

land to the sea, which, as usual, according to our experience, lay under a blanket of yellow fog. When we left the summit we descended towards the S.W. to a glacier upon which we turned the W. flank of our peak. We regained our depression of the morning, returning by the same line to the head of Eglinton Fjord.

ILLUSTRATIONS.

1. M. H. Ritchie. Fjord scenery to the E., from summit of Sanderson's Hope.

2. M. H. Ritchie. Devil's Thumb from the W. Climber's route by ridge facing camera.

3. M. H. Ritchie. View N. from nameless peak near head of Eglinton Fjord (climbed by Longstaff and Hanhan).

4. M. H. Ritchie. Early morning view towards glen near head of Eglinton Fjord (taken from a peak of 5050 ft.).

5. M. H. Ritchie. Vertical slabs on peak in Eglinton Fjord, Baffin Land.

THE NANDA DEVI BASIN.¹

By E. E. SHIPTON.

(Read before the Alpine Club, March 5, 1935.)

PERHAPS one of the principal objects I had in mind when I decided to go to the Himalaya last year was to prove to my own satisfaction at least: first, that the small self-contained party is in a position to obtain far better results from the mountaineering point of view than the big, unwieldy expedition which, for some obscure reason, since the war has been thought necessary for a Himalayan campaign; and, second, that the prevalent opinion regarding the cost of Himalayan expeditions is vastly exaggerated. Our party consisted of two Europeans, H. W. Tilman and myself; we were in the mountains for just under five months, and away from England for seven months; careful accounts were kept of expenses both in England and India; the *total* inclusive cost of the expedition worked out at £143 10s. each. Our plans were somewhat ambitious and involved the abandonment of our base for months at a time. For this we decided to allow ourselves the luxury of three of the 1933 Everest Sherpas. If one wished to climb from a centre and not cross any of the

¹ A map prepared by the R.G.S. is appearing in *G.J.* lxxxv, April, 1935. See also *A.J.* 23, 207; 24, 132.

major passes, an expedition lasting over a similar period could be done for considerably less.

For an objective we originally decided on an attempt to make a thorough exploration of the much-discussed range which lies between the sacred Hindu shrines of Badrinath, Kedarnath and Gangotri. Dr. Longstaff, however, advised me to alter that plan in favour of an attempt to get into that remarkable basin surrounding the great peak of Nanda Devi, and which had never been reached by any human being. Such advice coming from such a quarter was too valuable to neglect, and though I must confess I had some misgivings as to the feasibility of the proposition, I welcomed it with open arms. I am glad that Dr. Longstaff is one of the very few who can fully appreciate the debt of gratitude which Tilman and I owe him for this change of plan. I am deeply indebted too to Hugh Ruttledge for much valuable advice and encouragement.

The Nanda Devi group presents topographical features of absorbing interest to mountain explorers. The mountain is the highest entirely in British territory, and yet though several expeditions have tried to reach it no one had so much as penetrated to the glaciers which rise at the feet of the great mountain.

The main difficulty lay in the fact that the peak is encircled by a vast amphitheatre of mountains which, I believe, is unique. It is hard for anyone who has not studied the phenomenon at close quarters to form an adequate conception of this gigantic crater, in places over 22,000 ft. high, enclosing a bit of country itself not above the limits of dwarf trees, out of whose centre there rises a stupendous peak, 25,660 ft. in height. Both the interior of this circle and the foot of Nanda Devi had never been visited.

The water rising from the glacier system of this basin flows to the W. through a narrow gorge known as the Rishi Nala. This forms the one break in the huge amphitheatre. One would naturally suppose that the best line of attack lay here, but the extraordinary difficulties of the gorge are such that, since Dr. Longstaff visited it in 1907,² all aspirants to reach the foot of Nanda Devi have attacked the mighty walls of the crater itself.

As early as 1883 that redoubtable Himalayan explorer, W. W. Graham, accompanied by two Alpine guides, Emil

² *A.J.* 23, 202 *sqq.*

Boss and Ulrich Kaufmann, made two determined attempts to force a route up the Rishi Nala.³ The first was frustrated at the very mouth of the gorge by sheer walls of rock. Later, he contrived to avoid the lower part of the gorge by making a big *détour* to the N., and, after overcoming immense difficulties, contrived to force a re-entrance into the valley higher up. Here Graham was deserted by his porters, local men who believed the valley to be the abode of demons. Undaunted, he and his guides struggled on alone, but were at last forced to admit defeat by the sheer difficulties of the gorge. Others tried later with less success. But it was not until 1905 that Dr. Longstaff devoted his indefatigable energies to the problem of gaining access to the Nanda Devi basin.

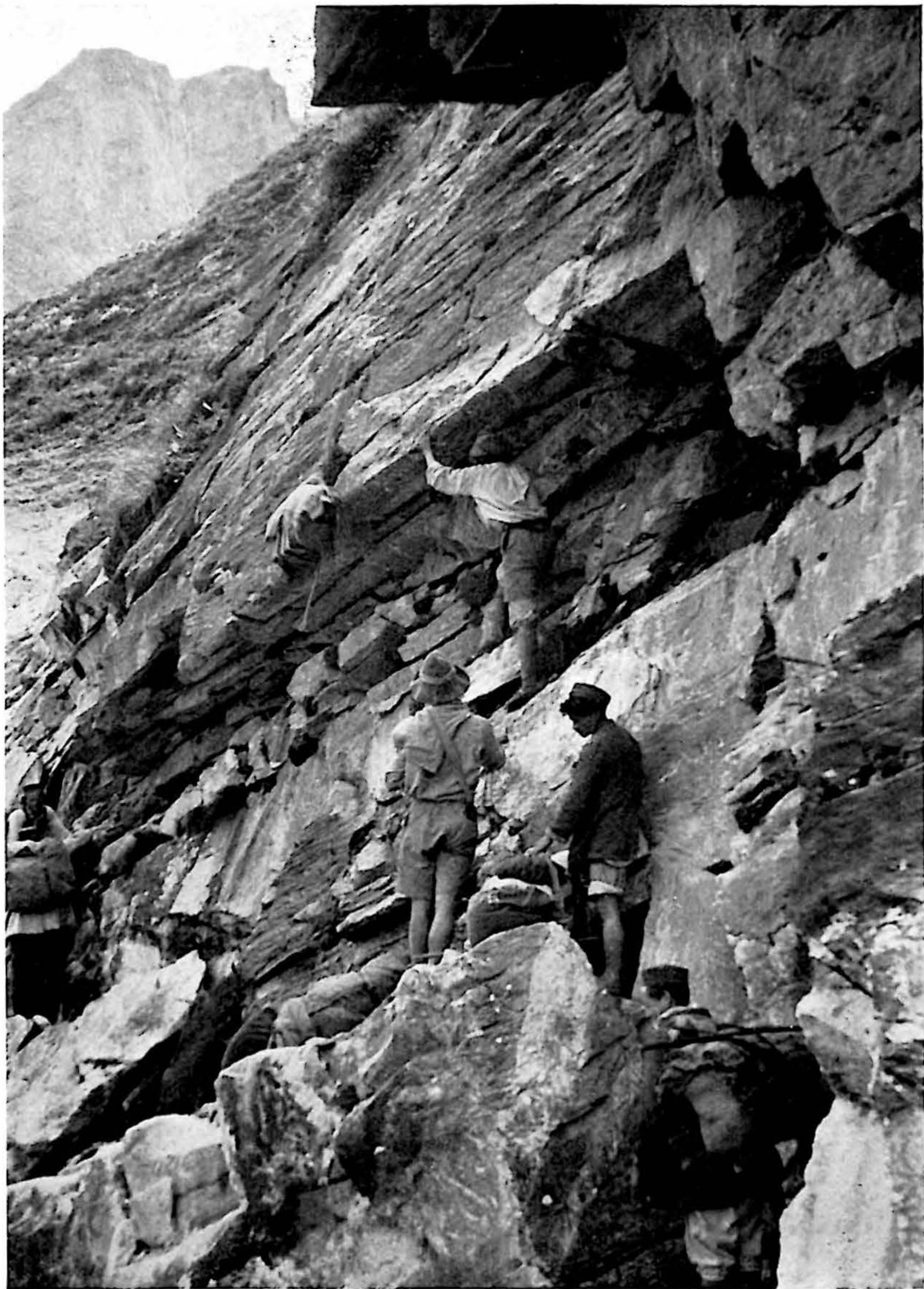
In that year he was accompanied by the two Brocherels of Courmayeur. They approached the mountain from the head of the Milam valley, which bounds the Nanda Devi group on the E., and ascended the Panchu Glacier, crossing a difficult snow pass at its head. This brought them on to the Lwanl Glacier, running parallel with the Panchu, and not into the Nanda Devi basin as their map had led them to expect. They descended to the main valley for supplies, and shortly afterwards re-ascended the Lwanl Glacier. After three days' climbing they gained the Kumaon-Garhwal watershed, forming at this place a part of the 'rim' of the Nanda Devi basin.

Thence, for the first time in history, they looked down on to the glaciers at the southern foot of the great mountain. A descent on the other side of the ridge was found to be impracticable.

Further exploration of the group was made in 1907 by Dr. Longstaff, General Bruce, Mr. A. L. Mumm and three Alpine guides.⁴ Their first objective was the Rishi valley. Examination of the lower gorge decided them to attempt Graham's route, the first part of which was known to the Tolma and Lata shepherds. But they were too early in the year and found too much snow to allow them to make a passage of the Durashi Pass. The party moved round to the Bagani Glacier, and after several days of difficult mountaineering crossed a 20,000 ft. pass at its head. Again they were disappointed. They had hoped that the pass would lead them on to a glacier flowing down into the Nanda Devi basin; but on descending the glacier they found themselves in the Rishi

³ *A.J.* **33**, 296 *sqq.*; **34**, 37 *sqq.*

⁴ *Ibid.* **24**, 107-33—superbly illustrated.



Photo, E. E. Shipton.]

SECTION OF TRAVERSE ALONG S. FLANKS OF RISHI NALA.

[To face p. 60.]



Photo, E. E. Shipton.]

THE TWIN PEAKS OF NANDA DEVI. FROM THE ICE PLATEAU AT THE HEAD OF THE LARGE GLACIER FLOWING INTO THE BASIN FROM THE N.

[To face p. 61.]

Nala at a point below that which Graham had reached in 1883. It was soon after this that Dr. Longstaff made his famous ascent of Trisul.⁵

After this he visited the mouth of the upper gorge. I should like it to be understood that no serious attempt was made by the party to force a route up this upper gorge and that Dr. Longstaff had neither the time nor the food to do so. Several attempts to get into the basin had been made since that date, notably those of Mr. Hugh Rutledge, who, in 1932, tried with the guide Emile Rey jr. to cross from Maiktoli a gap at the head of the Sunderdhunga valley on the S.⁶

It is a mountaineering axiom that each successive attempt upon a problem makes that problem easier to solve. Few great mountains were climbed and few passes crossed at the first attempt. The man who eventually reaches the summit of Mount Everest will have done so, not by his own efforts alone, but over the shoulders of the pioneers—Mallory, Norton, Somervell, without whose hard-won experience he would have stood no chance. It should be clearly understood, therefore, that what measure of success we have had this year we owe primarily to those who had gone before us.

It was our plan to attempt once more to get up the Rishi Nala. Our first project was to get a month's provisions to the junction of the Rhamani stream with the Rishi. This was about the farthest point previously reached in this direction. From here, Dr. Longstaff advised us to attempt to force a way across the cliffs of the southern side of the gorge.

We reached Calcutta on May 5, where we were joined by our three Sherpas, Angtharkay, Passang Bhotia and Kusang Namgir. The first two had both done particularly well on Everest in 1933 and had been among the eight who had established our Camp VI at 27,400 ft. Kusang was also on Everest in 1933, but had arrived late from Sola Khombu and his work had been confined to transport on the E. Rongbuk Glacier. He should most certainly be watched for a future Everest expedition, as undoubtedly he is fitted both physically and temperamentally to go high.

From Calcutta we proceeded to Ranikhet, reaching the latter on May 9. Within an hour of our arrival there we had recruited our small handful of Dotial porters and had sent them on to Baijnath, where we joined them by lorry two days later, marching on to Gwaldam the same evening (11th). For eight

⁵ *A.J.* 24, 118 *sqq.*

⁶ *H.J.* v, pp. 28–32.

delightful days we wandered through the lovely foot-hills of the range, over passes clothed with pine, oak and rhododendron woods. Here and there we obtained superb views of the peaks we were making for. An early morning view from the Kuari Pass showed us that wonderful panorama in its most inspired setting.

We reached Joshimath on the 19th and spent a busy day in the arrangement of our *Bandobast*. Our eleven Dotials requested leave to accompany us up the Rishi Ganga. With them we left Joshimath on May 21. On the 22nd, from Tapoban in the Dhaoli valley, Tilman, Passang and I ascended the Lata peak so as to get a view up the Rishi Nala and make a start with our plane-tabling, descending that evening to Surai Tota. The following morning we collected supplies of food at Surai Tota and engaged the services of eight more local men to help with the transport and supply local knowledge for at least the first part of the route. We left the same morning (May 23).

It was early in the season and there was a great deal of snow on the passes constituting Graham's 'back-door' entrance into the middle section of the Rishi Nala. These passes are used in summer by the Lata and Tolma shepherds of the Dhaoli valley, who take their sheep across them to a little alp known as Durashi. The Surai Tota men deserted us after the first day. This produced a serious crisis threatening to destroy at the very outset our plans for the exploration of the Rishi Ganga. For, in these parts, a very short interval exists between the melting of the winter snows on the lower passes and the breaking of the monsoon. However, the Dotials shouldered enormous loads and followed us with wonderful determination and loyalty.

Being now without the help of local knowledge we floundered for nearly two days through waist-deep snow before we could get across the passes to Durashi. Part of the route lies across some cliffs at an altitude of 14,700 ft. From here we could look down an 8000 ft. precipice into what must be one of the most fantastic gorges in the world. It has never yet been penetrated by any human being and it is believed by the local people to be the abode of demons—a superstition we were quite ready to share. The river, only just visible in the depths below us, sent up a roar like that of Niagara.

In making our way along the northern flanks of the Rishi valley we were again handicapped greatly by the lack of local knowledge which the Surai Tota men would in all

probability have provided. The flanks of the valley are steep and cut into innumerable ravine-like gullies. We were constantly reaching some cut-off which could only be avoided by making a big *détour*. It was terribly hard work for the Dotials, who carried their huge loads with remarkable skill and courage. Also we kept them at it all day, as food was a vital consideration and each extra day we spent in getting to our base meant three days less for our work beyond. We kept to the northern side of the valley until a mile or so beyond the junction of the Trisuli stream. Then we bridged the river and crossed to the southern bank. Late in the evening of May 28, in a heavy snowstorm, we reached the point where the Rhamani stream flows into the Rishi from the N. Here under the overhanging walls of the canyon we established our base. The Dotials were discharged and early on the following morning they started down the valley, leaving us to our own resources.

Our next task was to find a route through the unknown upper part of the Rishi Nala into the Nanda Devi basin, now barely four miles distant.

Dr. Longstaff had advised us to concentrate our search for a route mainly on the southern side of the gorge. Indeed it was not long before we saw how utterly impregnable the cliffs of the northern side were. They rise straight out of the river bed seemingly without a break to culminate in peaks of 20,000 odd feet.

The day following our arrival Tilman and I crossed the river by means of a natural bridge to make a reconnaissance from the northern side of the gorge. A hundred feet above the river we came upon Dr. Longstaff's old camp site—a level grassy platform by an overhanging rock. We climbed up the steep slopes behind until we could command a good view of the cliffs above our base camp. It was soon evident that it would be impossible to make our way up the gorge at a low level and that we would have to climb at least 1200 ft. before we could start traversing. We could not see how far this line would take us, but it appeared to be our only chance of getting along the southern side. I found myself to be very nervous and shaky on the steep grass slopes and slabs on which we had to climb. This was due to the fact that I was not yet used to the immense scale and the extraordinary steepness of the gorge and its surroundings. Tilman suffered from the same complaint. We also had great difficulty in judging the size and angle of minor features. This made route-finding

from a distance very difficult indeed, and we were continually finding ourselves in error. However the eye gradually adjusted itself and soon we began to move with more confidence.

For the next week we worked hard finding a way and carrying our 550 lbs. of food and kit along in relays. At first the task looked completely hopeless, but 1200 ft. above the river we found a downward sloping ledge along which we could make our way. Our luck held in an extraordinary way. Above and below us the cliffs were impregnable and, had this line of traverse failed, I think we should have had to admit defeat; but by a remarkable freak of chance the slender chain of ledges continued unbroken. The complete lack of any alternative too enabled us to avoid waste of time and, as may well be imagined, our excitement grew as we progressed. Over and over again the terrace we were on would peter out in some deep cleft, and further advance would seem impossible, but on each occasion there would be a kindly fault in the rock enabling us to climb over to the continuation of the terrace beyond. Some of the sections were very 'thin' and had to be roped before they were passable with loads.

The chain of terraces, each dipping in an easterly direction, led us in a downward sloping traverse to the edge of the river some two miles further up the canyon. The last section of this traverse was very sensational though not difficult. The ledge, less than a foot wide, actually overhung the river about 300 ft. below. The passage along it was exhilarating, while it was difficult not to believe that a kindly Providence had placed it there to wind up that long chain of improbabilities.

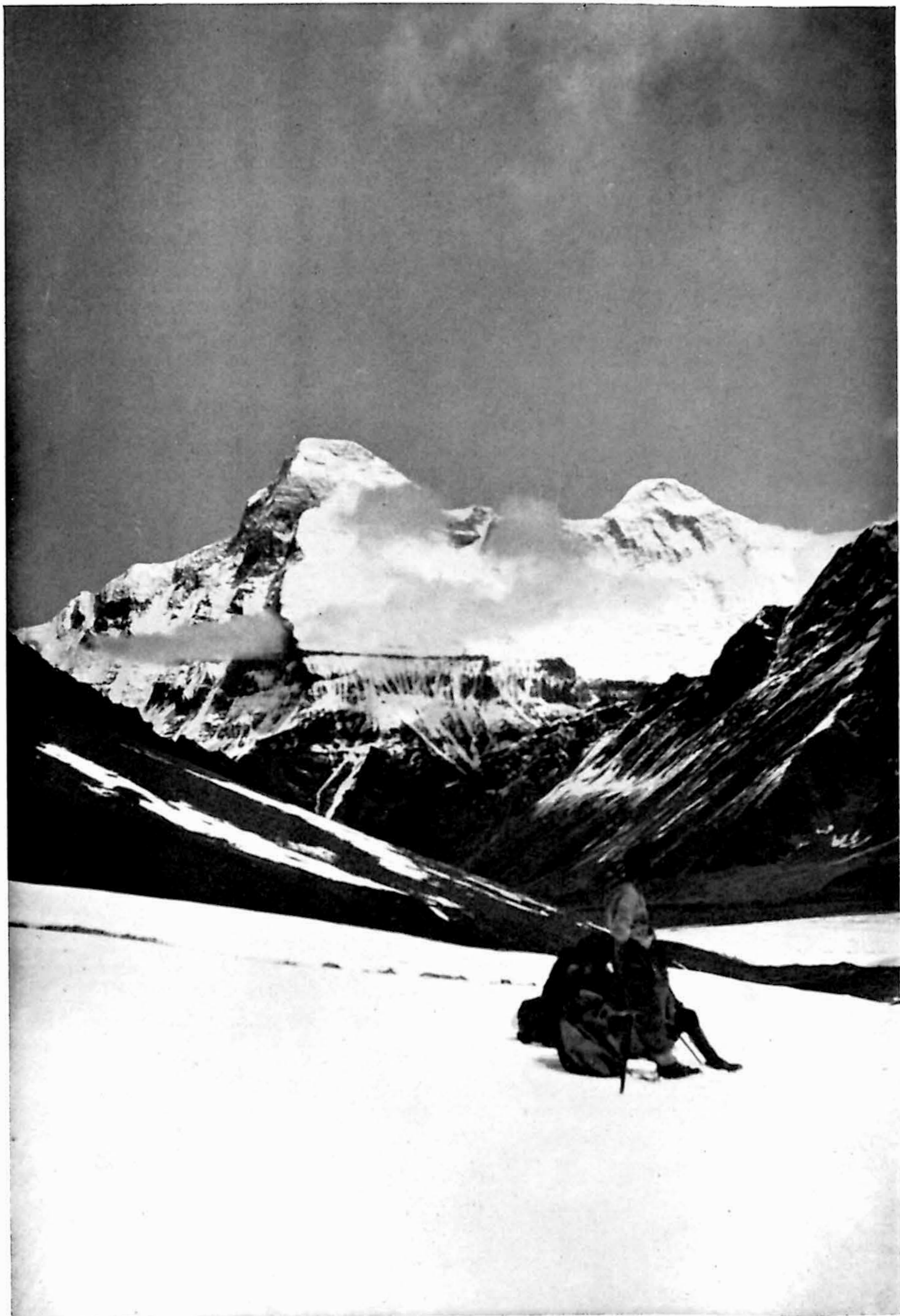
The last mile of the gorge looked so hopeless that we decided to try a route along the river bed itself. When the river was low we actually succeeded in getting through that way, though we had to ford the stream six times to do so. We found it impossible, however, to get our loads up, and after some unpleasant adventures were obliged to abandon the route and search for another. Later, we came to regard these river crossings as most serious obstacles. One's legs were numbed by the icy water and lashed and cut by the innumerable stones swept down by the river. We found that when the water reached our waists it was impossible to resist the current. The usual procedure was for the first pair to cross, holding hands for mutual support, then the others would follow hanging on to a rope stretched across the river. Careful search revealed a continuation of our route 2000 ft. above the river on the southern side and, on June 6, after nine days' work (from our



Photo, E. E. Shipton.]

TWO PEAKS ON N.W. 'RIM' OF THE BASIN.

[To face p. 64.]



Photo, E. E. Shipton.]

NANDA DEVI, TWIN PEAKS FROM S.

base in the Rishi valley) we established an advance base (13,000 ft.) in the Nanda Devi basin, with sufficient food to last our party of five for three weeks. We had left food dumps at intervals down the gorge.

It would be difficult to give an adequate account of the loveliness of the country in which we found ourselves. Rolling pastures gay with wild flowers and lakes on whose deep blue and green surfaces were reflected the icy crests of the great peaks ; birds of considerable variety and colour ; large herds of thar and bharal, which were so tame and regarded these strange new visitors with such curiosity, that I was quite glad not to have brought a rifle with which to supply ourselves with food ; while all about us was mountain architecture more magnificent even than the great southern battlements of Everest. It was at once obvious that to make even a rough exploration of the basin in the time available before the monsoon was out of the question. Accordingly we decided to concentrate on the northern section and to return to investigate the country to the S. after the main strength of the monsoon had abated.

To give a detailed description of our activities during those three weeks would be outside the scope of this brief account. The main object of the expedition was mountain exploration rather than mountain climbing, and our time in the basin was taken up by a fairly detailed examination of each of the side valleys coming down from the outer ramparts. This in itself was a most fascinating task and we would have given much to have been able to extend the time limit imposed on us by the scanty supplies of food which, unaided, we were able to carry with us into the basin.

We were keen to find a way out of the basin to the N. or E. In attempting to do this we reached three 20,000 ft. saddles on the outer 'rim' of the basin, but could find no practicable way down on the other side. We also succeeded in climbing a peak of 21,000 ft. on the eastern 'rim,' from which we had superb views into an extraordinary tangle of peaks in the Milam district. We also made two attempts to climb a peak of 22,940 ft. standing above the Bagani Glacier ; but failed on both occasions on account of dangerous snow conditions. For me these defeats provided yet another example of how apt one is to underestimate the difficulties on Himalayan peaks. Over and over again I have reconnoitred a bit of ground and voted it 'perfectly simple,' only to find when I have got on to it that it is desperately difficult. One

begins to wonder if any of that multitude of Himalayan peaks which look difficult are even possible.

The weather during our sojourn in the northern section of the Nanda Devi basin was moderate and never seriously interfered with our plans. Tilman and I both suffered from some curious and obscure fever. I was the first to succumb and retired to my sleeping-bag with a violent attack of shivering and an acute pain in the upper part of the right leg. A week later Tilman was confined to his bed by a complaint exhibiting almost exactly similar symptoms.

On June 20 we observed a very marked increase in the rate of melting of the surface ice of the glaciers, and we became somewhat alarmed about the state of the rivers below. On June 24 the monsoon broke. This surprised us as we had not expected it for at least another two weeks. However, it coincided almost exactly with the exhaustion of our food supply and we could not complain. But it was with great regret that we turned our backs on the country where we had found so much beauty. Our fears regarding the state of the rivers were well founded and we became involved in considerable difficulties before we could beat a retreat to the Rishi Nala. In mist and rain we made eight forced marches down the valley back to Joshimath, which we reached on July 2. Here we spent a few days eating and sleeping before embarking on our next project.

Although the Nanda Devi group was our main objective, we decided to devote the monsoon period, when heavy rain and snow would make work so far S. impossible, to the Badrinath range, on which we had originally intended to concentrate the whole of the season's activities. Our former elaborate plan had of course to be modified considerably, but we hoped to be able to make a complete crossing of the range, from Badrinath first over to Gaumukh at the source of the Bhagirathi, and then over to the Kedarnath valley-system at the source of the Mandakini, in this way connecting up the three main headstreams of the Ganges. We hoped, too, to be able to trace the watershed as far as time and weather permitted.

We reached the holy shrine of Badrinath on July 11, left the next day with eight Bhutias, and made our way up the Alaknanda valley to the head of the Bhagat Kharak Glacier. On the way Passang nearly lost his life; in fording a stream he was swept away load and all, and was saved only by his load breaking loose. We had hoped to cross the col which Mr. Meade had visited in 1912 with Pierre and Justin Blanc,



Photo, E. E. Shipton.]

WATERSHED PEAKS AT THE HEAD OF THE BHAGAT KARAK GLACIER.

[To face p. 66.]



Photo, E. E. Shipton.]

NANDA DEVI, E. PEAK, N. FACE ; SHOWING THE 2-MILE RIDGE CONNECTING E. PEAK WITH THE MAIN PEAK (RIGHT).
Approximate height of rock faces, 8000 ft.

but it seemed to us that the route to it was in danger of being swept by ice avalanches from a great ice peak to the S., which we called Kunaling. I have since learnt from Meade that this danger can be avoided by making a big *détour* to the north.

Four days after leaving Badrinath we pitched camp at the head of the moraine-covered portion of the Bhagat Kharak. From here we discharged the Bhutias and were left once more to our own resources. Tilman and I climbed a peak commanding a superb view of that amazing cirque which encloses the head of the Bhagat Kharak. After this we made a rapid exploration of the lateral glaciers of the cirque.

During the following week we crossed a series of passes to the N. each between 17,000 and 20,000 ft. high. This landed us in the Arwa glacier system and we were thus able to connect up the lateral valleys of this part of the watershed. We were carrying very big loads and our progress was slow. Snow conditions too were abominable, and however early in the morning we started we never found a surface crust to prevent us from sinking in up to our knees and even up to our waists. In all my mountain experience I have never struck such continuously bad snow conditions.

In the course of this northward journey we climbed another peak of about 21,000 ft. The weather was bad and we saw nothing. This was most unfortunate as a view from the summit would have been most instructive. However, the ridge by which we climbed the peak was very fine and gave us a really enjoyable day's mountaineering. It somewhat resembled the rocky S. *arête* of the Rothhorn.

Once amongst the Arwa glaciers we turned to the W. and crossed the watershed by a fairly easy col. This landed us on a big glacier flowing to the W., down which we raced as fast as we could. From now on we were able to leave dumps of food and fuel against our return. This lightened our loads and we were able to press on at a good speed. On reaching the Gangotri Glacier two days later we were surprised to find that we were only about $2\frac{1}{2}$ miles above its snout. The following day (July 28) we went down to Gaumukh, the main sacred source of the Ganges. Thus for the first time had a route been accomplished between the head waters of the Bhagirathi and the Alaknanda rivers.

We would have given much to have been able to make a push for the untrodden upper reaches of the Gangotri Glacier, and had we had four days' food to spare I think we would

have been able to reach its head. But our food was exhausted and we had to make all possible speed back by the way we had come. Our return journey was a lot easier for having no food to carry ; each evening we picked up one of the dumps we had left. From the head pass we made our way down the Arwa valley and so reached Badrinath on August 2.

Among the many legends of these parts believed to have been founded on fact is a story that, many hundred years ago, there was no high priest of the Kedarnath Temple, and that the high priest of Badrinath used to hold services in the temples of both places on the same day. The shortest known route between the two temples was well over 100 miles, and over a high mountain pass at that. Tradition has it that a quick way across the watershed was known to the priests of those days. But although the natives believe that the two places are only $2\frac{1}{2}$ miles apart, in actual fact the distance is some 24 miles as the crow flies.

Our observations from the Bhagat Kharak had suggested to us that if a pass could be forced from the head of the Satopanth, it would lead us into the Kedarnath valley system. If this proved to be the case, we should stand very little chance of getting down on the other side owing to the immense depths of the valleys there. However, a view from the crest of the ridge would solve for us many interesting problems.

We had intended to return to the Rishi Ganga about August 10, and August had already come round. But by now we were thoroughly absorbed in the manifold problems of the watershed, and to have to come away without investigating the head of the Satopanth Glacier would have left our task only half finished.

A dense mantle of cloud still hung over the peaks as we left Badrinath and plodded once more up the valley towards Mana on August 5. We had brought with us provisions for twelve days only, with four locals to assist with the load carrying up the lower part of the Satopanth Glacier. Progress proved easy and in three days we were able to pitch camp (August 7) near the head of the Satopanth Glacier, where we discharged the locals. Early on the morning of August 8, carrying heavy loads, we started towards an obvious gap below the tremendous southerly walls of Kunaling. Throughout the day we worked slowly up the icefall forming the head of the Satopanth Glacier. But at length, when 1000 ft. only from the col, we were brought up by a huge crevasse which, running from one side of the glacier to the other without a

break, formed an impassable barrier. We were forced to camp where we were in heavily falling snow.

Throughout the night the gullies and hanging glaciers of Kunaling kept up a continuous bombardment of ice avalanches, from which, however, we were protected by the crevasses about us. On the following day, in thick mist and falling snow, we managed to find our way off the glacier on to some rocks to our left and, by the middle of the afternoon, reached a level expanse of snow forming the crest of the col. We hunted about to try and get some idea of our surroundings, but visibility was restricted to a few yards and at length we decided to remain where we were lest we should blunder into some avalanche-swept area.

For the next eighteen hours the heavy mist continued to envelop us. It was extremely tantalising as we were far from sure where the gap was leading us. I had an idea that we should find ourselves at the head of the Gangotri Glacier. At 7.30 the next morning (August 10) Tilman and I set off to reconnoitre. The snow had stopped falling and our tracks provided sufficient safeguard against the possibility of losing ourselves. We worked down for twenty minutes before we were brought up on the brink of an ice cliff. We were looking for a way out of this difficulty when all of a sudden the fog rolled away from below us and we found ourselves looking down a glacier of tremendous steepness into a narrow ravine-like glen some 6000 ft. below.

It was now obvious that we were not on the Gangotri ice stream, and we concluded that we must be looking down into the Kedarnath valley system. The glacier we were on descended in a series of three exceedingly steep icefalls, separated from each other by small ice plateaux. We returned to find that the Sherpas had already struck camp and were waiting for our return. We shouldered our loads and hurriedly started the descent. All through the day we worried our way down the intricate tangle of ice, halting once only for a meal. The mist hindered us a good deal, while several times we were forced to retrace our steps for a considerable distance before we could find a way through the maze of crevasses and séracs. Late in the evening we reached the brink of the glacier's final downward plunge. We were now working on dry ice and much step-cutting was required. The angle of the glacier was becoming so steep that we began to think that we were on a hanging glacier. Indeed, the prospect of getting down the last bit appeared so hopeless that Tilman

and I would have decided to abandon the attempt had it not been for the extraordinary enthusiasm of the Sherpas, who insisted upon investigating every conceivable possibility.

Here was another striking example of the loyalty of these men. What we were doing must surely have seemed very pointless to them; and yet, because we had shown our desire to get down to this valley below us, they were willing not merely to follow us but to undergo any amount of labour, to face any danger in order that we might fulfil our purpose.

At dawn the next day (August 11) we resumed our task and eventually succeeded in lowering our loads and ourselves into a steep rock gully at the side of the icefall, by means of our 180 ft. of climbing rope. We were able to climb down the gully and so to reach the level glacier lying at the foot of the great icefall. At sunrise that morning we had had a fine view of the country to which we were descending. Beyond the glacier we had seen what we took to be a pleasant grassy valley, while beyond this again, dark vegetation stretched away as far as the eye could see. This we took to be pine forest.

Two days' marching at the most would, we thought, take us through this agreeable-looking country to some habitation. Also it seemed reasonable to suppose that we should strike some path and be able to cover, if necessary, some twelve miles a day. We knew that it could be no very great distance from the snout of the glacier to the Kedarnath pilgrim route.

We were soon disillusioned. Immediately on leaving the glacier we found ourselves in dense undergrowth. We now struck really bad weather. Rain fell in torrents most of the day and night. All our kit got waterlogged, making the loads extremely heavy and the task of hacking a way through a very tedious one. On the evening of the first day we reached the brink of a sheer drop of 1000 ft. in the floor of the valley. For a short distance above this the river disappears underground and spurts out of the side of the cliff in an impressive waterfall. In camp above this precipice we took stock of our position. Our food supply was beginning to run short and what remained of it was soaking wet and rapidly going bad. A discussion of the problem as to whether we should go on or turn back lasted late into the night. It was a difficult decision to make, but the prospect of retracing our steps and committing ourselves once more to the icy slopes we had just left did not appeal to us and eventually we agreed to continue downwards. The precipice provided us with

more rock climbing than we were then inclined for, but by roping down the worst sections we reached the forest at its foot. Here, under the spread of giant trees, the undergrowth was not so thick and we made good progress until we reached the upper limit of bamboo at about 10,500 ft. The bamboo shoots were ripe for eating, a fact which undoubtedly saved us from a very serious predicament. We were also able to collect a small supply of forest-mushrooms which, though they did not last long, gave us one or two square meals. The forest was full of bear tracks, which greatly alarmed the Sherpas, so that they sang and shouted all day long in order to frighten the animals away. This they did so effectively that we obtained but one close view of a bear during our sojourn in the forest. He was of the black variety.

Late in the evening of the 12th we reached a narrow gorge containing a formidable torrent coming in from the north. During the whole of the 13th, in a perfect deluge of rain rendering visibility extremely bad, we searched for a way across this obstacle without success. On the following morning, however, we managed to bridge the stream near its mouth. Here further trouble befell us. Passang had a small bone in his foot broken by a boulder falling on to it. This put him out of action for any work, while the task of keeping up with us over the precipitous country which followed must have caused him frightful pain.

Beyond the gorge the going became very bad indeed. The side of the valley was exceedingly steep and we had to hang on to the undergrowth to prevent ourselves from sliding down while hacking our way through the dense thorn-scrub. At times it took us as much as an hour to cover 25 yards and we were hard put to it to go more than a mile a day. We used to halt every evening at 5.30. This gave us just time before dark to build a bamboo shelter under which we could protect a fire from the pouring rain and so cook a meal of bamboo-shoot and tea. Dead bamboo, however sodden it may be, makes most excellent tinder and without it and a small supply of paraffin we should have had to forego the luxury of a fire. Thus this excellent plant provided us with shelter, fire and food. Without it our plight would have been a sorry one.

We made our way through this type of country for five days after crossing the gorge before reaching the tiny hamlet of Gaundar in the Madmaheswar valley. This was nine days after crossing the pass, an air distance of about seven miles.

The few inhabitants were very poor, and though they gladly gave us shelter we had the greatest difficulty in extracting from them a few handfuls of flour and a cucumber. For these we paid lavishly but quite willingly. We now got on to a good path and on August 20 ran down in the still torrential rain to the Temple Okhimath, where we were received with a hospitality whose warmth will live among my most cherished memories. The high priest who made a practice of holding services at Badrinath and Kedarnath on the same day was surely a little overworked !

Time was getting short and we could not afford to halt anywhere. In bad weather we crossed a beautiful pass to Chamoli and so on August 26 reached Joshimath in six marches from Okhimath. On August 27 we began hurried preparations for our second Nanda Devi expedition.

Early that morning Angtharkay started off with instructions to recruit fifteen men from the Mana valley and return with them as soon as possible. Meanwhile we were busy working out ration-lists, collecting food, packing up and planning our last little campaign. Late on the night of the 29th Angtharkay arrived, having accomplished two forced marches. He brought with him as tough a squad of men as we could have wished.

We left Joshimath on the 30th, reaching Durashi this time in four marches *via* the Lata Kharak. When we got into the Rishi Nala we found that a great many landslips had occurred in our absence. The rains must have been terrific. Some small steep side nalas, normally dry and with very little collecting capacity, showed signs of having had as much as 7 ft. of water pouring down them. We were now able to appreciate the tremendous advantage of local knowledge when traversing difficult country. Across places which had previously cost us hours of anxious toil we were now able to lead our party safely in half the time. We traversed at a high level and crossed the Rhamani 1500 ft. above its junction with the Rishi.

I should like here to pay a tribute to the skill and willingness of the Mana men. They had not, of course, to undergo the hardships which the Dhotials had suffered on our first journey, but before very long I came to have considerable respect for them as cragsmen, while their ever-ready wit and care-free laughter will remain as one of my pleasantest recollections. They and the Sherpas came to be the very best of friends, and I think there was a measure of genuine regret when the Mana men had to take their departure.

We reached our old base camp in the Rishi Nala on

September 5. From here onwards we knew every inch of the route and were able to take ten of the Mana men with us. It was by a lucky chance that none of the vital points of the traverse had been seriously altered by the landslips.

On September 8 we reached the basin and discharged the Mana men. We established a base near the snout of the southern glacier (about 14,000 ft.), which we were surprised to find is over three miles above the junction of the two streams. The weather now (September 9) became fine and we were able to work without interruption. We found the southern section to be a great deal less complicated than the northern. We were extremely anxious to avoid another retreat down the Rishi Nala by forcing our way over the barrier wall to the S. or E. There were two possible alternatives: first, by way of the depression in the great southerly ridge of Nanda Devi East, the crest of which Dr. Longstaff had reached in 1905; second, by way of the col on the southern section of the 'rim' by which Mr. Ruttledge and the guide Emile Rey had attempted to enter the basin in 1932. We reconnoitred the former col, which appeared to be practicable though difficult if one were carrying heavy loads, and, as the southern route would land us nearer home, decided to try it first.

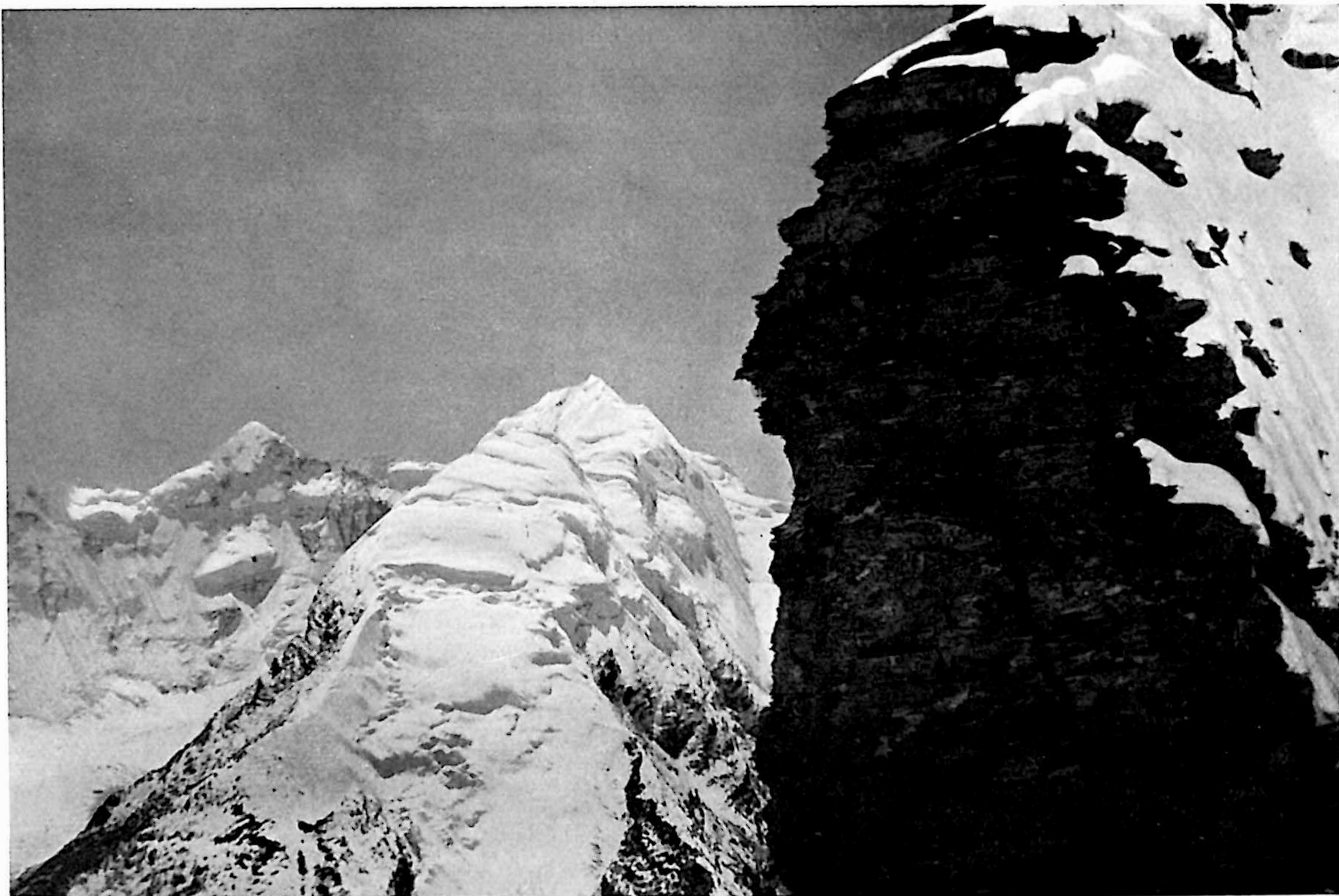
On September 11 we set out to climb a 22,360 ft. peak on the southern 'rim' of the basin. It is a triangulated peak and called on the map East Trisul. We have called it Maiktoli on our map after the grazing ground at the head of the Sunderdhunga valley on its southern side. We pitched a camp at about 20,000 ft. on the N. face. Tilman became unwell on the way up and unselfishly went down with Passang in order that Kusang and Angtharkay should be able to occupy the camp with me in his place. The next day we three climbed the peak in very bad snow conditions. We also encountered a severe wind which was almost up to Everest standards. All the way up and from the summit we saw views of surpassing grandeur. Even the great southern faces of Nanda Devi seemed to be dwarfed by the mere extent of the panorama. W. and N. the great peaks of Badrinath, Nilkanta, Kamet, Ghorī Parbat, Dunagiri and their numberless satellites simply served as a foil the better to display those extraordinary ranges towards the borders of Western Nepal. To the S., at our feet, lay the little Simm Saga range; beyond this was a cloud-sea stretching as far as the eye could reach.

It had been our intention to investigate the possibilities of a route up Nanda Devi from the south. The fearsome aspect

of the southern ridge soon drove that idea from our heads. However we found a subsidiary ridge plunging downwards from the main arête in a great sweep in front of the S. face of the twin peaks. This appeared to offer at least a means of getting a footing on the main peak, and we decided to try and climb a little way up it in order to obtain a more comprehensive view of that aspect of the southern glacier system. It was with no idea of reconnoitring for a route up the peak that, on September 15, we started up this ridge from a camp at its foot. We did not even make an early start in the true Alpine sense.

We were surprised to find that the rocks, sloping in our favour, were a great deal easier than they had appeared from a distance, so much so that before turning back we had reached an altitude which we calculated to be 20,500 ft., and I had come to the unexpected conclusion that the ridge was probably climbable. The general standard is certainly high and there would be no relief. Prolonged siege tactics would be too dangerous to be justifiable, since this method would involve too many porters and, if caught in bad weather high up, a party would be in a very serious plight. Therefore I think that only a party of men of proved capacity for quick acclimatization and who have had previous experience of mountaineering at 25,000 ft. or over should try the climb. I hope, too, that when the mountain is attempted it will be tackled by a small party—in the spirit of a sporting venture. Such a party will have the better chance of getting up and are less likely to break their necks. We were not equipped to make any serious attempt to go high and our party was by now in poor condition.

On September 17, having completed to our own satisfaction the reconnaissance of the southern section of the basin, we set out to attempt the crossing of the pass on the southern 'rim.' We carried with us twelve days' food, having left a dump against a failure to force an exit in this direction. We ourselves carried 50 lbs., while the Sherpas carried 70. The northern side of the col was not difficult, and we reached its crest at 11.15 on the 18th. The view which greeted us was similar to that which we had seen from the top of the 'Satopanth Pass' six weeks before, and we realized at once that we should have our work cut out to get down the 6000 ft. of icy precipice lying between us and Maiktoli. Dumping our loads we went off immediately to prospect. The icefall below us plunged out of sight. It was flanked on the left by some prominent rock ridges from which we were separated



Photo, E. E. Shipton.]

PEAKS OF THE SOUTHERN 'RIM,' FROM ABOUT 19,500 FEET ON S. RIDGE OF NANDA DEVI.

[To face p. 74.]



Photo, E. E. Shipton.]

FLANKS OF S. RIDGE OF NANDA DEVI, FROM ABOUT 20,000 FEET.

by some ugly stone-swept gullies, the crossing of which was obviously too dangerous to attempt. We worked over to the right, but found ourselves completely cut off by a line of vertical ice cliffs below from which great masses were breaking off at frequent intervals. This left the centre icefall as the only alternative. We were all very despondent and returned disconsolately to the loads for a meal at 2.30. A cup of tea and 'satu' put new heart into the party and we set off to attack the icefall. It was a terribly complicated affair and we had a strenuous time trying line after line. By 5.30 we had worked our way down the upper bit and become more hopeful of success.

At dawn the following morning, from the ice ledge on which we were camped, we saw a sunrise which for beauty far surpassed any I had seen before. In the right and left foreground were the icy walls, steep-sided and grim, enclosing the head of the Maiktoli valley; in front, beyond the tiny foreground of snow and immensely far below was a lake of vivid colour at the bottom of which we could see the Sunderdhunga River flowing away from us into a placid sea of cloud which stretched without a break over the plains of India.

The day was one of heavy toil and no small excitement, but night found us sitting on a rock ledge some 3000 ft. lower down gazing out upon a scene similar in general detail to that of the morning, but now lit by the delicate rays of a full moon. We reached the valley at the foot of the precipices the following evening, September 20.

These three days provided a fitting climax to our little season of supreme happiness. It was with heavy hearts that we turned our backs on the high mountains and wandered slowly over the wooded foot-hills to Ranikhet. But we took with us the priceless memory of five crowded months amongst some of the most glorious mountains of the world.

A CROSSING OF THE COAST RANGE OF BRITISH COLUMBIA.

By E. B. BEAUMAN.

(Read before the Alpine Club, October 30, 1934.)

TO the modern-day mountaineer, accustomed unfortunately to rope-ridden ridges, grottoed glaciers and hiker-filled huts, the present paper must read like a fantastic fairy story. Nevertheless it is a fact that only a comparatively short