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THE NANDA DEVI GROUP AND THE SOURCES OF
THE NANDAKGINI: *Read at the Meeting of the Society,*
9 January 1928, by

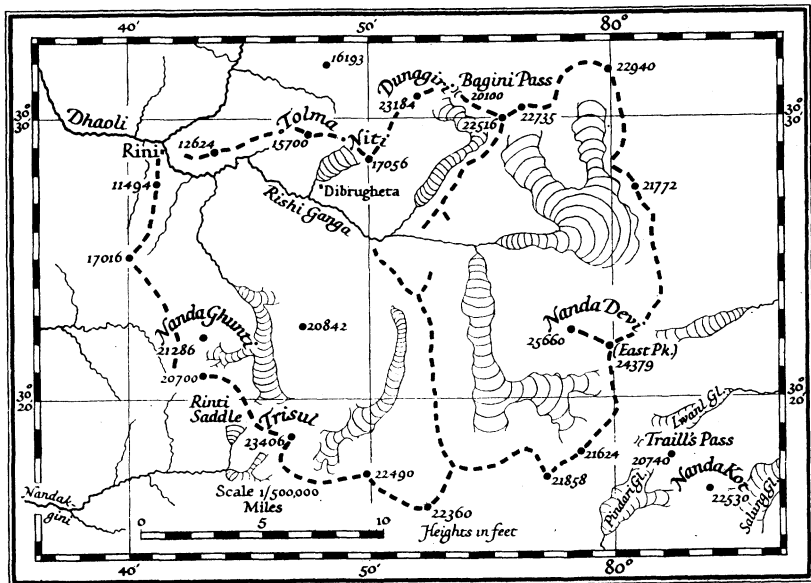
T. G. LONGSTAFF, M.D.

NANDA DEVI (25,660 feet) in the Garhwal Himalaya is the highest mountain situated entirely within British territory. There are no "political" difficulties to prevent anybody going there at any time. Its neighbourhood can be reached very quickly, easily, and cheaply from railhead at Kathgodam. In spite of this no one has yet succeeded in reaching the actual base of this grand mountain, much less in setting foot on it.

No doubt one reason is because, in this particular climatic zone, the winter snow does not disappear until June, while in the Rains travel in the southern valleys is so dangerous to health and so unbearably unpleasant. But quite apart from this the topography of Nanda Devi presents difficulties of access which I believe are unique. The mountain rises from the middle of an almost complete crater-like amphitheatre of mountains whose walls are 20,000 feet high, which has neither been crossed nor entered by any human foot. On the east the highest peak rises abruptly from the end of a buttress 2 miles long and about 23,000 feet in height, which connects it with a separate mountain, Nanda Devi East, 24,379 feet. On all other sides it rises a sheer 10,000 or 12,000 feet from the glaciers which encircle its base. But this central "crater" is only part of another almost complete ring of mountains measuring full 70 miles in circumference, from the crest of which spring a dozen *measured* peaks of over 20,000 feet, including Dunagiri on the north, Nanda Devi East, and on the south Trisul and Nanda Ghungti. For 60 miles of this distance there is no known depression below 17,000 feet, and in this distance it has only once been crossed, by the Bagini Pass, 20,100 feet (see *G. J.* 31, 367). This defensive crest-line has also been reached, but not crossed, in three other places: at 19,000 feet 2 miles south of Nanda Devi East (*G. J.* 29, 202), on the summit of Trisul, and last summer at 17,000 feet on the Rinti Saddle.

Down the centre of these two concentric horseshoes flows the Rishi-

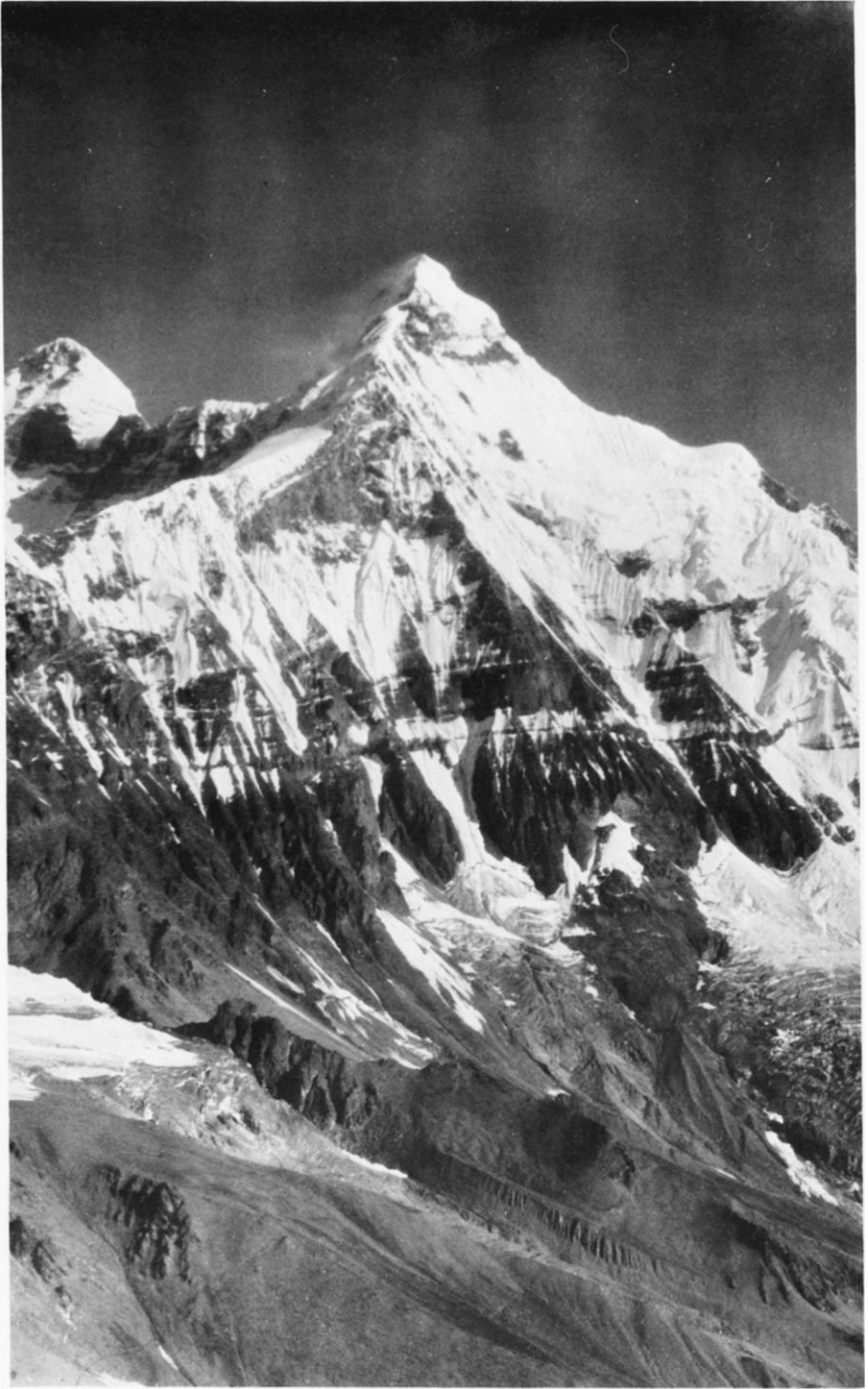
ganga, which joins the Dhaoli river at Rini at an altitude of only 6000 feet. The distance between Rini and Nanda Devi is but 20 miles, so that both the actual drop and the angle of steepness is considerably more than on the northern slopes of Mount Everest. The drainage of some 250 square miles of glaciated mountain country would be expected to make something remarkable in the way of a trench, when limited to one outlet ; but however great the difficulties anticipated it would be expected that the Rishi valley would provide easier access to the inner sanctuary than climbing over a 20,000-foot wall. Yet the Garhwalis, good rock climbers and brave men as they are, affirm that the lower half of the Rishi gorge is quite impracticable. In 1883 that redoubtable mountaineer, W. W. Graham, with two celebrated guides, Emil Boss and Ulrich



The crest-lines of the Nanda Devi group

Kauffmann, tried to force the passage from Rini, but were stopped after going a very short distance by the sheer difficulties of the ground (*Proc. R.G.S., New Series, 6, 433*). Another trouble is that this mysterious valley is "a savage place . . . holy and enchanted" into which the local people have a superstitious dread of entering, and local coolies are therefore apt to bolt at any moment from mere unreasoning fear. It is the traditional home of the Sat Rishi, the Seven Wise Men, who are now translated to the constellation of the Great Bear.

The valley has never been inhabited, but every summer the Tolma shepherds bring a few sheep and goats across the cliffs, at 14,700 feet, just west of Tolma peak (see map, *G.F. 31, 472*) to pasture for two months in the little side glen of Dibruggheta, which hangs high above



Nanda Devi from ridge near Trail's Pass *Phot. Mr. H. Rutledge*



Phot. Mr. H. Rutledge

Nanda Devi from above Bilju-Milam road

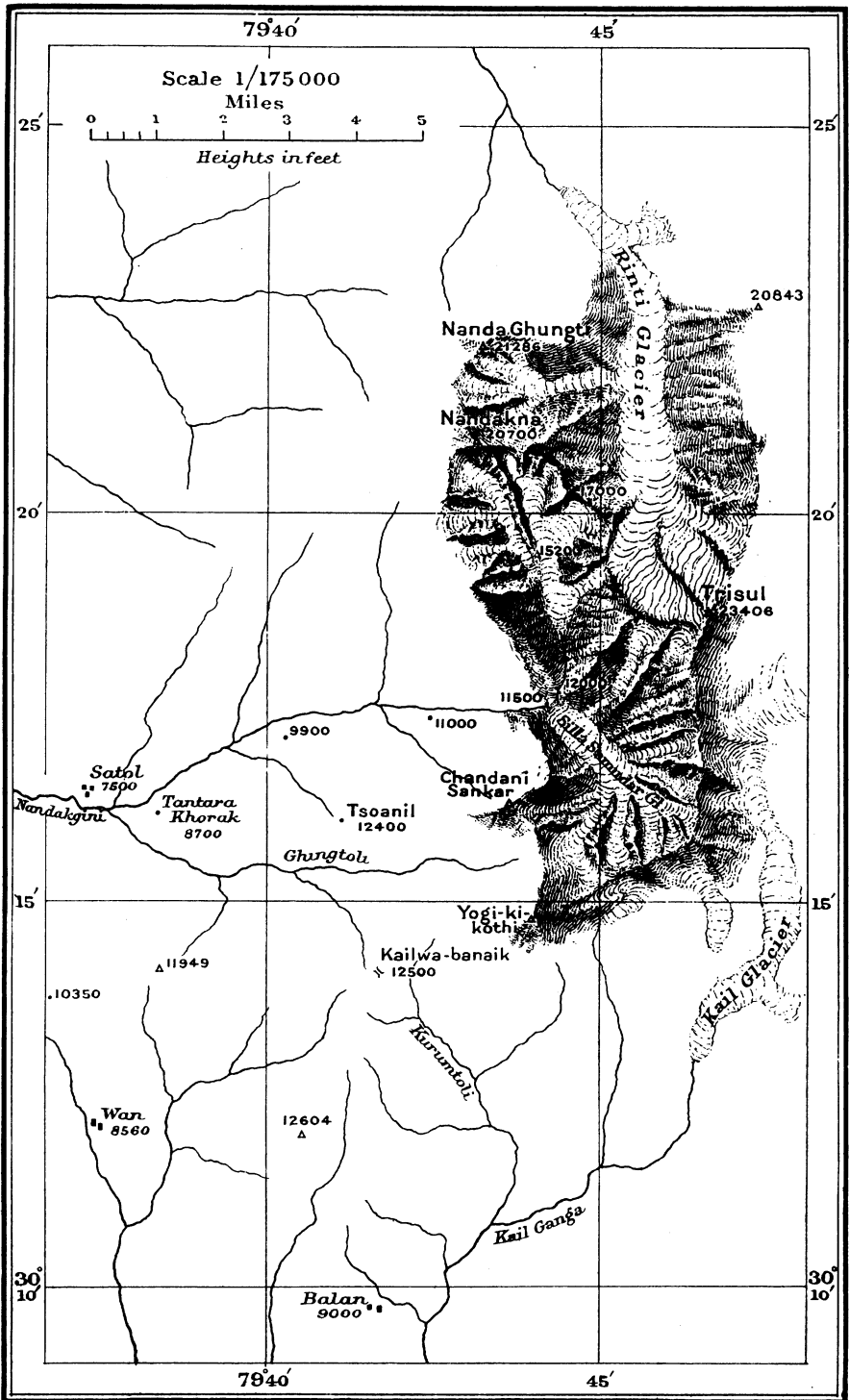
the northern bank of the Rishiganga. Using this route, both Graham's party in 1883 and General C. G. Bruce, the late A. L. Mumm and the writer in 1907, reached the banks of the Rishiganga about the middle point of its course; both parties were however defeated by the difficulties of the upper end of the gorge where the two arms of the inner crater-like amphitheatre almost close upon one another, so that the glaciers at the foot of Nanda Devi remain untrodden to this day: and when the foot is reached you find an Ushba with 10,000 feet added to her stature.

In 1905 (*G.F.* 29, 201-11 and *Alpine Journal*, 23, 202-228) and in 1907 (*G.F.* 31, 361-395 and *A.F.* 24, 107-133) I had explored practically all the approaches to this inviolate sanctuary. But a combination of adverse circumstances had prevented me, in August 1907, from pushing home an attempt to penetrate to the glacier sources of the Nandakgini river. Rising from the western foot of Trisul and from the southern slopes of the next peak on the north-west, which is definitely known to the natives as Nanda Ghungti (*i.e.* Nanda in her bridal veil), the Nandakgini river flows in a westerly direction to join the Alaknanda at holy Nandprayag. It was obvious that there ought to be a pass between Trisul and Nanda Ghungti; and that if this was an easy one it might give quicker access to the Rishi valley than the northern route used for the successful attack on Trisul in 1907. But nothing whatever was known of the topography, and diligent research has convinced me that no European had ever reached the glaciers in this neighbourhood.

In May 1927 Mr. Hugh Rutledge, I.C.S., Deputy Commissioner of the Almora District, obtained a month's leave and invited me to accompany him and his wife on a further exploration of this valley.

He is greatly esteemed by the various peoples of his huge district for visiting even the remotest corners of it and for his devotion to their sacred Himachal: with his wife he made the only *pari karma*, or ceremonial circuit of Kailas, which has ever been performed by Europeans. In company with Col. Commandant R. C. Wilson, D.S.O., they made the first modern passage of Traill's pass in 1926. Such activities, even if unblest by his official superiors, greatly add to his prestige as a District Officer with his people. He made all arrangements for our trip, including the enlistment in Darjiling and fitting out of six Sherpas, of whom Chettan served with the second Mount Everest expedition and Lewa with all three: Lewa was one of the two saved alive from the avalanche by Mallory, Somervell, and Crawford in 1922. Col. A. H. R. Dodd, commanding the 1st/3rd Q.A.O. Gurkha Rifles, most kindly lent us two picked men, Riflemen Khare and Budha Singh, who were of great service to us. All our men worked splendidly.

Leaving Gwaldam on May 15 we made three long marches by the Wan Pass (about 10,350 feet) to Satol, which was reached on May 17. Satol (about 7500 feet) is the highest village on the Nandakgini, and



The sources of the Nandakini

became our base, where all servants and all but the lightest equipment were left behind. We were told at Satol that about every twelve years a regular pilgrimage was made to Silla Samudr (or Samudar), the terminal ice-cave in the glacier from which the Nadakgini river appears to rise. The name was said to mean Source of the Ocean. We were told that on these occasions two thousand goats were sacrificed there; but we were also told that exceedingly few of the pilgrims ever arrived at their journey's end—and we never found even a bone of one goat! The performance of the pilgrimage appears to be a sort of perquisite of the villagers of Satol, for the which they are paid a regular fee. I think it must be to this pilgrimage that Atkinson refers ('Himalayan Districts,' 3, 634): "The summit (of Nanda Devi) is altogether inaccessible; but over a mile below it, a *mela* or religious festival is held every twelfth year, though access to the spot is so difficult that it is reached by scarcely fifty of the pilgrims who make the attempt. Further progress is impracticable in consequence of the mural cliffs of ice which on every side encase the peak. . . ." But Silla Samudr is 15 miles south-west of the peak. There is a great erratic beside the Salung glacier, 10 miles south-east of the peak, which I was told by my coolies in 1905 was a place of pilgrimage for the worship of Nanda Devi, and in 1907 I saw a celebration in her honour at a village 30 miles west of the mountain. In the course of three journeys in this district on all sides of the mountain and during which I have always been on good terms with the villagers and hillmen, I have failed to get any evidence of a near approach to the mountain from any side: all were unanimous in denying the possibility of any access up the Rishi valley. I had been told twenty years ago that the head of the glen was guarded by a large and malevolent serpent, which some said was petrified and some said ate all comers, and we now heard that a party of travellers, who once long ago essayed a passage across the range, were destroyed by an avalanche hurled from the top of Trisul by Shiva, who was incensed at their approach to his Veiled Bride (Nanda Ghungti). While there was no suggestion of any objection to our party proceeding, no villager was willing to accompany us; nor could any detail of the route be obtained. But an old soldier, Bhawan Singh Negi, who had greatly distinguished himself in France with the Royal Garhwal Rifles, offered to do his best for us although he had never been that way himself. Our party was now cut down to the two Gurkhas and six Sherpas, with a few of our old coolies who would be sent back to Satol when the glaciers were reached.

On May 18 we climbed the steep track, past the old temple of Tantara (about 8700 feet), by which sheep and goats are taken in summer up the *Kharak* or summer grazing alp of Dagwal. Soon after passing this small temple we turned from the track into feathery bamboo jungle under the dense shadow of great forest trees, and keeping our height gradually approached the gorge of the Nandakgini to the north of us,

on our left. The track was now very narrow and sometimes precipitous. At 4 p.m. we camped in dense wet jungle at about 9900 feet.

May 19 was a very hard day. Very soon the "path" quite disappeared. The dwarf bamboo got thinner as we left the oak and maple and entered the fir and rhododendron zone. Before noon we got down into the bed of the Nandakgini, here about 11,000 feet, but were very soon forced up again into snow-bent birch and mauve rhododendron jungle, very fatiguing to the passage of laden men. Opposite to us, extending along the sunny north bank of the gorge, was a beautiful forest of large crimson tree-rhododendron contrasting gorgeously with the dark foliage of great scattered firs. The last two-thirds of a mile took us two hours to cover; our laden men were far behind, and at one o'clock we stopped to camp on the only level spot we had seen all day, the top of a birch-clad spur thrust out into the valley between two great gullies filled with winter avalanche snow. We had the usual pre-Monsoon rainstorm, which turned to hail in the evening.

I was very interested to see that we were, at about 11,000 feet, near the upper edge of a very fine continuous birch forest. This proved that we had reached a region never visited even by the hardy shepherds of Garhwal. In northern latitudes the silver birch is normally the last tree met with. It would be the same in the Himalaya were it not for centuries of grazing by sheep and goats. These, by destroying every seedling, inevitably cause the ultimate death of the forest, so that birch woods are now decidedly rare in this part of the Himalaya. I consider that the same conditions hold good in the Alps, where I have only seen well-grown birch in parts of Dauphiny which are too steep to graze. The normal existence here of these extensive birch woods naturally leads to the consideration of the real biological boundary between the palæarctic and the Indian faunal regions. In the Central Himalaya this lies at an altitude of about 12,000 feet along the *southern* slopes of the range, and not along the Indo-Tibetan water-parting, as is often assumed. This was strikingly emphasized in the upper Nandakgini valley, where from the bamboo jungles far below us the notes of tropical birds like the "Koel" contrasted with those of the (apparently) European cuckoo in the highest birch zone. The gorgeous tropical butterflies of the depths of the valley are exchanged for homely looking species above the tree-line. The Bharal (*Ovis nabhura*) is also found on these southern Himalayan slopes, though it is generally considered typical of the more arid inner zone of the Indo-Tibetan water-parting. We have here a beautiful example of high altitude compensating for low latitude in its effect on the faunal character of a region.

Next day we continued on our way, almost at once having to cut steps across a steep, broad snow-filled gully. This was followed by steep slopes through the last of the dwarfing birch forest to another snow gully across which steps had to be cut. At last we got down to the bed

of the torrent, here flowing in the narrowest throat of the gorge between the far projecting southern curtain of Nanda Ghungti and the slightly less precipitous northern spur of Chandani Sankar. Ahead of us we saw a distinctly snake-like moraine curling round the true right bank of the Silla Samudr glacier, which apparently blocks the head of the glen directly under the western foot of Trisul. Crossing the stream by a snow bridge we reached the crest of the moraine three hours after leaving our previous camp, which was about a mile distant. The snout of the glacier descends to about 11,500 feet : its face is fairly steep, and although the right lateral moraine is double, showing a former much greater breadth and thickness of the ice, no sign of active retreat is evident at the present time.

We now realized that the sources of the Nandakgini lay in a T-shaped valley. A partially glacier-filled glen flows due south from Nanda Ghungti : the valley filled by the Silla Samudr glacier descends towards the north between Chandani Sankar and the western face of Trisul ; these unite at the western foot of Trisul, where the Nandakgini river starts on its westerly course. Our way lay up the northern glen, in the mouth of which we camped (about 12,000 feet), sending our Almora coolies back at once and keeping only the two Gurkhas and six Sherpas.

The next two days were spent by the Ruttledges in reconnoitring, while I made photography and the map an excuse for a much-needed rest. The Silla Samudr glacier seemed to be stationary, while those flowing south from Nanda Ghungti appear very shrunken and choked by morainic deposits, but were still so deeply covered with snow that it was impossible to define their snouts with certainty. My map is merely a rough sketch, based on the 1-inch G.T.S. sheet, with details filled in from photographs. Unfortunately there are no observed peaks south-west of Trisul, and we were much too close under the summit of that mountain even to be sure of identifying its actual summit. We afterwards obtained the names Chandani Sankar and Yogi ki Kothi for the two most prominent outliers of Trisul on the south-west ; but neither had been intersected, though both can be recognized on the G.T.S. 1-inch sheet.

The peak which is locally known as Nanda Ghungti is the Nandakna (20,700 feet) of the G.T.S. Synoptical, vol 35, p. 345, and chart No. 53N, but shown without name or altitude on the 1-inch sheet : Burrard and Hayden (pp. 6, 19) refer to it as $\frac{\text{Pk76}}{53\text{N}}$ Nandakna 20,700 feet. I have not ventured to alter this nomenclature, but have left the name Nanda Ghungti attached to peak 21,286, which is 2 miles due north of "Nandakna," as on my old map published in the *G.Œ.* 31, 372. Yet it seems certain that as the northern peak is invisible from the south, it is this southern peak which is the Nanda Ghungti of the people ; also

I suspect that Nandakna is merely an alternative or a corruption of Nandakgini, the name of the river.

From a little south of the summit of Trisul a great buttress juts out westward. This soon curves toward the north-west and rapidly decreases in height. This jagged north-west buttress supports on its northern face a vast shelf of glacier which, descending on to the Rinti glacier, ultimately discharges into the Rishi valley on the north. But in one place this great northern shelf-glacier overflows through a slight depression in this steep north-west buttress of Trisul, and discharges south-westward to feed the Nandakgini river, which we have been following. Just north of this western overflow glacier there is an obvious passage up a 1000-foot gully to the top of this north-west buttress of Trisul, and which would lead straight on to the high shelf-glacier on the north face of Trisul. It is therefore a potential pass across the local water-parting. But the lowest depression in the Nanda Ghungti-Trisul ridge lies farther north, at the head of the glen we had entered. Here steep but easy snow-slopes (May 24) led up to a perfect snow-saddle, which is the obvious pass over to the Rinti glacier on the northern side of the range. For this we suggest the name Rinti Saddle : as it has never been crossed it should not be called a pass. Its height is about 17,000 feet. My Watkin aneroid was out of order, and we had to depend on a small but good aneroid which Rutledge had brought. We got our height all the way from Satol by registering the differences from camp to camp both going and returning. By this means we were able to put our highest camp at 15,200 feet : the Rinti Saddle is about 1800 feet above this. It is obvious however that all the altitudes determined by us are mere approximations.

On May 23 we took a still lighter outfit and ten days' food up to a camp at about 15,200 feet on the highest moraine outcrop of the eastern-most of the two Nanda Ghungti glaciers. The site was most exposed, but conveniently close under the lowest snowy gap (our Rinti Saddle) in the ridge between Trisul and Nanda Ghungti. The Sherpas despise tents, and made a far better camp than ours under a big boulder on the moraine. We suffered daily from hail or snow-storms accompanied by thunder or high winds. Such weather made the condition of steep snow-slopes dangerous. On May 24 we reached the Rinti Saddle in three hours' easy going up steep and rather soft snow-slopes. New avalanches were lying at the foot of the still steeper slopes on both sides of us, as we approached the pass. Just south of the pass is a curious depressed hollow basin, giving the impression of local subsidence. From the crest of the pass we had a splendid view down on to the head of the Rinti glacier, which was very heavily snow-covered and disappeared to the north-west, flowing between Nanda Ghungti (21,286 feet) and the long precipitous northern spur of Trisul which terminates in peak 20,842 feet. A portion of the south-west ridge and the glorious summit of Dunagiri (23,184 feet) was visible over the north-west ridge of peak 20,842 feet

on the far side of the Rishi valley, giving us a very welcome check on our position. But the saddle on which we stood was heavily corniced, and at our feet snow-slopes, which we knew must be dangerous, fell away steeply for about 2000 feet to the head of the Rinti glacier. In my opinion it would be quite possible to make the descent on the north in good snow conditions; but the passage would demand much time and great care to effect safely. To reascend the pass from the north would be easier, but would take the best part of a day. If the slope was ice, then neither ascent nor descent would be practicable.

Since that part of the Rishi gorge into which the Rinti *nala* debouchés has never been traversed, it was probable that we should have to return by the same route. We regretfully gave it up. But we were all three set on breaking through this redoubtable barrier. If we slept only one night on the Rinti glacier we could claim an absolutely new pass to our credit! As we looked back up to the summit of Trisul, ascended just twenty years ago, and still the highest peak whose complete ascent is undisputed, we realized that, if the snow would hold, it would be a simple matter to traverse left-handed from our Saddle and so gain the crest of the serrated north-west spur running down from Trisul, and look over on to the great shelf-glacier which drapes its north-western face. An hour's cautious traversing brought us to the crest, and to our great surprise we found ourselves only a few feet above the level of the shelf-glacier, which farther towards Trisul overflows through a gap in the ridge in steep icefalls over on to the south-west or Nandakgini side. The first part of the descent on the north side was apparently very easy, though not without danger from seracs falling from a smaller shelf-glacier higher up on the north-west face of Trisul. We could not see the actual junction of our shelf glacier with the main ice-stream of the Rinti glacier itself, but decided that this alternative route was well worth trying, and that we would take over enough outfit to enable us to sleep on the Rinti glacier and then return by the same route. By now the snow was in pretty bad condition, and the descent of the steep slopes back to our camp was not without moments of anxiety.

Our good fortune now deserted us—or the gods were angry. On May 25 we had a bad storm which continued all night and blew down the Ruttledges' little tent. Next day of course climbing conditions were impossible, and in the evening the cliffs of Nanda Ghungti and Trisul stood out ominously clear. On May 27 we left camp in desperation at 6 a.m., we three lightly and the two splendid Sherpas, Chettan and Lewa, heavily laden. We meant to rush the passage and go at least far enough to see the actual junction of the shelf-glacier with the Rinti glacier, returning in our old steps the same night. We dare not be caught on the far side of the pass by another of these pre-monsoon snow-falls. We had chosen the next *couloir* on the north to that by which the great shelf-glacier sent down an overflow tongue above our camp. We made

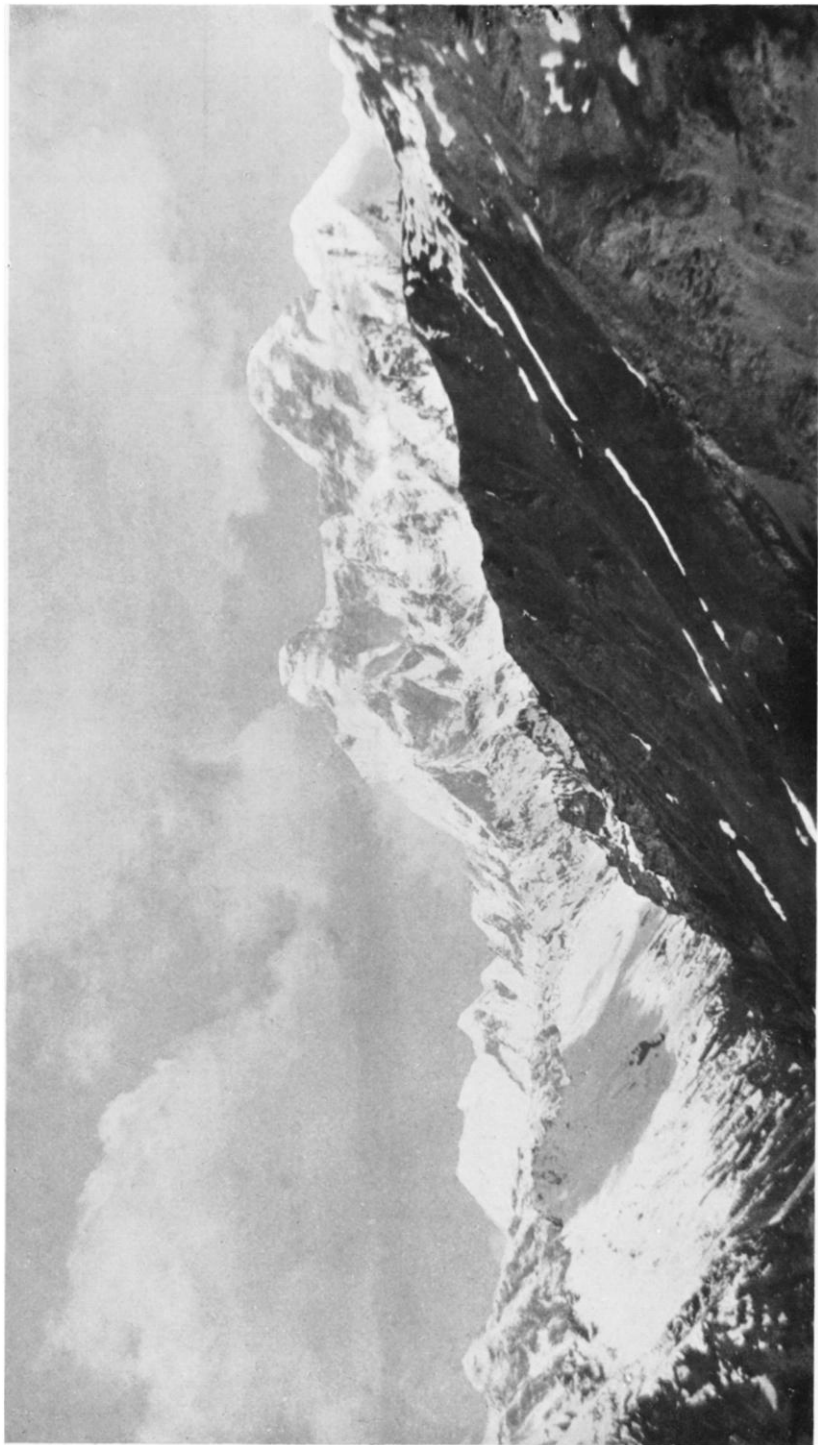
the first 1000 feet quickly and found the snow in the lower part of the *couloir* fairly safe : the way was clear to the crest of the ridge, little more than an hour above us. But for some time we had been alarmed by the look of the weather in the west, and it was now evident that we were in for a very heavy snowstorm. We turned tail as it commenced. We had a bad day in camp and a worse night. There were 9 inches of fresh snow next morning, and as it was still snowing and our gully would be impossible for several days, we struck camp and descended. Snow had fallen at our lower camp (12,000 feet) and the Whympet tent was blown down. The hot days made the new snow dangerous, and we deemed it wise to shift our camp out of this narrow side glen and on to a safer site under the cover of the "Snake Moraine" beside the snout of the Silla Samudr glacier ; it was also drier and warmer. Our caution was justified, for as we left this camp on the morning of May 30 we were enveloped in the snow-dust and rushing wind caused by an invisible avalanche, which I think must have fallen very near our former camp.

Instead of returning to Satol down the gorge of the Nandakgini, we spent five unforgettable days traversing the Chandani Sankar-Dagwal ridge, camping first at the upper limit of the birch forest and then at the upper limit of the fir belt ; halcyon days of ravishing beauty, with the great peaks of Nanda Ghungti and Trisul floating serene above the deep forest-filled ravine of the Nandakgini. Picking up more supplies at Satol, we despatched our baggage to Gwaldam by the Wan pass and struck out ourselves across the great outlying ridge south-west of Trisul over the Kailwa-banaik (about 12,500 feet) and Kurumtoli to Balan, the highest village in the valley of the Kailgunga, and so along the Nauali ridge down into the valley of the Pindar.

It is a grand bit of country, seldom visited because of the difficulties of supplies, but Ruttledge's *bandobast*, and the endurance of our Sherpas and the two Gurkhas, proved equal to every emergency. Day after day we wandered along high bare grassy ridges with beneath us incredible glens clothed in forest growing at the steepest angle ; and always with the snows to look up to, ever changing but ever beautiful. I have to thank my two companions for giving me a pilgrimage more care-free and more full of delight than any other I have made in Himachal.

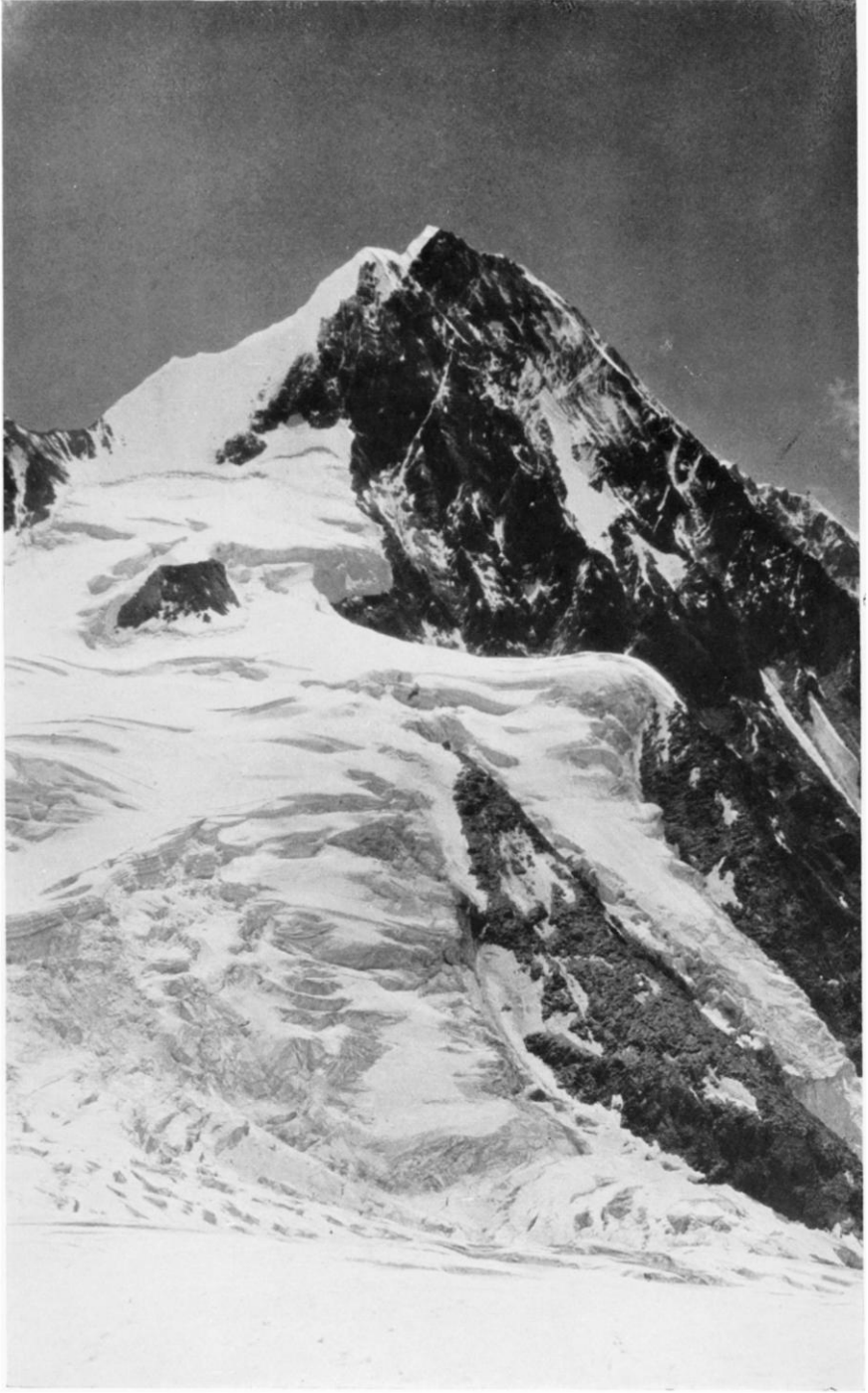
DISCUSSION

Before the paper the PRESIDENT (Col. Sir CHARLES CLOSE) said : This evening we are to spend in the High Himalaya, and our guide is to be Dr. Longstaff. Those who are Fellows of our Society need no introduction to Dr. Longstaff, but there may be those who are not Fellows in this hall, and I should say that Dr. Longstaff is an intrepid mountaineer who has climbed in three continents : in the Alps and the Caucasus, in the Himalaya, and in the Rockies. He reached the summit of Trisul. He has made two journeys to Spitsbergen, and he was a member of the 1922 Expedition to Mount Everest. With those credentials you may be quite sure that we shall have a very interesting account of the problem of Nanda Devi. I ask Dr. Longstaff to give his account.



Phot. Mr. H. Rutledge

Nanda Devi from 14,350 feet on Qalganga Ka Pahar



Phot. Mr. H. Rutledge

West shoulder of Nanda Kot from Névé of Pindari glacier

Dr. Longstaff then read the paper printed above, and gave some account of the papers by Mr. Rutledge and Col. Commdt. Wilson which follow; and a discussion ensued.

General WAUCHOPE : I have for many years been indebted to Dr. Longstaff. When he first met me, somewhere in the Himalaya, he advised me to visit the district of Trisul, and the vivid picture he has drawn of these mountains has laid me and all of us under a deep debt of obligation. I sometimes think that my friend Dr. Longstaff, who is a man of science, divides mankind into two classes : those fortunate mortals who have visited Trisul, and those less fortunate beings who have not had that privilege. But, speaking as a soldier, I cannot agree. I divide mankind into three classes : those who have never seen Trisul ; secondly, those poor creatures, like myself, feeble, fearful, and infirm, who have had the privilege of visiting Trisul but have never succeeded in reaching its peak ; and the third class, which is numerically very small—I rather think it is confined to one individual—contains those who have been to Trisul, solved its problem, and gained its summit.

Dr. Longstaff gave us such a vivid picture of these incomparable mountains that it would be an impertinence on my part if I were to attempt to add anything to what he has said, but I would like to make a couple of comparisons. There are many people who would of all buildings in India give first place to the Taj Mahal. They say while the other buildings are greater in size and may have greater grandeur, no building combines such lightness and strength, such perfection of setting, and such simplicity of design and beauty of ornament. I do not happen to agree. But I think that the argument used as regards the Taj Mahal may be applied, with far greater force and justice, to Trisul and Nanda Devi. I well remember when I first visited that country, fourteen years ago, it was in the month of May. The steep sides of the deep valleys were covered with dark green woods and bright green pastures. The valleys between them were all gold and yellow with ripening corn ; the streams half hidden with wild roses and jasmine ; among the pomegranate, bohinnias, and other trees, all in full flower, were birds, mostly Asiatic, whose brilliant colouring I shall never forget ; and higher up one came to those woods of rhododendron that Dr. Longstaff showed in one photograph, like Joseph's coat a mass of many colours. Farther up, far above the haunts of the animals and birds I had been shooting, one gained an incomparable view of the serene beauty of Trisul and Nanda Devi. I have never seen any view which inspired me with feelings of such reverence and awe. Sometimes I think that when we climb 10,000 or 20,000 feet above sea-level it is not only our bodies we raise to that height. I believe it happens sometimes that our minds are also uplifted to a higher plane. You may remember when Victor Hugo is discussing the great poets of the world he says of Shakespeare in a fine phrase that Shakespeare is a promontory into the infinite ; a promontory along which we poor mortals may clamber and climb and gain a vision of things that are ordinarily hid from our mortal eyes. When first I looked upon that marvellous vision of Nanda Devi and Trisul, I felt that they well deserved the words of Victor Hugo, and may well be termed "Headlands into the Infinite." It is for recalling that vision to us to-night, and for his brilliant exposition of these mountains, that we have to thank Dr. Longstaff.

Brig.-Gen. Hon. C. G. BRUCE : I cannot speak without first referring to the recent loss of our companion, Arnold Louis Mumm, and I must also remind you that that particular expedition to which Dr. Longstaff has referred, to the

north side of the Nanda Devi range, was a secondary thought ; that we had almost arranged for the first exploration of Mount Everest. The expedition had been financed and was ready to start entirely through the generosity of Dr. Longstaff and Mr. Mumm. It was only owing to political difficulties that it was found necessary to switch off to a further exploration of Dr. Longstaff's own particular stamping ground, so to speak, the Nanda Devi range. We had on that occasion the full support of the Viceroy, then Lord Minto. Without his help it would have been extremely difficult for us to have fitted out an expedition on the lines of that which we took into Garhwal, itself an extraordinarily bare country.

Dr. Longstaff has not quite brought out what an exploration of Nanda Devi means, because he is a great deal too modest. I must let you into the secret. When we made our great attempt to explore the Rishi valley it was impossible, from the point of view of cold, of outfit, kit, and possibly capacity, to take with us local men. We had to follow up the glacier which lies to the north of the group, the great Bagini glacier, fairly early in the year (in May, in fact) and be prepared to cut ourselves off from all help for ten days—tents, cooking apparatus, even some spirit for fear we should not find wood, food for two of the hungriest guides I have ever seen, besides being the strongest, for four very hungry and strong Gurkhas, for Dr. Longstaff, and for, no bad trencherman, myself. Dr. Longstaff and I had a very formidable rifle each and adequate ammunition to carry also. We camped with our full loads up on Bagini glacier at a height of 18,000 feet. From there we had to go with our packs on our backs over the Bagini Pass, 20,100 feet, the climb to the pass requiring a great deal of step-cutting on the part of the Brocherels. That was the easy part. Then we had to go down that steep cliff shown in the slide, needing 500 feet of rope. That was a real teaser with our heavy loads. I remember that particularly because the heaviest load of all was carried by Alexis Brocherel, who had elected to come down last. Just before I had started he asked me to exchange loads. I had his load in addition to my rifle, and the remarks I made are not recorded except by Dr. Longstaff. We had a very rough time, but eventually landed on the Arhamani glacier and had to follow it down for some miles. The last to come down were Dr. Longstaff and myself. In one place we had to sling ourselves down on about 60 feet of rope with our loads. Dr. Longstaff shot burhel, and it will give you some idea of the difficulty encountered in the Rishi valley if I tell you that we were never able to get back to our cache of burhel meat when we made a second advance up the valley. On the second advance we were camped at the junction where we could see that extraordinarily difficult side valley which leads to the foot of Nanda Devi itself and the way up to Trisul, and from there Dr. Longstaff with his companions made the ascent of Trisul, which still remains to this day the highest actual summit yet reached by any human being. There they had an experience which has stood us very well indeed since. They were camp-bound at 20,000 feet in a real blizzard, and there they thoroughly understood what a blizzard means when continued for two nights and a day at that altitude. Every one had to come down for the purpose of food and rest exactly in the same way as the Mount Everest Expedition in 1924. Over that height a real storm will take it out of you quite as much as a very hard day's work.

Dr. Longstaff in the pluckiest possible way went out this last year to continue his explorations, and I think it is a matter of very great congratulation that he was able to do so. We have now at any rate in Kumaon a most sympathetic Deputy Commissioner, and there is no doubt that he will continue the explora-

tions of this splendid group. There is a little still to be learned, but there is an enormous amount still to be done of what we might call minor exploration in the rest of the range.

I think I am right in saying that in Garhwal, within an area equal to Glamorgan and half Monmouth, there are no less than eighty peaks over 20,000 feet. To the north also lies another field, well known in mountaineering history, Kamet and Ibi Gamin. Attempts have been made on both of them, and they have been explored by Dr. Longstaff himself. There is still in the same neighbourhood a little exploration to be done, too, in connection with the source of the Alaknanda. It looks a comparatively simple geographical problem; the mountaineering difficulties are not known. We hope some day some one will tackle it and be able to push his way up the Sathepanth glacier and over to the other side and descend near Gangotri somewhere and complete the circle of the source of the Ganges.

It may interest you to know that the companions who chiefly accompanied Dr. Longstaff, not only on his first attempt on Trisul but also on his subsequent explorations on the southern face up the unknown valley of Sonadhunga, were two Gurkhas, one of whom got the M.C. in the war, retiring desperately wounded; the other retired with the honorary rank of captain, both going about as far as they could under the circumstances. Of course his Gurkha companion on the ascent of Trisul was the well-known sub. Karbir, who had travelled so much with Sir Martin Conway. It is also interesting to me that a certain number of Sherpas from Darjeeling took part in the last exploration, with Mr. Rutledge and Dr. Somervell. They are first-class people, but I must point out that in the neighbourhood of Milam among the Milamwals and also among the Dhanpurias there are men who would do equally good work if they had the opportunity of training that the Sherpas have had. A certain number of the Dhanpurias, I believe, have enlisted in the Garhwal Rifles and have done first-class work. That is a source which might easily be tapped to help other explorers to push their way into that part of the world and save the expense of importing men, besides which it would give a great stimulus to local activities.

Col. E. F. NORTON: I should like to add my tribute to Dr. Longstaff for his fascinating lecture. Widely as Dr. Longstaff has travelled and widely as he has climbed, he has told us to-night about the country which he has made peculiarly his own and of which he can speak with an authority which nobody else can claim. In those halcyon days before the war I spent seven years on the banks of the Ganges, and thence on rare occasions, when a shower of rain cleared away the dust haze, about 150 miles away along the northern horizon like a picture thrown on a screen, we used sometimes to see that great outer range of the Himalayas—a wonderful panorama, with those two great mountains, Nanda Devi and Trisul, the central figures. In those days we, having eyes to see, saw not. We concentrated our activities entirely on three other pursuits: we used to spear the grey boar; we used to shoot tiger and other big game in the foothills and in the jungles of the Central Province; and if we wanted a change of air we used to go to the Himalaya and shoot sheep and goats, and the Kashmir stag. I am wrong: we had a fourth pursuit. We used to do a little soldiering in our spare time. I for one, when I got leave to Europe, used to spend every week of it in the Alps. Yet we never dreamed of attempting the giants of the Himalayas. We little knew that on one of those very days on which we could see those great peaks to the north of us, perhaps at that very time, an Englishman was reaching the top of one

of them and thus constituting a world's record for the highest peak that has ever been climbed.

Later, when I became associated with the Mount Everest Expeditions, I foresaw that they might lead to a recognition among Englishmen in India of the possibility of the Himalaya as a playground from the Alpine point of view ; and from what we hear of the two new mountain clubs which they are starting in India it looks as if my hopes may be fulfilled. If it was the Mount Everest Expedition which directed the attention of Englishmen in India to the mountaineering aspect of the Himalaya, it was the enterprise of men like General Bruce and Dr. Longstaff which demonstrated what could be done with a small bundobust, which showed the way to what a poor man with limited resources of time and money could achieve. I think this movement is undoubtedly going to gain ground in India, and when it does the pioneers will gain that tardy recognition which is the reward of those who do not broadcast their achievements in books but, like Brer Rabbit, "lie low and say nuffin'."

The PRESIDENT : We are very glad to hear from Col. Norton that two mountain clubs have been formed in India. No doubt one of these days they will amalgamate. The formation of a mountain club is a thing that ought to have taken place long ago, but we are glad to hear that it is now being carried out. We are sure that if they do start they will have a very long and successful career. Dr. Longstaff this evening has said very little about himself, but I think that we should remember his record for the highest summit, made on Trisul many years ago, remains unbroken. We have not now the means, or the opportunity, of celebrating his exploits in the Bhotia manner, but in your name I am sure I shall be right in thanking him for his lecture and for the very admirable slides which he showed us, which did, in some small way, convey to us the majesty of the Himalaya. We also thank Mr. Ruttledge, who provided many of the photographs and some of the information, and Colonel Commandant Wilson, for their contributions to this evening's meeting.