



Tirich Mir's top precipice. It was from here that all the large avalanches came.

THE NORWEGIAN HIMALAYA  
EXPEDITION

TIRICH  
MIR

*Translated by*  
*Sölvi and Richard Bateson*

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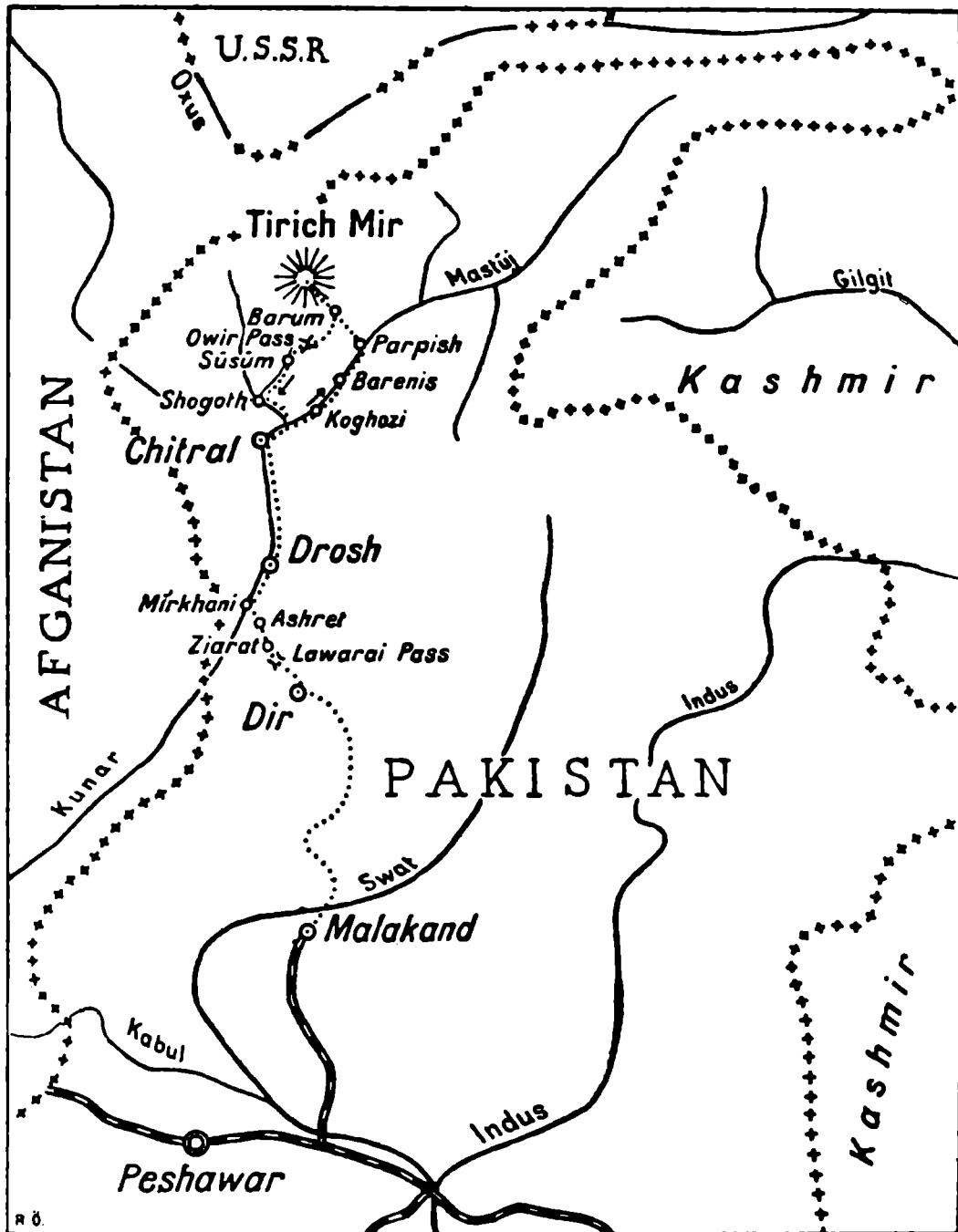
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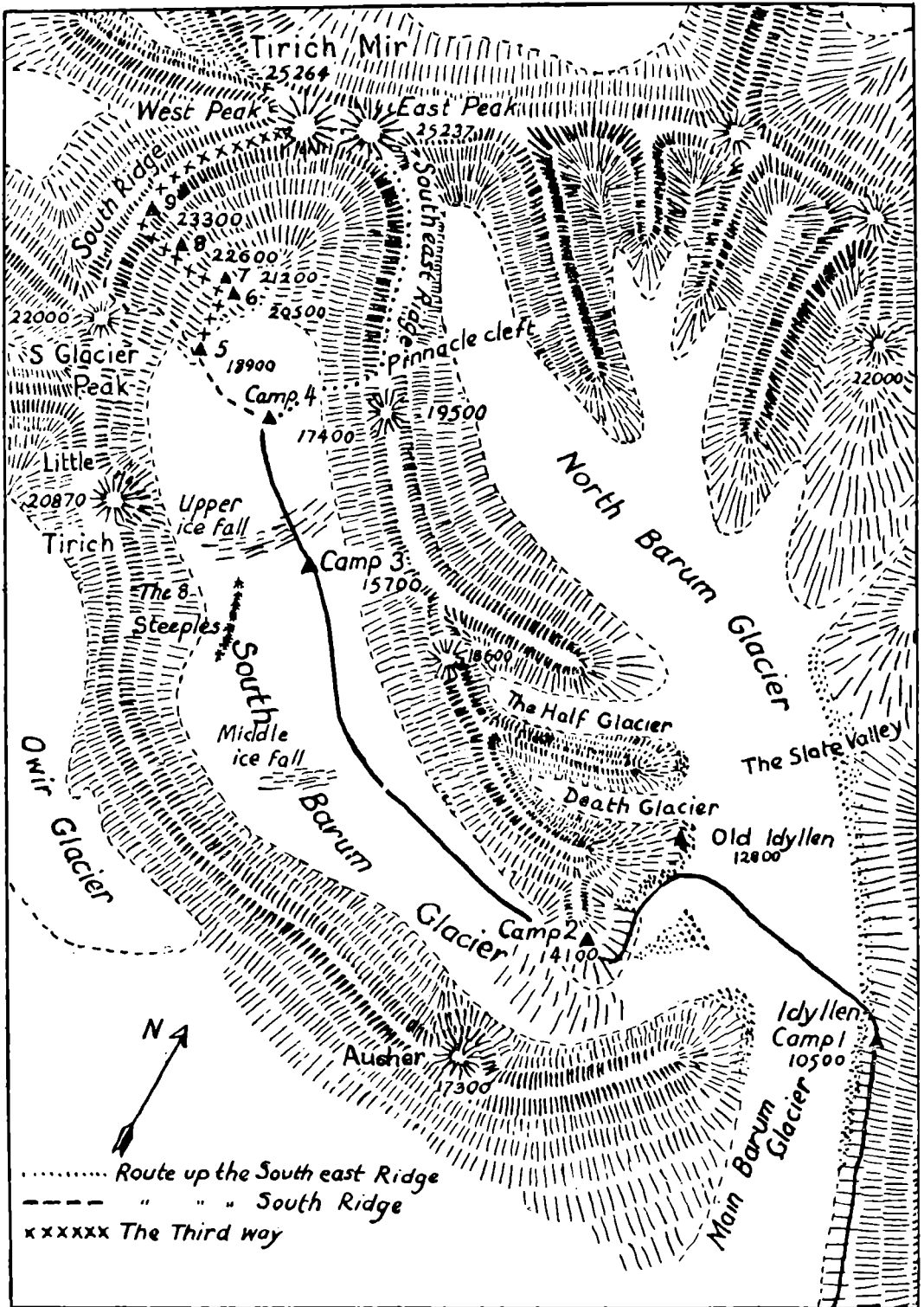
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The expedition's route from Peshawar via Malakand and the Lawarai Pass to Chitral and Tirich Mir. As shown by the dotted line of the upper part of the route the expedition took another way back to Chitral.



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## FOREWORD

**T**HERE are many things that drive men to dangerous voyaging, said Kongespeilet.<sup>1</sup>

Partly it is the competitive spirit and wish for fame, and partly thirst for knowledge, because it is in the nature of man to want to see far away countries that he has been told about. A third reason is the lust for gain, a universal reaching after wealth. These and other motives have stirred and inspired those who through the ages have found their way up to Chitral—the isolated mountain state in the north-west corner of Pakistan—close to the watershed of Central Asia.

The first of whom we know anything were those who voluntarily or forcibly were driven up there thousands of years ago, bringing the Indo-Aryan language with them; so that we can still recognise words, such as *troi*, “three” in the Chitral tongue. In their own way they tried to find a livelihood or at least a bare existence by cultivating the small, but often fertile, patches of

<sup>1</sup> From the old Norse *Speculum Regale*.

ground in the narrow Chitral Valley. They went as far up as there were luxuriant pastures in the mountains, sometimes even higher, hunting for wild goat and sheep. Rock-carvings from unknown times depicting such hunts are still to be found on the mountain rocks of Chitral. But the peaks and glaciers remained untouched, the haunts of fairies and spirits who well knew how to frighten away any daring wanderer.

It was this lust for gain that drove the merchants through the ages, in spite of dangers and difficulties, to take their caravans over the high passes in the Hindu Kush Mountains. This age-long traffic between India and Central Asia continues down to our times, political fugitives having latterly joined the merchants. Some caravans brought merchandise from far away; rugs from Bokhara or China, tea-pots and cups from as far away as Russia. But mountain peasants from the valleys over the border in Afghanistan brought their local products; packloads of lapis-lazuli from the mines in Mundsjan or big blocks of reddish rock-salt. This merchandise was much in demand in the one and only bazaar in Chitral's "capital."

But not all wayfarers have come to Chitral for the sake of material profit; through the centuries from the end of ancient times and onwards there has been a steady stream of pious and dauntless Chinese monks coming as pilgrims to the sacred places of Buddhism in India; they came along this endless road north of Tibet, through Sinkiang, Pamir and the narrow passes of Hindu Kush, crossing the route that Alexander once had taken, and so down to the plains. Many perished on the way, sandstorms, blizzards, thirst and avalanches taking their toll, unprepared as they were for mountain travel. But many of those who survived the journey and returned home have left accounts of their travels which give a vivid picture of the country and the dangers *en route* for Chitral and the country round, through the "Iron-gates" and over the "Hanging paths" under the tops of the "Onion Mountain." The teachings of Buddha and the Hindu religion penetrated as far as the mountain valleys and one can still find monuments

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in Chitral with Sanskrit inscriptions—the sacred language of the Hindus. But in our times Islam reigns everywhere and only in the small isolated mountain tribes can one still find traces of old local paganism. On the dizzy paths along the ravines in the side valleys of Chitral one can meet Mohammedan fakirs on their missions to these people.

Early on, power politics cast its eyes on Chitral and the surrounding valleys. As the Chinese Empire spread westwards through Singkiang, Hindu Kush became an important strategical focal point. Already in the seventh century Chinese statesmen began to take an interest in collecting information about these far-away places. At times China seized the sovereignty of Chitral to secure her borders.

The most dramatic episode during China's occupation of these parts happened in 747. The world political situation was that Tibet, at that time a mighty kingdom, was trying to join forces with the Arabs, who were pressing on eastwards towards Pamir. Their joint goal was to threaten the position of the Chinese in Singkiang, thus cutting off their important trade route westward, the famous "silk road."

To prevent this the Chinese sent General Kao-hsien-chih with an army of 10,000 men westwards through Pamir, and further south through the glacier-covered, difficult, 15,000-ft. Darkot Pass, the most north-easterly in Chitral. They pressed down the head valleys to the Indus and severed the connection between the Tibetans and the Arabs, for the time being. The Anglo-Hungarian explorer and archæologist, Sir Aurel Stein, who on his many trips has so often stolen the thunder of the climbers, has followed Kao-hsien-chih's route and has found remains of his earthworks high up in the mountains. Stein was full of admiration for Kao-hsien-chih's achievement and bemoaned the fact that no monument to him had ever been raised on the top of the Darkot Pass: "If judged by the physical difficulties encountered and vanquished, this crossing of the Darkot and Pamirs may well be held to surpass the great Alpine feats of commanders famous

in European history, from Hannibal, Napoleon and Suvorov." It may be worth mentioning that Kao was a native of Korea, probably the only warrior from this country the world had ever heard of up to the present time.

Not till the end of the last century did Europeans find their way to Chitral; Marco Polo's route eastwards through Pamir went just north of the country. The first pictures of Tirich Mir are found, I believe, in Major Biddulph's *Tribes of the Hindoo Koosh*, published in 1880. In the years following Chitral was visited by a series of young British officers from India.

These pioneers were driven by the competitive spirit, thirst for knowledge and lust for gain, not for themselves, but for the British Raj. The Tsar was steadily moving forwards towards Pamir and the North-West Frontier of India, and the British wanted to investigate the unknown valleys up towards the Hindu Kush to prevent Russian infiltration here.

In the 'nineties a small Anglo-Indian force was surrounded in the fortress of Chitral. The relief of this, over high passes and in the middle of the thaw, was itself a gigantic feat. After this the British obtained sovereignty over the principality of Chitral, which has now been handed over to Pakistan.

What an Eldorado these years opened to young adventurous men in this wild mountainous country! Every pass they struggled up yielded a vista of new, fantastic mountain worlds, every corner rounded opened on to an unknown valley. It was easy to find good excuses for climbing the mountains; it became a patriotic duty to pry into every hidden nook and corner.

Decades later, when talking to rheumatically, elderly generals and colonels over a glass of port in a leather armchair in a London Club, one would see their eyes light up when they related the adventures of their youth in this glorious playground.

Apart from British officers and civil servants, other European travellers rarely entered Chitral. Some Frenchmen appeared in the country for a short time in 1880, and in 1906 Stein went



The departure from Norway.  
*From left to right: Bugge, Jørstad, Wendelbo, Kvernberg, Lorentzen, Berg, Naess.*



Professor Naess telling Indian children about Europe.





The Norwegian members of the expedition with Tirich Mir in the background—the picture was taken after the assault on the summit.

hurriedly through it. But the first expedition, with research into Chitral as its aim, was sent from the Institute of Comparative Cultural Research in Oslo in 1929. At that time I spent a few months in Chitral, which offered an extremely fertile field for research. A series of Indian and Iranian languages have been washed up through the ages and collected together in this small territory, and they have conserved very ancient traits of great interest to science. I tried to rescue all that was possible of the traditions and religious conceptions of these tribes which still clung to their old, heathen beliefs.

In 1935 a German expedition was given permission to enter, after having worked first on the Afghan side of the border. The only aim of this expedition, at least the official one, was botanical and other scientific research. A couple of the Germans also tried to climb Tirich Mir, but they only got part-way to the top. In 1939 there was an English expedition.

The king of all the peaks of Chitral, the most westerly bastion of the great mountain range in Asia, still remained unconquered. It is a peak with a regal carriage, and I believe anyone who has watched it for any length of time through all the seasons must retain an overwhelming impression of it.

Glittering in the clear sunshine ahead, so near that one almost felt one could touch it as one galloped along the valley towards it on a clear morning, it closes the end of the valley to the north, high above all the other quite formidable peaks, and fits the description of the original meaning of its name: "the Transverse Mountain." I remember it also on moonlit nights bathed in a supernatural silver glow, and perhaps best from the hours before dawn, while it was still quite dark down in the valley and Tirich Mir floated high up like a rose-coloured cloud in the first glimmer of day. Tirich Mir remained to me a banner and symbol of Chitral, luring me back, even one who would have to be satisfied with admiring it at a platonic distance. It was therefore a special pleasure to be able to draw Professor Naess' attention to Tirich Mir as a possible objective for his plans, and an even

greater pleasure to hear that Norwegian climbers had decided to attempt to reach the summit.

I do not think our mountaineers were driven by any hope of gain, although I remember I was often suspected by people in Chitral of looking for gold and precious stones in the mountains; on the assumption that it must be something sensible a European was after. But curiosity, competition and love of adventure are each sure to have played a part.

No doubt important observations were made both botanically and geologically—even a layman is struck by the mass of flowers in the Chitral mountains—and it is a great satisfaction that Norwegian research workers will get material from these far-away parts to work on. The films of native life and other things will no doubt also be of value.

But first of all what captivates us and fills us with admiration is the achievement itself. This “aimless” act, the straining of every nerve to conquer obstacles, is also bound to have its great value, even to us who stayed at home and are now to follow this expedition in words and pictures. We live at present in a world forced to incessant and active straining towards constructive and destructive aims. It is therefore with a feeling of liberation that one partakes in an expedition whose aim lies in the achievement alone.

No other sport demands so many noble human qualities as mountaineering. Not only courage, will-power and physical fitness, but also the capacity of planning, the knowledge of mountains in all their varying conditions, sober evaluation of chances and dangers, and above everything a team spirit and comradeship that may be put to the test more severely than in any other sport.

More than ever does this apply to expeditions to distant lands, with all their strange and unaccustomed conditions.

The greatest form of moral courage may be required: the courage to turn back, perhaps almost at the summit if necessary. Professor Naess hinted, before he left, that *this* would be the most difficult test for a leader to face.

## FOREWORD

Fortunately, this form of courage was never required. Let us therefore pay homage to that mutual play of qualities which made this victory possible. We feel justly proud that the Norwegian flag first flew over Tirich Mir.

GEORG MORGENSTIERNE.



## RECONNAISSANCE, 1949

By ARNE NAESS

*Tirich Mir or Nanga Parbat?—To India without a visa—  
The Custom house as hotel—Through the Sind Desert  
at 113 degrees in the shade—Gallop along the ravines  
—A gigantic avalanche—Deep-frozen duck—20,000 ft.  
above sea-level.*

THERE are few subjects in geography with a stronger appeal to our imagination than India and the Himalayas. Already at a tender age these words have a ring of adventure about them. For someone interested both in philosophy and climbing, the subject has an additional attraction making it irresistible.

The literature about the Himalayas gives one a mixed feeling of pleasure and fear. For us Norwegian climbers this literature has inspired countless successful, imaginary Mount Everest expeditions. I cannot remember one climbing expedition in Norway where we have not discussed the Himalayas and felt stimulated by our optimistic plans. The fact that these plans were never realised was partly due to the misunderstanding that peaks above 20,000 ft. would not offer proper climbing, e.g. real intense use of one's arms and the special technique which makes climbing a sport all its own. This was certainly a misconception, as such technique really proved very useful. If there was one thing we realised this year, it was how much less energy was required to climb dry, steep mountains, than trampling up a not so steep mountainside in deep snow. This applies to climbing at 20,000-25,000 ft.

We were, however, not far wrong in our estimate of Himalaya climbing, that, at its best, it would be a lot of dull trampling in

snow. The physical weakening, as a result of the lack of oxygen, tainted the whole ascent with prosaic medical contemplations, anxious thoughts preoccupied with one's pulse, sore throats, pains in the stomach, numb toes and again one's pulse. The Norwegian climbers were not prepared for all this, as well as the vast work involved in preparation, transport, finance, etc. We were all, in different degrees, adherents of mountaineering as a form of escape from a strait-jacket existence. But the greater the expedition, the more one gets caught up in a machine and a concentration of human beings which are just the drawbacks of an industrial community. The fascination of real mountain sport disappears. When we contemplated how very rarely one succeeded in packing *one* sensible rucksack, after painful hours with detailed lists, how could we face a whole winter of preparations? What we needed were people with a flair for organisation and administration.

The arguments against abandoning the imaginary joys of the Himalayas for an actual expedition seemed strong to me, and so they still do. But in the autumn of 1948 the longing for the mountains pushed aside all sensible considerations. For the first time since I was twelve years old, I had had to do without a summer holiday in the mountains. The safety valve guarding one against exaggerated climbing expeditions was thus removed. Added to this came the great disappointment in my own work. Lured by U.N.E.S.C.O.'s plans of philosophical research into international ideological conflicts, I had been tied up in Paris for nine months. Such large-scale, extravagant schemes proved, however, impracticable. Too much nationalism and too little belief in research prevented U.N.E.S.C.O. from getting the member nations to subscribe to such long term schemes. By way of compensation, I indulged at night in delightful trips to the Alps. As the situation got worse, this was, however, not sufficient compensation; the material was exhausted. Then my fantasies took me to the Caucasus. Later I had to go all the way to Persia, Afghanistan, Hindu Kush and India, and so I was committed. On

a flying visit to Oslo in November, I put my plans before Professor Morgenstjerne and some friends who were also Himalaya enthusiasts—among others, Per Hohle, and Øystein Røed.

To these last two it seemed senseless and not a little presumptuous to plan recreational pleasure trips to the Himalayas. The Himalayas were the hot spot of heroic and painful national feats. The thought of going there for pleasure and enjoyment seemed to them unheard-of debasement. An exploratory attempt, or at least a reconnaissance, would, of course, first have to be made, with a bigger expedition in view next year. Nanga Parbat (26,629 ft.) might be a suitable goal. Its accident record was high. Nanga Parbat, however, belonged to those peaks I had climbed so often in my imagination with such splendid results. There was not much more satisfaction to be got out of that peak, not by climbing it, anyway.

The ardent enthusiasm among climbing friends had, however, some measure of effect. Remains of old climbing passion flared up. With many and vague qualifications, I put myself at the disposal of the spokesmen of bigger plans. When Arne Randers Heen intimated that he was ready to go off to the Himalayas at short notice, recreational and slapdash planning suffered a bad set back; he wanted to go in for plans for reaching great heights at great speed. Vilhelm Aubert, who had hitherto been keen on the idea of a recreational trip with cultural and miscellaneous appendages, withdrew and never regretted it.

On my trip to Norway in November, 1948, Professor Morgenstjerne recommended Tirich Mir (25,263 ft.), a peak practically unknown to us all. Actually, I had already some vague plans of a trip by coach to Afghanistan, with a detour into Chitral, to have a look at Tirich, but I had been under the impression that Chitral was a disturbed border province where no tourists could enter (or—more likely—leave). My climbing friends felt that Nanga Parbat ought to be reconnoitred. Professor Morgenstjerne warned us, with reason, that this province was one of those over which India and Pakistan were squabbling. It might be difficult to get a



*visa*. I, myself, felt that the most important preparation for a big Norwegian expedition in 1950 or 1951 would be the gaining of experience of remaining at great heights, the studying of snow conditions, avalanches, porter questions, special equipment, etc. Which peak we reconnoitred was of minor importance. In December, 1948, the wind was still blowing in the direction of Nanga Parbat. Henning Sinding-Larsen, who at that time was in Paris, held out the possibility of 60,000 kroner (£3,000) from *Aftenposten*<sup>1</sup> if this paper could have the sole rights of all the material from such an expedition. Things were getting beyond a joke.

In January, 1949, the systematic preparations for a Himalaya expedition began. One evening I had the chance to talk to various leading lights on Himalaya climbing—the leader of the Swiss expedition in 1947, the leader of the French expedition in 1936 and the President of the Club Alpine. They very kindly offered extended help if Norwegian climbers would come to the Alps for training. Without long and intensified experience in the Alps, they thought there was no chance of getting very high up in the Himalayas. They also called attention to the fact that everything was three or four times as expensive as before the war.

I had come to the conclusion after *a priori* considerations of finances that 6,000 kroner (£300) was enough for two men to go to Chitral and back. I had about £150 which I felt justified in using for such an eccentric purpose. No budget was, however, worked out, as I felt quite sure, at the bottom of my heart, that the costs would be far higher. The thought of financial aid was rejected, as this tends to lead to unpleasant detractions from the charm of casualness in carrying out one's plans. Actually we each of us used about £250 on the expedition, including travelling.

It is incredible what a lot of paper is required to obtain travel and other permits; the preparations in Paris soon reached such dimensions that they had to be done by assistants. One job was to read through as much of the literature as possible and make a

<sup>1</sup> A leading Oslo newspaper.

register of subjects, so as to collect as much information as possible of what the most experienced Himalaya climbers had recorded about such things as tents, boots, cooking apparatus, etc. There was obviously no time to experiment with equipment.

Arne Randers Heen had not much time to give to this, but a lot of valuable work was done in Norway. In quality our equipment did not differ much from that of the usual Norwegian Easter trip equipment. But quantitatively the equipment we brought with us was impressive.

In spite of quickly growing files marked "Correspondence," the diplomatic preparations proceeded at a slow pace.

It was imperative to get off at the very latest by the end of May. Finally, we had to leave without any permits of any kind. It was therefore impossible to take any decision as to *where* we were going. I for one had pondered a great deal upon the politically uncontested province of Kashmir—the Nun Kun Mountains. Nun (24,000 ft.) the highest peak here, is still unclimbed. Close to Nun are other unclimbed peaks between 20,000 and 23,000 ft. high. When in January the Norwegian Alpine Club seriously began to consider our expedition, the well-known Himalaya expert, Eric Shipton, was invited to come to Oslo to give his opinion on Nanga Parbat, Tirich Mir and Nun Kun. He recommended Tirich Mir. After his visit, opinion changed in favour of an expedition to this mountain. There were many who still doubted whether Norway could raise either competent or sufficiently experienced people or the special equipment required by a large expedition. These were prepared to wait and see what reconnaissance of Tirich Mir would yield.

On the 24th of May I was able to write home:

"DEAR FRIENDS,—This letter is written on board S.S. *Taiwan* between Marseilles and Genoa. The situation, in a nutshell, is as follows: everything is all right, bar certain reservations. The destination is Bombay, whither we are proceeding at a snail's pace. We may, with luck, arrive as early as the 12th of

June. [We did not, unfortunately, arrive before the 20th June.] We are completely without papers except for our passports. No *visas*; no special permits! Hence we must still leave three possibilities open: (i) The Nun Kun trip, (ii) The Chitral trip, and (iii) the trip to Garhwal Himalaya.

“As far as the equipment is concerned, I cannot, with the best will in the world, see that it differs very much from the equipment of an extended Easter trip in Norway. Our self-confidence as Himalaya climbers rests entirely on the primus with two burners, one for heights of 20,000-23,000 ft. and one for ordinary heights. One of the principal objects of the expedition will be to discover at what height the ordinary burner conks out, and how the second functions at greater heights.”

*En route* from Marseilles to Bombay we received, at last, cables which made it improbable that we would get permission to go to the Nun Kun and Nanga Parbat districts. The military operations in Kashmir made it impossible. It looked as if we would have to go to Garhwal, a very unfortunate choice because of the early monsoon in those parts. We could count on reaching the mountains about the same time as the first heavy snowfall.

In the Arabian Sea, to our delight, we received the following cable from Minister Krogh-Hansen: “Chitral plan feasible.”

This settled it. Our plans were decided; we would have to try to get into India without a *visa*, and then out of India and into Pakistan. After that we had another 1,200 miles north towards Central Asia, where Tirich Mir was supposed to be.

About the peak we knew next to nothing, except what Major Forskett had told us in a letter. There was a pen-drawing of the peak in the letter, seen from the south, with strong recommendations to go up a certain South Barum Glacier. We were luckily able to borrow maps in Natiagali on the way from Peshawar towards Chitral; these supplemented the pen-drawing with annotations from the *Survey of India*. Until then we had had nothing but a general map of 1 : 1,000,000. It is no good denying

that we felt the lack of a thorough study of all the literary sources and photographs of the peak.

A rough estimate of how long it would take to reach Tirich Mir and return showed that it would be impossible to get to the summit. We might possibly not even reach the foot of the mountain. I had to be back at Oslo University *definitely* on the 4th of September, and any but the cheapest means of transport was out of the question.

We landed in Bombay without *visas* on the 19th of June, but it was not so easy to force one's way through the customs. We had a lot of dutiable goods, but the Customs officials were friendly, however. We were worried about how to get our 400 lb. of luggage to the hotel in the town and how to pay the bill. When the head of the Customs enquired rather impatiently whether we were contemplating settling down for good in the Customs shed, I had the presence of mind to answer very seriously in the affirmative. This was how it came about that we spent forty-eight hours in the Customs shed as old-established friends of the Customs officers. We continued on our way on the 21st of June, naturally without having paid a penny duty. And this in spite of Randers Heen's long equipment list in Norwegian, which included "eight carbines." (A carbine is a small steel-ring used in piton-climbing.) This was the only declaration the Customs officials seemed to understand. After some fuss, they decided not to take us for gun-runners.

In Bombay we experienced something that perhaps made a greater impression even than the mountains, the bottomless pit of dirt and poverty of the dock areas. We were "fortunate" enough to arrive during a protracted strike of the refuse-collectors. The strike coincided with a heat wave and a new stream of refugees from Pakistan. The collective result was indescribable.

On the 26th of June we found ourselves, in high spirits but impatient, on the Indian-Pakistan border near Lahore. Our pockets were filled with papers—permits for this and that, recommendations, etc. It had been a tough job for Consul Orvin

and Preutz, the *chargé d'affaires*, and we are indebted to them.

Travelling in our day has hardly become any the easier, in spite of all the discoveries of this century. It now turned out that we had *too many* papers; we had an enormous registration form which we had acquired in India and which we ought to have handed in before we left Bombay. There was nothing else to do but for me to return to the nearest big town in India, historical Amritsar. But we had no more Indian money left, and it was a crime to carry Pakistani money. A minor railway official wanted to present us with about £2 in Indian small change; however, he let us have his address in the end, so we were able to return his money later on.

In Amritsar there was plenty of lovely fruit and I bought large quantities which I consumed in the street while waiting. Soon a crowd collected and an interpreter translated the questions showered at me. Two things seemed incredible to them; that I had come 6,000 miles to have a look at the mountain peaks and that a wealthy man like me was eating fruit in the street. In living memory such a thing had never happened before.

But the surprised inhabitants had still stranger experiences in store for them. We soon got accustomed to carrying our 400 lb. of luggage from the railway station, etc., by ourselves. At the sight of us, an army of hungry professional porters in red shirts appeared. It was pretty evident that Europeans to them spelt extra income, perhaps enough to feed the family for days. It must have been a horrible disappointment to them when we made four or five trips to carry our fifteen cases. It was delightful to see the pathetic victims of our base deception soon cheering up and taking the whole thing humorously. But the situation did not seem very humorous to us, struggling with it all in the broiling sun, with a temperature of 111 degrees in the shade. We saw no signs of disgust for the new European types, and we found this just as admirable a characteristic as their capacity of carrying a tower of suitcases on their heads.

In Peshawar we had an experience which cost us three days

and nights and a further cutting down of our time in the mountains. We had to see the authorities, and were soon sitting, topee in hand, in front of a senior English official. He looked us in the face and said, "First of all, remember to be *very* polite." I blinked and tried to recall how I had entered the room. He continued: "You must call on the Government of the North-West Frontier Province. You will find it in its summer residence in Natiagali, 120 miles away." The Englishman seemed to think that everybody was on the point of a nervous breakdown due to the conflict between India and Pakistan and that we ought to be very cautious and humble, coming on such an unimportant errand.

In a bus filled three times over, starting at three o'clock in the morning, I succeeded in reaching Natiagali the following evening. There was still a heat wave, but it lacked the novelty it had had on our trip through India where in spite of all the dodges with windows and fans of my experienced fellow passengers, the temperature rose to 113 degrees. With three thermometers placed round about, we had followed the development with great delight. On the way to Natiagali, the patient but badly squashed Pathans suddenly decided they had had enough and all left the bus in a body, throwing themselves down on the grass for a meal and some rest. It was no good the chauffeur nagging at us and saying we had to get on to meet the corresponding bus for Abbottabad. There were other difficulties, too, for the chauffeurs in these remote parts: if a bus did not get enough passengers—this never happened to us—the bus took a trip round the village, the driver blowing his horn and shouting for passengers, "Come aboard. I am going to Mardan. Arriving in the morning." Arne Randers Heen went that way with the luggage.

Pakistan's Natiagali corresponds to India's Simla. It lies about 7,000 ft. above sea-level on the top of rain-drenched, wooded hills. From here I gazed at Nanga Parbat from the comparatively short distance of sixty miles.

In utter darkness and wet as a drowned rat after the only

tropical thunderstorm on the trip, I arrived at a grand bungalow, which, according to a helpful Pathan, was the summer residence of the high Government official I had to see. I knocked on the kitchen door and tried to get a footman to make an appointment for me for the following day. He was gorgeously attired with a grand silk scarf wound round his middle, and was obviously not impressed. But a pleasant woman's voice called out, "Hallo. Come in."

I had taken the wrong way. This bungalow turned out to belong to another senior English official, who was away on an inspection in the border district, and his wife was feeling bored. A little later I was seated in front of a tremendous meal in a pair of dry trousers of at least colonel's rank. Such contrasts as this make arduous travels well worth the experience. The wife was on intimate terms with the other senior officials and offered to ring them up. I did not need to make appointments. "Everything would be fixed." This mysterious "everything" that recurred so often did stand for something. But the more exalted the person who promised "everything," the further down were those who did anything for us: customs officials at the barriers, petty officials at the forts and borders, chauffeurs, etc. It could not be helped that we were somewhat in advance of our permits, which were trickling slowly down the pyramid of Government offices and civil servants behind us.

A young Captain Streather was among the many in Natiagali who was really distressed at not being able to join us on our Tirich Mir trip. He had been invaluable in digging out maps for us. He was supposed to be a bit absent-minded, but the fact was simply that during our touching farewell, when the bus was about to roll down to Natiagali, the entire money supply of the expedition had vanished. It turned out that I had left it in Streather's map-room and he had not discovered this *immediately*.

The journey from Natiagali to Malakand offered an experience I would not have missed for anything. A slow train carried me across a desert-like plain, as flat as a pancake. Out of the haze

appeared by degrees small hillocks—tiny, steep rocks. Behind them some higher hillocks sprouted out of the plain. These insignificant rocks heralded our arrival at the highest mountain formation in the world. Higher and higher and wilder and wilder the mountains towered until they reached their climax in the mad pyramid of Tirich Mir. After this came the large mountain plateaux in Pamir and peaks reaching up to 23,000 ft. Only after about 600 miles in the direction of the small hillocks would the waves subside and the plains of Turkistan appear. The hillocks had the same concentrated power as the first ripples on the ocean of an approaching typhoon, or the *pianissimo* chords which introduce a symphonic climax.

It was grand rejoining Randers Heen, who rarely dealt with diplomatic matters, and who was more unwilling than ever to admit the necessity of all the polite palaver, requiring days and nights and robbing us of our last vestiges of athletic form. Besides, he had discovered that diplomatic complications could be solved in a more matey way. On his way through he had to make a detour to Mardan, to notify our presence. He had knocked on the door of the highest official in the town in the evening. The servant, who did not know any English, believed him to be an English officer in spite of his doubtful appearance, and gave him quarters for the night in a place reserved for high-ranking English officers. In the morning some high-up personage arrived who was not exactly pleased about the mistake at first. On their way together to the Governor, he noticed Randers Heen's well-developed leg muscles and asked if this was due to any form of athletics. This was affirmed, and it then transpired that the officer was one of the most eminent champion walkers in the country. It proved a great success when Randers Heen enthusiastically demonstrated the new European competition walk. After this he "walked" through all formalities and was sped on his way.

We were in high spirits when we sighted the Chitral River at last and could spend our first night in strange and romantic Chitral. On the morning of the 1st of July we had a telephone call



from Drosh from a certain Captain Rutter, saying that he would come and fetch us on horseback. I told him that I had never done any riding before, which was the plain truth, but added that Randers Heen was a bit of an old hand at it. Randers Heen, for his part, told him that he had never sat on a horse in his life, but that I was hot stuff. Captain Rutter deduced from this that we were both experts. Whatever we could say to make him understand that we were in dead earnest was of no avail. We set off at a gallop along a terrible precipice down towards the Chitral River. Never has either of us been more frightened. We were both incapable of either guiding or braking our horses. Captain Rutter turned several times to give us the pleasant information that we must keep our horses away from his, or they might fight, or to admonish us not to pass the mule transport on the outside or they might push us over the precipices. When I finally got the upper hand of my horse down a steep hill, Rutter and I stopped, but Randers Heen's horse, which was even more frisky than mine, was dashing up a steep hill at a gallop. We heard Randers Heen groan and saw him sway in the saddle. Captain Rutter seemed to grasp the situation at last. He and Randers Heen took it easy the last six miles to Drosh. As for me, I insisted on riding alone, as it was obvious that my horse was affected by the other two.

In Drosh we got an interpreter and for the first time we were able to bargain with porters by other means than signs and gestures. We were also reassured that there were no orders for our arrest anywhere we had passed through, but that it was customary to have a military escort through the passes.

At Drosh the expedition was increased by three members; a cook, Abdul Samat, who was given the job of interpreter, and who proved to be very capable, conscientious and also cunning, and for the sake of prestige, a kind of sergeant-major of the Chitral Scouts, together with his "batman." The under-nourished, miserably-clad Chitral mountain peasants had a genuine respect for anything connected with the military, if for no other reason



The hotel in Peshawar was so bad that the climbers preferred to carry their beds up to the roof.



Counting money. 80 lb. of small coins were taken, as the porters were not expected to accept paper money.



Professor Naess.

than that they had clothes and were fed several times a day. As the sergeant-major was a distant relation of the Prince of Chitral as well, he was so grand that even his batman was unable to carry anything for us. The two of them were completely useless and turned back when the difficulties started. The repercussions of this were great and cost us many porters, who found it easier to serve one princely sergeant-major in the valley than two *sahibs* in the mountains. One of these deserters was a small, spirited, very thin professional porter with quick movements and intense, rather crazy-looking eyes. He was characterised as being very poor, and swore that he wanted to go all the way to the top for very little money. When he was loaded with our biggest piece of luggage, a large paper carton, he almost disappeared beneath it, but he could carry larger loads than anyone else.

After a stay in the village of Chitral, where we met several of the friendly high officials of the country, headed by the young Prince and "the political agent," we were able to start the journey up along the shores of the Mastuj and on to the side moraine of the South Barum Glacier. We arrived here on the 10th of July. Here we found the last shrubs and trees and a small brook. As we had already experienced how black and ugly and very difficult to traverse the glacier was, this place naturally soon acquired the name "Idyllen" (the Idyll). It seemed a kind of paradise to us, as by degrees the need for green things and soft lines became more acute during our ascent of the glacier.

From "Idyllen" we could see the glittering pyramid of Tirich. "It looks very easy," the cook remarked quite placidly. It is actually impossible to get an impression of the peaks of the Himalayas without clouds to indicate the height, or without having already been up the slopes and verified the distances.

On the 11th of July we started from "Idyllen" (11,000 ft.) up towards Camp I, with eight chosen porters. Two of them completed the trip. It was extremely fatiguing, as we had to go up and down to urge them on. Hoping for the influence of the good example, we ourselves carried colossal loads. When the porter

I mentioned above obstinately refused to balance on the edge of a steep precipice of mire with the giant paper carton, Randers Heen pulled it from him and almost ran along with it. But neither this nor the harangues delivered by the cook were of much avail. Although we ourselves had carried our share, 400 lb. was too much. How we cursed every single item we had brought with us!

After a long day we were able to prepare our first mountain meal outside the tent in the evening, 13,500 ft. above sea-level. Our precious iron-rations were brought out and strong cocoa brewed with dried milk as a dessert. Distended with good food, we lay down. Randers Heen's stomach managed the sudden strain, but mine refused point-blank to digest.

The next two days were terrible. The porters banded together and argued over every little effort they made. More and more of them had just one desire; to return to the valley. We tried to be present everywhere and carried like mad, but it seemed all to be of little avail. On the 12th of July the first loads were carried up to Camp II. My stomach refused any kind of nourishment, and by degrees I was getting completely exhausted. Randers Heen enjoyed his food and felt in good form, but even his ardent enthusiasm was not sufficient to move the porters. About midday on the 13th of July we settled our accounts with the porters, and the last of them disappeared down towards the valley. As far as the expedition was concerned, it was a terrible blow, but I rejoiced at the bottom of my heart at the thought of being alone and rid of all the worry and arguing.

Before the porters went, their leader, Kosham Shah, intimated that they could only contemplate risking their lives if they were given a large sum of money every day. He mentioned 5 rupees (about 10s.) per man per day—a colossal sum in their eyes, as the ordinary daily wage of a working man was about 1 rupee. When we accepted the offer, they did not want to do it all the same. The Cook, who handled the difficult negotiations, told us that the countless crevasses and bottomless mud, the fast, which prevented proper nourishment, and the wish to get on with their own jobs

down in the valley were the deciding factors. Better equipment for the porters would have been a help. We do not believe that superstition and fears played a very important role. When we tried to buy boots for the porters in Peshawar, we were told by people who understood these things that the mountain folk had better footwear themselves and were more accustomed to walk in snow than we were. Later we also heard that the mountain folk were so hardy that such things as sleeping-bags and tents were quite unnecessary. They were accustomed to sleep in the snow at night, even in winter.

There was no doubt that the Pathans in the mountains were hardy folk. But they were more or less unaccustomed to snow, and these stories about their capacity to resist cold may perhaps have arisen because the poor professional porters, on their trek across the Lawarai Pass, lacked sufficient equipment. But I doubt the assertions that it did not do them any harm. One hears of Chinese coolies who can carry enormous loads with the greatest of ease. But closer investigation reveals that tuberculosis, damaged backs and other things finish them off at an early age.

Fortunately, we had not chosen our equipment according to these exaggerated myths of their hardiness, but as far as footwear was concerned we had been duped by the tales of the people who professed to know the locality.

The last porter left us at a height of 15,000 ft., and we were confronted with making several trips to get the remaining 350 lb. further up. Quite a lot had been left at 13,000 ft. We usually had to make four or five trips back and forth for each stage. Sometimes more. I myself crossed the upper glacier fourteen times and, with the trips in 1950, I did it twenty-two times all told. But we did not do any heavy carrying on this stretch in 1950. The snow was good for walking and the countless crevasses were rarely more than 3 ft. wide. We soon got so used to them that we jumped automatically as we came to them.

Our two first days alone were not very encouraging. In the

afternoon of the 14th of July, Randers Heen began to make longer pauses during the ascent. Up to then he had been carting loads most magnificently from morning to night. Personally, I felt almost exhausted, and it was a great effort just to stand upright. One's inside refused any form of nourishment, and we suffered from incessant pains.

In those days we did not realise fully how crazy it was of us to continue without a rest from the hot lowlands, where we had spent three weeks without an adequate diet. On the 15th and 16th of July I made no attempt at carrying, but gave full rein to my sole desire of lying motionless. In a couple of days I was completely recovered, and for the rest of the time, even at greater heights, had no serious symptoms. Randers Heen just could not bring himself to "stay put" for as much as twenty-four hours and so grew increasingly exhausted and short of breath. He also assumed that twenty-four or forty-eight hours' rest could not be sufficient. We had many arguments about this. As a rule they finished in this way: Randers Heen: "We haven't time to rest." Naess: "Nor for your *not* resting." We reached a sort of compromise whereby Randers Heen concentrated on walking back and forth between Camps I and II, while I kept to the greater heights between Camps II and III. From then on we went by ourselves most of the time, but all the more welcome were our evenings together.

On the 16th of July Camp III was established. The diary records of this day:

"At 14.15 A. R. H. started with a load from 'Great Rock' (*Storsteinen*) for Camp II. I started for Camp III with load No. 1. Glacier much cut up in turrets and arches. Found some bridges possible for transport on the east side. Exposed to avalanches, but minimum risk this weather. Above glacier a flat semicircular cirque, the south cirque, from where there was a view of 'possibilities.' The south east ridge can now be seen for the first time. It looks very difficult. Bare rock with



Captain Tony Streater of the Chitral Scouts (twenty-four-year-old Englishman) was of invaluable help through his knowledge of the Urdu and Kowar languages, which he learnt after going to the East at seventeen to take part in the war. He had an excellent way with porters, and without any previous training proved a first-class climber.





Polo match in honour of the expedition. The Prime Minister of Chitral is in front.

snow shelves, slippery crags, especially the first 2,000 ft. The south crest still looks the most inviting, but the 1,600-2,200 ft. up to it [later called the upper S-glacier] has very steep hanging glaciers. Possible (?) under present snow conditions, but if new snow falls will it be possible to get down with avalanches? Camp III set up on the snow in the south cirque, which was covered with glass-like layers of ice. Glacier had only few small crevasses. The Tirich wall between the south ridge and the south-east ridge is enormous and out of the question. Specially impressive is a hanging glacier ending in a colossal vertical wall of ice. Barring perfect snow conditions, the south cirque may almost be considered a trap. All sides are extremely steep, liable to avalanches."

It was an exaggeration that all sides were vulnerable to avalanches. We were soon to make the surprising discovery that snow with big cones was perfectly avalanche-proof. The precipices from the south-east ridge had such snow and no hanging glaciers until much nearer the east summit. Hence the cirque on the glacier's east side was avalanche-proof. We were also soon to realise that there was a possible way between the south and south-east ridge, "the Third Way." This looked quite impossible from the south cirque.

The weather was still ideal: brilliant sunshine and dead calm. Towards the end of July there were some small snow-storms, coming rapidly over the south ridge in the afternoon. But they did not create new snow conditions.

On the 21st of July, the eleventh day since we left the upper villages, we had got enough food and equipment up to Camp III and could begin to think of getting load No. 1 up the S-glacier. The south-east ridge looked grim from a distance, while the S-glacier seemed quite inviting, in spite of apparent roughness of the ice, which turned out to be ice towers the height of Oslo Town Hall. On the other hand, when one was amongst them, the south-east ridge looked quite safe with its firm rock,

while the S-glacier seemed quite uncanny because of its vulnerability to avalanches from all sides.

Going along the south cirque, we suddenly came upon a large, jagged area with the remains of large ice blocks and deep holes with stone in them. As a result of the strong sun, the small stones on the glacier get so hot all through that they melt the snow under them. Some heaps of sand and stone were lying in craters up to 6 ft. deep. The whole landscape was changed. There were obvious signs of recent avalanches, but we could only see the contours when we got higher up and got a general view. Quite a distinct tongue-shaped contour then appeared. Practically the entire innermost part of the glacier cirque had been cut off by a colossal avalanche which must have been several weeks old. It gave one food for thought that this avalanche from the comparatively low height of Little Tirich's wild and magnificent east wall had managed to sweep straight across the broad South Barum Glacier and in some places even had crept some yards up the east side towards the south-east ridge. If we had such an avalanche now, could we possibly survive the air pressure if we were about half a mile away?

By degrees, as we experienced the force of avalanches, which hardly came near the flat glacier cirque, we agreed that a gigantic avalanche would be deadly even if it didn't directly hit us. This agrees with the experience of former expeditions.

But how could the most easterly point have reached several yards up the opposite side towards the south-east ridge? The simplest explanation was that the blocks had not rolled up these few yards, but that the depth of the avalanche was such that the upper layers had spread out over the lower in such a way that after some yards of melting the marks of the upper thin layers stretched a little way up the mountainside. It was unusual to find avalanche deposits which were several yards thick.

The gigantic avalanche gave us plenty to think about as we walked wonderingly along its borders.

Camp III had a deep hollow in the glacier between it and Little

Tirich, so was safe enough. But at a few hours interval, day and night, there were ice avalanches from Little Tirich. Some of the hanging glaciers calved, in definite places, with a thundering roar, but the majority of them kept quite still. Thanks to requiring little and light sleep, I managed to observe dozens of these avalanches, and I reached the conclusion that this was not normal calving, which is due to the constant sliding of the glacier down and over precipices where they break off. We seemed to be witnessing whole glaciers, previously well-anchored, being swept down the mountainside because of climatic or other changes, and by degrees exposing rocks and crags. With the thought of possible giant avalanches, we did not move Camp IV towards the S-glacier, but preferred placing it just below the steep, but not dangerous, snow-covered parts below the bare rock of the south-east ridge. The idea was that if there should be a giant avalanche we might be able to throw ourselves out of our tents and run up these snowclad slopes. No danger seemed to threaten us from the enormous south wall of Tirich. Several avalanches certainly seemed to come from a cleft in the glacier, but these ice avalanches turned under the S-glacier and never threatened to spread over the cirque.

The weather remained fine—so much so that we longed for some shade. Our lips and noses became large sores that split and bled when we were eating and it became increasingly difficult to smile, even in the most laughable situations.

This is what my diary records of the first advance up the S-glacier:

“A gigantic avalanche from Little Tirich has gone across the cirque and up the opposite slope. Took thirty minutes to pass the avalanche. First part of S-glacier heavy with much deep, loose snow; some large crevasses across the glacier. Difficult to cross if some yards of bridge destroyed. Went 1,000 steps of the upper part of the S-glacier along a big channel serving as an outlet for many of Tirich's hanging

glaciers. Turned back at 16.15. Good snow along the channel. The prospect of avalanches not great. Height probably about 20,000 ft. just below the crest of Little Tirich; although 'just below' nearly always an illusion, result of wishful thinking and difficult perspective. Height attained probably nearer 19,500 ft. Left a load here. Next task: Possibility of traversing upper parts of S-glacier. A. R. H. fetched a load from plain below fall of the glacier. Exhausting trip. Bad throat, feeling faint."

He did not manage to get up the ice fall in the end and slept in the open. It was 8° F., but he had brought a sleeping-bag and managed all right.

The diet was very monotonous. As a rule, the choice was limited to one dish for dinner, iron rations. We certainly got very excited when we discovered a plump, fresh frozen duck only 2 yards east of the tent in Camp IV. Should we eat it or not? However, the thought of how far it was to any doctor restrained us. It was evident that the whole glacier was a kind of refrigerator, filled with fresh field-fare and other delicacies. They had probably fallen down on their courageous annual migrations from Siberia and Russia. The migratory birds apparently fly straight ahead without a thought of the surface of the planet—a dangerous habit in the Himalayas. All told, we found six birds.

On the 23rd of July, about five days before it would be necessary to turn, three loads of about 24 lb. each, had been brought to Camp V and an advance up the S-glacier to the south cleft (about 21,500 ft.) was possible. The lack of special light equipment made itself felt. If we brought iron rations for five days, it was out of the question to establish Camp VI (at 21,500 ft.) without bringing up at least 80 lb. That meant two trips. If the next camp was pitched at 23,000 ft. on the south crest, 120 lb. would have to be brought up to 21,500 ft. and 80 lb. to 23,000 ft. So we would not be able to get up so high before we would have to turn, even if we kept fit. But A. R. H. was having a bad time. It was impossible to get him to relax and take a complete rest.

His condition therefore got worse and worse. His great will-power and colossal energy made him still able to continue carrying every day, but, of course, with dire consequences to his reserves of strength. It was only a question of days before these reserves would be used up.

To me it was a matter of great urgency to investigate the S-glacier all the way up, as the large crevasses running crosswise on the lower part became wider and wider, so that the snow bridges became fewer and more fragile. By making marks in the snow every day with my ice-axe while bringing a load from Camp IV to Camp V, I was able to keep myself up to date with how much the crevasses altered in the vicinity of the snow bridges. It was evident that in a couple of days it would need two of us to manage the ascent of the lower part of the S-glacier. The 24th was therefore entirely dedicated to an advance on the S-glacier:

“24th July: At 8.30 went up the right part of S-glacier to investigate possibilities of reaching south ridge. Got up to a greater height than Little Tirich (20,869 ft.) but large crevasse prevented me reaching top of S-glacier cleft. Got far enough though (at least 21,000 ft.) to see up south ridge from new angles. Did not look difficult, but on the other hand found that the upper S-glacier did not lend itself to transport. First part badly exposed to calving glaciers, second part covered by very loose snow, reaching to one's middle if we did not make steps. Besides this, danger of loose snow covering crevasses. Did not do much cutting of steps, in spite of steep gradient, so steep in fact that it was natural to use one's hands. It was a great experience seeing other peaks creeping under the horizon, one after the other.

“Gradually the glacier became somewhat flatter, but hopeless snow continued and certainly it would have taken at least another hour to reach the top of the cleft. Above the cleft there were snow-fields, not particularly steep, but the crags of clean, fine rock were rather steep. I came to the conclusion that under

almost any snow conditions the upper S-glacier would be far too risky for transport. The trip down was quite exciting, as it was very difficult to tread as carefully going down the snow bridges as coming up. Turned at 15.00 hours for safety reasons and returned to Camp V at 17.30 hours, after having slid down a good part of the bobsleigh run meant for ice masses.

“A. R. H. arrived in Camp V towards evening with his sleeping kit. Trip up lower S-glacier very exhausting as partly loose snow; ‘air snow’ or ‘foam snow’ seems to describe it. Large and small air holes give snow consistency like some cakes which collapse when touched. We agreed further reconnoitring up S-glacier useless, but to investigate lower and doubtful part of south-east ridge as a last effort before returning. This ridge recommended by Shipton and Forskett. The other parts of the ridge can obviously be traversed.”

Behind this short entry lay a lot of strenuous work with heavy rucksacks in deep snow, where we had to build up every step. There had not been much time for us to get acclimatised. All the carrying and too little attention paid to the diet had stiffened the muscles in our legs and made them very painful when starting after a pause, if this was longer than two minutes. Hence I generally counted the very troublesome steps—usually twenty—then took one minute’s pause. When the pains started after a longer pause it was almost impossible not to lie down again, but if one did it became worse at the next attempt to get going. The secret was to walk evenly. In the middle of the day the fatigue was very troublesome, but in the morning and evening all went well; often it was unnecessary to count, or about 100 steps at a time was all right.

The look of the glacier led us to the conclusion that the upper S-glacier was not fit for “transport,” e.g. for the stamping up and down of a large expedition with porters. It looked as if several ice towers were about to topple over, and on all sides, especially towards the north, the hanging glaciers ended in vertical

ice-walls, which looked as if they were at the point of calving. But during those days and nights that I kept an eye on the glacier, there was not a single large avalanche, and the avalanche ball in which the bobsleigh run ended showed that there had not been a violent avalanche for weeks.

The bobsleigh run was a trench in the middle of the glacier, where the ice avalanches from the mountainside collected. It was as hard as stone and polished by all the big blocks that had slid down it.

But it is no good judging by appearances, and the reconnoitring of the S-glacier certainly made us want to have another try the following year, irrespective of the fact that it looked as if there would be constant avalanches. The decisive factor is the frequency of large avalanches during the twenty-four hours. When I went up the most exposed places under these towers in 1949, I cut several "emergency exits." These were well-prepared horizontal steps which in the event of an avalanche would allow me to escape from the "river bed," where the ice masses would sweep down. The avalanches of 1950 far overflowed its banks, so this kind of technique would not have helped then.

From Camp V ran a small (by Himalayan standards) glacier-covered crag up the south-east precipice towards the broad snowfields of the south crest. It looked most inviting. It should be possible to walk along a ledge where no ice avalanches from the south-east precipice could reach one. While the S-glacier was like a basin which collected all the avalanches, this other, "the third possibility" or "the third way" as we had called the ridge up the south crest, was free of avalanches. It was a joy to follow its tempting formations with the eye. But the ridge finished below the south crest. To get up one had to cross glaciers which might indeed prove very dangerous because of ice avalanches. The decisive argument against using the remaining days for reconnoitring "the third way" was that *if* the west wind brought more snow these traverses would be sheltered and therefore collect snow for constant avalanches. The thought of not



being able to get down from the south wall because of the snow conditions was not so good. Hence, with a larger expedition in view, I considered it more important to try the south-east crest. In 1950 we could not resist the temptation offered by "the third way," and we did not regret it.

On the 25th of July we established a new camp, Camp IV(E) (the East Camp), straight underneath the steep but friendly west wall of the south-east ridge. Part of this and the next day was occupied in letting ourselves down into a crevasse into which a large load of equipment and stores had fallen. Coming down the lower south glacier, we were getting heartily sick of zigzagging round the crevasses with our heavy packs, so we let our baggage roll down the last and least dangerous part of the glacier. But Randers Heen's pack made a peculiar turn in fine style and jumped into a specially unpleasant crevasse. Thanks to our plentiful stores, this was not a very serious loss. It was difficult to feel at ease down the crevasse as the snowbridges above were full of icicles. A small icicle dropped about a yard on to my shoulder and made me realise what the impact of a 5-yard long one would feel like.

An excursion in the afternoon of the 26th of July up towards the couloir of the south-east ridge ("the pinnacle couloir") proved a sheer delight. At last we could set foot on dry rock. The wall offered amusing, simple climbing if one wished it—this proved to be a much more energy-saving form of ascent than deep, steep snow.

It was therefore with joy and anticipation that we started off to establish a camp on the south-east ridge on the 27th of July. But the day proved a terrible strain for Randers Heen, and he had to give up when he got to some deep, loose snow not far from the edge of the ridge. He had to give up, more or less, on medical grounds. The will to continue was strong enough, in spite of violent pains.

Randers Heen even felt he had had a sign to turn back. Below the crest he found a small white stone like a hand with fingers of



Bridge below Sussum.



Bridge at Parpish. It had no railings and swung alarmingly when crossed.  
The donkeys refused to cross it.



Four members of the expedition on their way along the irrigation channels.

a darker material. It seemed to point: Go back. He put it in his pocket and is reputed to have had a beautiful piece of jewellery made from it when he came home.

The south-east ridge offered new and magnificent views over the walls of Tirich down towards the wild North Barum Glacier. I specially noticed a small ridge winding up towards the upper parts of the last ridge. It looked passable all the way to the summit. The outlook did not allow a similar conclusion in the case of the corresponding small ridge up from the South Barum Glacier.

We had to give up the idea of establishing a camp on the crest, as it was time to return. There was only one other possibility of getting higher.

During our trip up, I had, with some reluctance, sent a begging letter to the Braathen's Air-transport Service, asking for 50 per cent. reduction if lack of time made it necessary for us to turn later. Returning by air would give us an extra fortnight. The Mehtar of Chitral had promised to send our post by special courier on the 25th of July, and we were hoping for a reply from Braathen.

Next morning when I peeped out of the tent in Camp IV(E), I saw to my surprise two of our best porters arriving, carrying a basket between them. It was full of ripe apricots, a heaven-sent treat after our daily dose, however healthy, of cod-liver paste. "Visitors to see us with a basket of apricots," I called out in a matter-of-fact voice to Randers Heen, who was lying in his tent. No reply. I called in an even more matter of fact voice, and reacting at last, he looked out. Instead of finding me half-demented, he beheld the same overwhelming sight. That there was no letter from Braathen (actually it was on its way in the valley) seemed a mere detail.

Before old Koshan Shah and the hefty porter, Gosh Begi, could slip away, we loaded them with some enormous packs; the rest we took ourselves. But before this Randers Heen and Begi had a strange experience.

Randers Heen was still fretting about the loss of his pack, so before going down the ice-fall they made another trip to the crevasse. Randers Heen noted the following:

“I lowered myself into the hole, but the walls had crashed together even more and it would be fatal to go further, so there the pack will remain refrigerated till it reappears at the end moraine in several hundred years. Returning, we had to pass the remains of an avalanche under Little Tirich. Just then a hummock of ice loosened below the summit. As the track below was very uneven from earlier avalanches, I presumed the ice masses would be pulverised before reaching us. This actually did happen, but the air pressure which followed it formed a snow cloud that swept on with terrific speed. We were both aware of the danger and leapt aside, but the surge soon overtook us and struck us down. Everything became black around us, and some uncanny moments ensued. Then the roar quietened down and the pressure no longer increased. I scrambled to my feet and saw the native like a snowball lower down. We were covered with a thick layer of ice needles, which we shook off, and soon the sun was as scorching as ever.”

We arrived at “Idyllen” in high spirits the next day after a successful trip down with our enormous packs.

Another hanging glacier calved just above Randers Heen and Gosh Begi. But they were able to get away quickly enough and avoid it. The ice blocks flowed majestically past them in the heavy but steep snow. The other porter lost his balance and slid down towards a small cross-crevasse, but remained lying stiffly stretched out on the precipitous ground with his head and shoulders on the upper edge and his feet on the lower.

It was a superb effort of Koshan Shah and Gosh Begi to get as far as the south cirque, even if they had our tracks to follow all the time and the glacier fall had subsided. They were certainly neither lacking in courage nor capacity when required.

Randers Heen soon recovered when we reached "Idyllen." The next morning he returned by himself up 3,000 ft. to fetch down the last load, while I took a day trip across the North Barum Glacier to finish the reconnoitring. Here the glacier seemed to require more ice climbing than the South Barum Glacier and so was less suitable for transport.

So ended our trip on the nineteenth day after leaving "civilisation" in the upper villages.

We had achieved exactly what we expected to when we had received the cable in the Arabian Sea, which had made Tirich Mir our choice.

At the bottom of our hearts we were rather disappointed at not having reached the summit, however improbable it had seemed. Our physique would hardly have stood another week of coolie activity at over 20,000 ft., added to which we were unable to eat enough of the strong but monotonous and heavy food.

On our return we were received with genuine relief by all those who had doubted whether they would ever see us again when we set off. The old Sultan Murad Khan was overjoyed, and the inhabitants of Barum collected in his courtyard to listen to Koshan Shah's and Gosh Begi's graphic descriptions; we didn't understand a word and there were no interpreters. This may be why the solemn reception of the Barum authorities was so particularly successful. The conversation was lively, chiefly hunting stories. We could actually see the hunting grounds from the simply decorated dinner table and we mimed all the animal and hunting stories we could possibly think of.

Thanks to our plentiful stores, we had sufficient biscuits, iron-rations and cod-liver oil all the way to Karachi, but we also enjoyed fruit, etc., in spite of unavoidable biliousness.

On the 19th of August we started by plane from Karachi, lean but in high spirits. Randers Heen left the plane in Egypt, where he spent a week among the Pyramids.

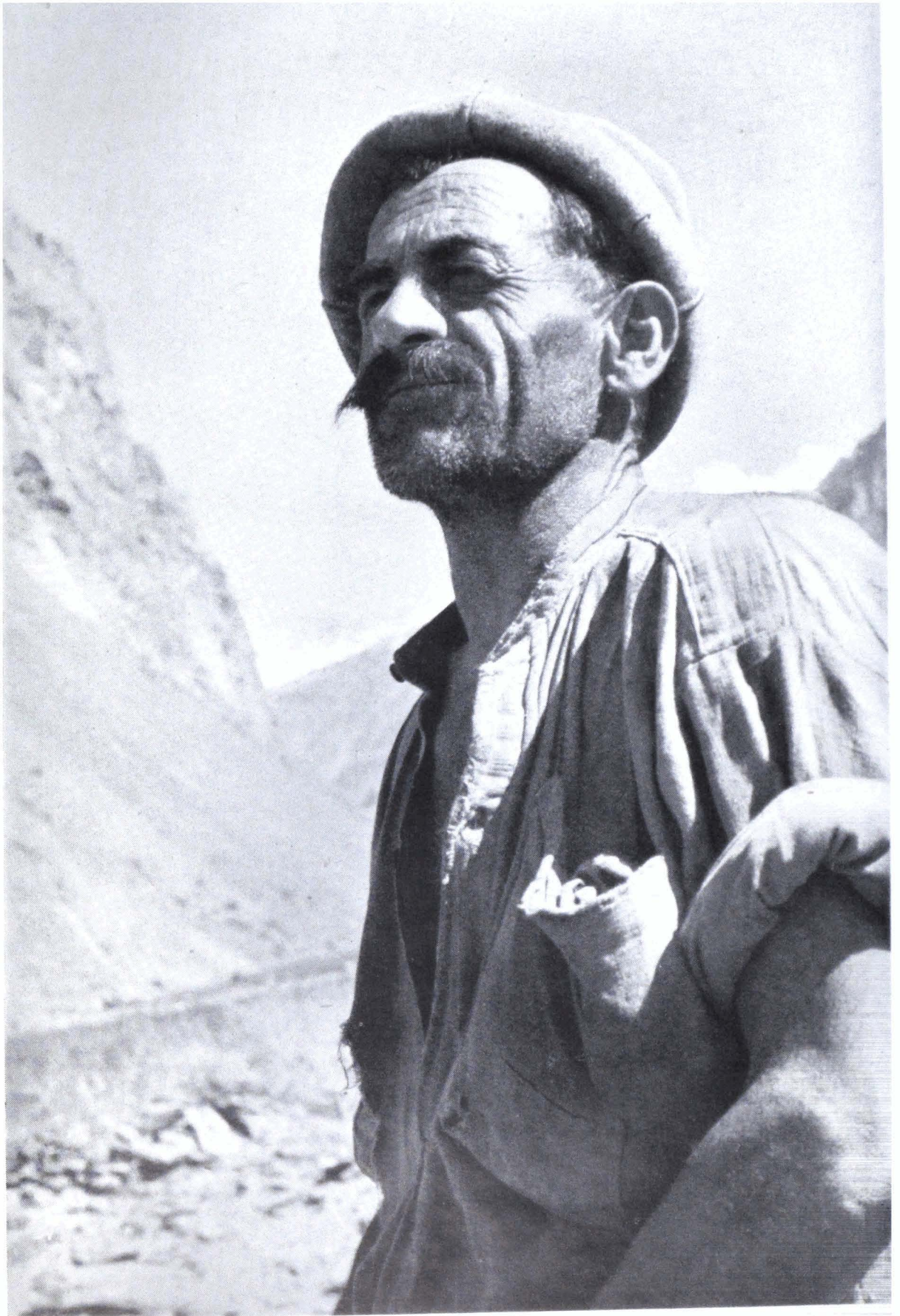
The more our climbing friends heard about the trip the keener

they became in their demands for another expedition as soon as possible. Earlier doubters were converted. But there were still many important problems to solve: the finances, foreign exchange, selection of members and a leader. We agreed that I might be more useful as a climber than as a leader. But the most suitable leaders refused stubbornly to take the responsibility of such a great enterprise. I had to do it, although I was then more than satisfied with travelling in general and the Himalayas in particular. But we could not leave Tirich Mir in peace, having been halfway up it.

One evening a nice fellow, Captain Campbell Secord, called on me in Oslo. He mentioned that an Anglo-Swiss party had decided to go to Tirich Mir in 1950, but if it was true that we had already thought of doing so, they would go somewhere else instead. I replied that we had thought of going and meant to leave as early as 1950.

After this it was obvious that we must make sure of being ready by May, 1950. We could not, after all, in January, 1950, say that it was impossible for us to manage a 1950 expedition. At such a late hour the English and the Swiss would not have had time to prepare for their attempt. Very decently, they abandoned their own plans when they heard about ours. But in return we had to see that we got off at the right time.

Thus, the autumn of 1949 saw feverish activity on the part of the Norwegians in surmounting all the obstacles barring the way to a successful main expedition in 1950. It often looked as if there would not be sufficient time for the preparations, but the major things were ready for our start in May, 1950.



A porter.





Prospect between the village of Barum and "Idyllen."

## ATTEMPTS PREVIOUS TO 1949

By ARNE NAESS

*Dangerous mountains—The first attack on Tirich Mir—  
The defeat of the Germans in 1935—When even the  
Englishmen had to retreat.*

THE 25,263-ft.-high Tirich Mir occupies an extremely dominating position. It is easily the highest peak in the Hindu Kush mountains—a 400-500 miles' system of mountain ranges which stretches from the middle of Afghanistan to Pamir and the west of Karakorum.

There are no mountains as high as Tirich Mir in other parts of the world. The nearest peaks which are higher are Rakaposhi (25,550 ft.) and Nanga Parbat (26,629 ft.) respectively about 150 miles south-east and east as the crow flies from Tirich. They can be seen as two glittering islands peering out of the cloudy and misty air.

One reason why Tirich Mir appears so impressive is the fact that it is not surrounded by other high peaks; it rises straight up from the low, inhabited countryside, thus giving the effect of a gigantic, isolated pyramid, the many layers of air creating weird colour effects.

One might have thought that such a beautiful peak as Tirich Mir would have caught the attention of Himalaya climbers at an early stage, but there have been few expeditions to it. One of the reasons was the political disturbances in the isolated principality of Chitral, the north-westerly border district of India. Another reason has been that other peaks have been more get-at-able, as, for example, Garhwal.

The distance between Tirich Mir and Mount Everest (29,002

ft.) is about 1,100 miles. Next after the Mount Everest district, the Karakorum area has been the most tempting to Himalaya climbers. The biggest expeditions have gone to the gigantic mountains there. Tirich Mir lies just about 150 miles from West Karakorum, and when the climbers began to make a serious attempt on West Karakorum it was natural that their attention should be drawn to Tirich Mir too, and since the war it has been the ambition of several climbing expeditions.

One of the aims of a Himalaya expedition is to attain a greater height than human beings have ever been before. The climbers of Mount Everest reached the highest, but the summit is still unclimbed. There have been many attempts to get to the summit of the thirteen peaks of the 26,000-ft. class, but often with disastrous results. The remarkable French expedition this year to Annapurna (26,500 ft.) was no exception. The summit was reached, but it cost the leader all his fingers and toes, and most of the other members suffered from serious frost-bite. Annapurna is the highest mountain yet climbed. The second was Nanda Devi, where the summit was reached by an Anglo-American expedition, with H. W. Tilman as leader. The third was Kamet and the fourth Tirich Mir.

When judging the effort which has been expended on about 100 expeditions to peaks above 25,000 ft., one must not think of the height alone. The greatest effort may have been put into those expeditions which never reached the summit, as during the attempts on Mount Everest, K.2, Kanchenjunga, not to mention Nanga Parbat, where so many climbers were killed.

It was in 1928 and 1929 that the first climbers came to Tirich Mir. An early geological work mentions the fact that Tirich Mir is the only peak among the highest in the world to be quite white with snow and ice. This is not so in reality, but proves that the writer had only seen the mountain at a distance.

It was surveyors who made the first attempt on the precipitous sides of Tirich Mir. Three subalterns, Cadell, Burns and Wilson,

tried to reach peaks round Tirich Mir, but they did not get above 20,000 ft. They were collecting material for the *Survey of India* and wanted to get observations from as many peaks above 20,000 ft. in Chitral as possible. The report said that the exhaustion experienced during the climbing of Tirich Mir possibly undermined Cadell's health and was a factor contributing to his death from pneumonia in Burma two years later.

In 1928 glaciers in Chitral and Gilgit, stretching about 1,200 miles, were mapped. In 1929 the triangulation of the highest parts of the Hindu Kush was continued. Shrinking of the glaciers, just like that in Norway, was confirmed.

Fresh attempts at reaching mountains of 20,000 ft. near Tirich Mir were made, trying to get a survey of the area, but the attempts did not succeed. The climbers complained of bad weather and hard ice. In one place they had to cut steps for three days without getting higher than 3 yards an hour. The fourth day they left the mountain "in disgust." Lieutenant Burns recorded that the expedition had been lucky in so far as it only had two serious accidents. He himself was killed in 1932 by an avalanche at Pangtarni in Kashmir.

These accidents between 1927-9 are probably the reason for the widespread belief in Chitral that no one who tries to approach Tirich Mir lives more than two years at the most after the attempt. By then the gods will have found an opportunity of punishing human profanity of holy ground. Unfortunately, after 1929 also there were accidents which confirmed this belief in the revenge of the gods.

Up to 1929 the name of Tirich Mir also included a peak which lies about six miles north of the 25,263-ft. pinnacle. Burns christened this the Istoru Nal, the horseshoe. The top crest had the shape of a horseshoe. The inhabitants of Chitral followed the old terminology. This resulted in our incessantly chasing reports of Tirich Mir expeditions which actually had never been made, but which were attempts on Istoru Nal.

In 1929 the first serious attempt was made to reach the summit

of Istoró Nal (24,271 ft.), the third highest in the Hindu Kush. Tirich Mir was considered impossible to climb at this time. The expedition to Istoró Nal was led by the experienced Alpine climber, Captain Culverwell, while the others, Major Dutton and the subalterns Burns and Coldstream, had had long training in surveying high mountains and were thus well qualified. Culverwell and a Chitral porter reached the top ridge after some real climbing, but bad weather prevented further progress.

The expedition made very careful meteorological reports. These gave us much food for thought when in 1949 we were deciding the best month for climbing and the best route to the summit. Burns reported six clear days in July, ten cloudy and misty, and twelve complete days of rain or snow. Confirming other reports of bad weather conditions in July and August, Burns' observations pointed to the fact that we ought to keep clear of such routes which made good weather a necessity in these months.

The terrible accident to the Germans at Nanga Parbat was partly due to advances in the good weather periods without sufficient preparation to provide for a prolonged stay or retreat in case of bad weather. The reports from 1927-9 and from 1935 all point to the possibility of several days of continuous snowstorms in the middle of the summer. Such snowstorms may alter an easy and safe route into one where it is literally impossible to take a step without the risk of a fatal avalanche. It was important to be quite aware of these things, as the perfect weather in 1949 might easily tempt one into pushing on thoughtlessly and optimistically in 1950.

Burns recommended April as the best month without any hesitation; another surveyor recommended September as the best. Other experts recommended May, June, July or August, so it was not easy to arrive at any commonly accepted conclusion in this matter.

The reports from the *Survey of India* bear witness to the enormous effort which has been put into the surveying of the

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1,200 miles long border district towards the north. Great parts of these districts could only be reached by week long marches in incredibly difficult terrain (compared to Norwegian conditions) and under the constant threat of falling rocks and snow avalanches.

When speaking of the German Hindu Kush expedition of 1935, Chitral officials and chieftains smiled slyly, implying that its first and foremost aim had been high politics. Though the members had been looking for prehistoric species of corn and many other things, the Chitral people were not convinced about the reality of these interests. The stately tome, *Deutsche im Hindukush*, where the results of the expedition are recorded, is so well arranged and full of information that the work can hardly have served only as camouflage for high politics in Central Asia. The members of the expedition must have had plenty of scientific work to do.

The list of the members of this expedition contains no well-known names from the Central European climbing world; nevertheless, serious attempts were made at getting as near to Tirich Mir as possible. They did not attempt to reach the summit itself, "The King of Hindu Kush" or "The Guardian of Chitral," reports Albert Herlich, considering themselves inexperienced Himalaya climbers.

In the last days of August, the German expedition, with twenty-six Chitral porters, crossed the nameless glacier directly south of Tirich Mir. Camp II was at about 15,000 ft. Between this and the next camp (16,000 ft.) the porters suddenly turned as by "word of command." They did not want to go another step, and begged the Europeans to turn too, probably after the thunder from stone and ice had made them expect the revenge of the gods. But two servants and a porter foreman went on.

The trip was extremely exhausting and the weather was bad, but in spite of being *vollständig ausgepumpt*, they managed to reach a suitable place for their tents at 16,500 ft. a few days after they had left the warm climate of the valley. The next day they

reached a crest which they thought was about 19,900 ft. Their barometer showed this height. But they add with praiseworthy honesty that they were probably not so high. From here Tirich Mir seemed overwhelmingly big and steep. Straight down in front of them they had our acquaintance from 1949 and 1950, the South Barum Glacier, 800 yards below the crest, and they observed "the terrible cut up surface of the glacier arms." And yet they would have to cross this to reach the summit. They turned back. In Camp III they found one of the party seriously ill with pneumonia. They quickly organised transport down to the valley and took back all the malicious things they had said about the Chitral porters, who surpassed themselves in self-sacrificing exertion. Completely exhausted, they reached the beautiful village of Susum. According to old traditions, Tirich Mir would now for a long time cover itself with fog, disgusted at the profane humans soiling its white cloak. Tirich could not stand any form of dirt, and yet the sun shone on Tirich when the Germans reached Susum. The Europeans were curious to find out if this would be explained away. The natives at once urged in polite phrases that the German *sahibs* must have been much cleaner than the porters, besides being white-skinned. The expedition declared laughingly that they considered themselves defeated. All objections were silenced.

It is a bit of a mystery where the Germans really turned, the most likely reason being that they had a look down at the southern Tirich glacier from the crest between Little Tirich (20,859 ft.) and the S-glacier summit (22,000 ft.). This coincides with a sketch they had made. The crest was about 19,500 ft. at the lowest. The Germans must have reached this height at least.

But how could they think they had to cross the South Barum Glacier? Both in 1949 and 1950 we looked longingly at the Little Tirich crest. From there, as far as we could judge, it seemed possible to get straight up on the south crest of the main summit without unsurmountable difficulties.

Below a magnificent photograph of Tirich Mir is written,

“view towards southern Barum glacier.” But after a long—far too long—stay there we can with certainty assert that this picture does not show this glacier. Besides, in this picture Tirich is far behind the glacier, while in reality it rises straight from it. There are two possibilities: the expedition did not see the South Barum Glacier and turned by a glacier a bit further south, or there was simply a mix-up of the photographs after returning home. This latter seems the more plausible. Members of a later English expedition think the Germans must have been confused as to their whereabouts.

Six years after the attempt of the Survey of India's officers to reach the summit of the large horseshoe ridge, Istora Nal, two determined Englishmen stationed in Chitral, D. Hunt and R. J. Lawder, made a courageous attempt. It should be mentioned that they turned at a point only 200 ft. lower than the highest top without the terrain demanding anything more than “an honest trampling in deep snow.” Such retreats, so near the goal, after lengthy and anything but pleasant ascents, help to show how near the limits of one's endurance one finds oneself and how suddenly one can get the impression that all is finished and immediate retreat required if one is to escape with one's life.

Hunt and Lawder were not experienced climbers, but had spent much time at heights between 18,000 ft. and 20,000 ft. during skiing and hunting expeditions. As their permanent station in Chitral was, in addition, at 5,000 ft., neither of them had any difficulty in reaching 20,000 ft. They brought with them three Hunza porters, of whom some had been with the German Nanga Parbat expedition in 1933 or 1934. They were probably the same porters we had in 1950. Besides the Hunza porters, they had two Chitrali porters who proved excellent rock-climbers.

Lawder got cramp at 22,000–22,500 ft. after a very quick ascent, but Hunt continued with two porters close to the summit. The snow was deep and Hunt reported that complete exhaustion prevented his achieving the last steps. With our experiences of the snow in these parts, this retreat seems quite comprehensible.



New attempts had to be given up because of bad weather and frost-bite.

Hunt's achievement did not make the Chitrali less sceptical about another attempt at getting away from Tirich Mir safe and sound, as Hunt was actually drowned in the Chitral river within two months. This happened a few years after the third of the 1927-9 climbers met with a violent death. Captain Coldstream was murdered in Peshawar.

In 1939 the strongest expedition which had ever tried to approach Tirich Mir started from England. The well-known climbers Mr. and Mrs. Smeaton, Millar and Richard Orgill, like the Germans, attacked from the south. They brought experienced Sherpas—accepted as the best porters in existence. Since the war, it has not, for politico-religious reasons, been advisable to try to get this kind of porter into the Mohammedan country where Tirich lies. This was therefore the first and last time that Sherpas were used. From the Owir Glacier the English party advanced up towards the ridge between Little Tirich and the S-glacier peak. They reached the top of this (22,000 ft.). Here they were surprised by the sight of the deep hollow between the S-glacier peak and the south ridge. They looked straight at the terrible wall, and it must have looked much steeper than in half and whole profile, as we saw it in 1949.

The party turned, bearing in mind their lack of ropes and ice-bolts. When they returned to the main camp, they received the news that the war had broken out. They came home very quickly, in contrast to certain German climbers who had to try to get home overland via Tibet.

We have only received information of this English expedition since both the Norwegian expeditions. We had no idea that one of the front peaks, at which we looked longingly daily, had already been visited and that the route had been considered extremely doubtful.

When one takes into consideration Tirich Mir's dominating position, it is extraordinary how few expeditions have tried to

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approach it. But it has been quite popular since the war, and both the English and the Swiss were contemplating expeditions there in 1950. We Norwegians are very grateful to Eric Shipton and Professor Morgenstierne, who as early as 1948 and 1949 recommended the summit in such strong terms that all other plans were pushed into the background.

## PREPARATIONS

By HANS CHR. BUGGE

*Selecting the party—"Vibram" soles and dogskin socks—  
Delicacies for the assault party—Cooking apparatus with  
special vaporisers.*

IN the autumn of 1949, when the Norwegian Alpine Club was confronted with the question of whether to go in for a Norwegian expedition to the Himalayas the following summer, many members were naturally sceptical. Some said straight out that it was none of our business. We had not enough experience of high mountains like those in question. Tirich Mir is only about 400 ft. lower than Nanda Devi, which at that time was the highest yet climbed, and about 200 ft. lower than Kamet, which was the second highest. Reports from these expeditions showed clearly the immense difficulties encountered when climbing at such heights. The peaks were reached by English climbers with years of experience in the Himalayas, and even for these it had been extremely strenuous. We knew that the snow conditions in the Himalayan heights were quite different from those in Norway. Even if we sent people with experience of winter climbing in Norway, they might easily under-estimate the dangers of the snow and ice at a height of 23,000-26,000 ft. In addition, all the people under consideration had no experience of such great heights. Those chosen might prove quite unsuitable for such a task or at best be unable to climb higher than 23,000 ft. It was a fact that those climbers who reached highest were, as a rule, those who had attempted great heights before; Tilman, for example, the well-known Himalaya climber, who managed to climb over 21,500 ft. the third time he was in the Himalayas.

However, we were comforted by the thought that Norwegians,

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without any previous experience, had reached great heights—C. W. Rubenson and Monrad Aas at Kabru in 1907 and Eilert Sundt and Thorleif Bache on the Aconcagua in 1915—and that there was no reason to believe that Norwegians were less fitted for great heights than, say, Englishmen or Americans.

Before anyone in the Alpine Club came to any decision, we asked the world-famous English Himalaya climbers, N. E. Odell and Eric Shipton, if they would recommend such a Norwegian expedition. It is no good denying that the opinions were divided. While Shipton suggested "having a try," Odell hesitated. Even though the Norwegian expedition has proved a success, it does not mean that Odell's hesitation was groundless. Tirich Mir proved an exceptionally fine peak as far as weather and snow conditions were concerned. It lies so far west that it is clear of monsoons at any rate until late July. Hence the snowfall on Tirich Mir was not as great as on tops further east, with the result that the danger of new snow avalanches was relatively small from this peak. It is quite possible that a Norwegian expedition to a higher peak further east in the Himalayas might have met with difficulties which could only have been solved, without taking undue risks, by experienced Himalaya climbers.

The Norwegian Alpine Club made thorough investigations and weighed the pros and cons before they came to a decision, but when the plans were laid before the members at an Extraordinary General Meeting on the 28th of November, 1949, it was unanimously agreed that the Club should co-operate in an expedition to Tirich Mir on the lines proposed. The Norwegian Geographical Society and the Norwegian Alpine Club would jointly support such an expedition, and the supreme authority was to be a General Committee consisting of the leader of the expedition, a representative from the Geographical Society and one from the Alpine Club, with the leader as President. The expedition was to consist of five climbers, one being a doctor, who were all to be appointed by the Alpine Club, and two scientists chosen by the Geographical Society.

When we began to make preparations in December, 1949, we were all fully aware that we had an immense and exacting task before us. In order to get off as early as the spring of 1950, the work would have to be delegated to many, and we would have to get the assistance of people with expert knowledge and experience in many subjects. For all concerned it meant work without remuneration in their spare time, which obviously implied that in the main we would have to draw on assistance from the climbers' own interested circle. Inside this there were people from the most varied professions with knowledge and experience we knew would be of the greatest use. There were several doctors among the members and people who from camping expeditions in the Norwegian mountains knew much about tents, cooking apparatus, practical provisions, clothing, etc., and of course it was easy to get expert help in procuring all the necessary climbing gear. We reckoned on the kindness of these our climbing friends, although we were quite aware that we were going to make big demands on many of them.

The work was divided so that under the General Committee there were to be two working committees: the Finance Committee, which would look after all the ingoing and outgoing payments and the accounts of the expedition, and the Planning Committee, which would direct the work of all the other preparations. Under this latter committee were a series of sub-committees with the following special duties: photo and film, health, clothes, boots, rucksacks and tents, provisions, kitchen equipment, climbing gear, packing, literature and maps, travelling arrangements, and ordinary correspondence and files. Besides this we had a committee for the diplomatic arrangements with Pakistan. We weren't exactly going to a neighbouring country. Not only were we going to the Far East, but to principalities through which all and sundry could not travel, in the depth of Asia, with only a loose connection with Pakistan. It was not sufficient to get permission from Pakistan and its princes to go straight through to Tirich Mir. We had also to be sure in advance that we would be welcome

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and would get the required assistance from the authorities.

Before we could get all these sub-committees going in earnest, the Finance Committee had to solve the problem of funds and currency. It was *Aftenposten*<sup>1</sup> which solved the problem of funds. This paper had previously encouraged the idea of a Norwegian expedition, and the negotiations carried on between this paper and the General Committee very soon brought the question of finance to a safe conclusion. The amount we considered sufficient for the expedition to get off was £3,500. This sum was put up by *Aftenposten* on condition that the paper had the sole rights to all publicity in connection with the expedition—except for lectures. The amount *Aftenposten* put at our disposal was that which we had asked for on the basis of a rather rough estimate of expenses. It soon turned out that the estimates were too low, and it was only by the good offices and assistance we received from several firms, private people and the Army that the expedition finally managed to get off. Quite a lot of the equipment was provided gratis or at much reduced prices, and the agreement with Braathen's South American and Far East Air-transport A/S was very advantageous for the expedition. Altogether considerable sums were saved or produced in this way.

Then there was the question of foreign currency. We estimated that half the ready money we had at our disposal was needed in Pakistan, and that this amount would have to be in sterling for conversion to Pakistani rupees. It took some time to obtain a permit for the currency, but we found the right spirit of co-operation at the highest level in the end. The finances were secured towards the beginning of January, and all the committees went full speed ahead.

We began our preparations at the eleventh hour, as the equipment had to be sent by boat from Norway at the latest in the beginning of April. It was not just a matter of ordering the various equipment the moment the money was available. For many of the sub-committees the work was to begin with a

<sup>1</sup> One of the leading Oslo newspapers.

thorough study of Himalaya literature, with conferences and correspondence with experts at home and abroad, and later many tests had to be made before they could decide on the final equipment. It would have been a great advantage if we could have tried out much of the equipment in midwinter in the high Norwegian mountains, but there was no opportunity for this. Practically everything was packed without previous trial. It was also because of this that we set off with some uncertainty as to the result of the whole thing. But fortunately we found later that all our essential equipment was completely satisfactory.

It was now high time to select the members of the expedition. We considered that the climbers would require a minimum of six months' training to build up a strong physique, and the departure was to take place in the end of May. We counted on our all flying to Karachi and being ready to advance up the glacier from the main camp at a height of 11,000 ft. about the middle of June.

Already, early on, it had been decided that Professor Arne Naess was to be the leader of the expedition, and at the general meeting of the Alpine Club in November it was decided that all the climbers should be members of the Club. This did not mean that there were no qualified climbers outside the Club; on the contrary, we knew that capable young climbers from the north of Norway would have liked to join us. But we decided it would be far too difficult a task for the Selection Committee if it was also to take into consideration people of whom it knew practically nothing but their climbing achievements in Norwegian mountains. Climbing ability was far from being the only consideration, and we found it right and proper to let the selection committee choose from among the club members, whom the committee knew as friends. It had also the advantage that those who were sent out were mutual friends in advance. In the Alpine Club we regarded this as a safeguard, having regard to the great exertions the expedition might be exposed to.

All the same, it was a difficult job to choose the climbers. Many

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more applied than were required, and it was not easy to find the necessary reasons for one being more qualified than another. Everyone had, of course, to have a thorough medical examination.

In the beginning of January the following climbers were selected, besides Professor Arne Naess (38): Hans Chr. Bugge, deputy leader (40), Henry Berg (27), and Per Kvernberg (32). As the expedition's doctor, Fridtjov Vogt Lorentzen (41) was chosen. He was also a member of the Alpine Club. As reserves Olaf Augestad, Arne Randers Heen and Øistein Røed were selected. The Norwegian Geographical Society chose their people soon after. These were: as geologist, Finn Jörstad (27), and as botanist, Per Wendelbo (22).

It was soon obvious that we ought to have a film-photographer. After some negotiations the result was that Rasmus Breistein undertook the job, paying his own expenses. He brought as his assistant Arild Nybakken.

Two men were to join the expedition in Pakistan. One of them was the President of the Lahore Climbing Club, Professor Abdul Hamid Beg from Islamia College, Lahore. Professor Naess had met him in Pakistan the previous year and had invited him to join as the liaison officer of the expedition. The other man was Captain Tony Streather (24), who was attached to the military organisation of the Chitral State Scouts, and who had a thorough knowledge of the North-West Frontier province and the principalities there. It had originally been arranged that he should join as a liaison officer in case Professor Beg should be prevented. But we found we could take him as an eleventh man, and we did not regret it. Together with Professor Beg, he was of very great assistance to the expedition on the journey through Chitral towards Tirich Mir, as beyond the town of Chitral we could not get very far with English. Here it was necessary to know Urdu or Khowar when talking to the porters and when negotiating with the natives about the buying of food and other things. Captain Streather spoke both these dialects and also knew the

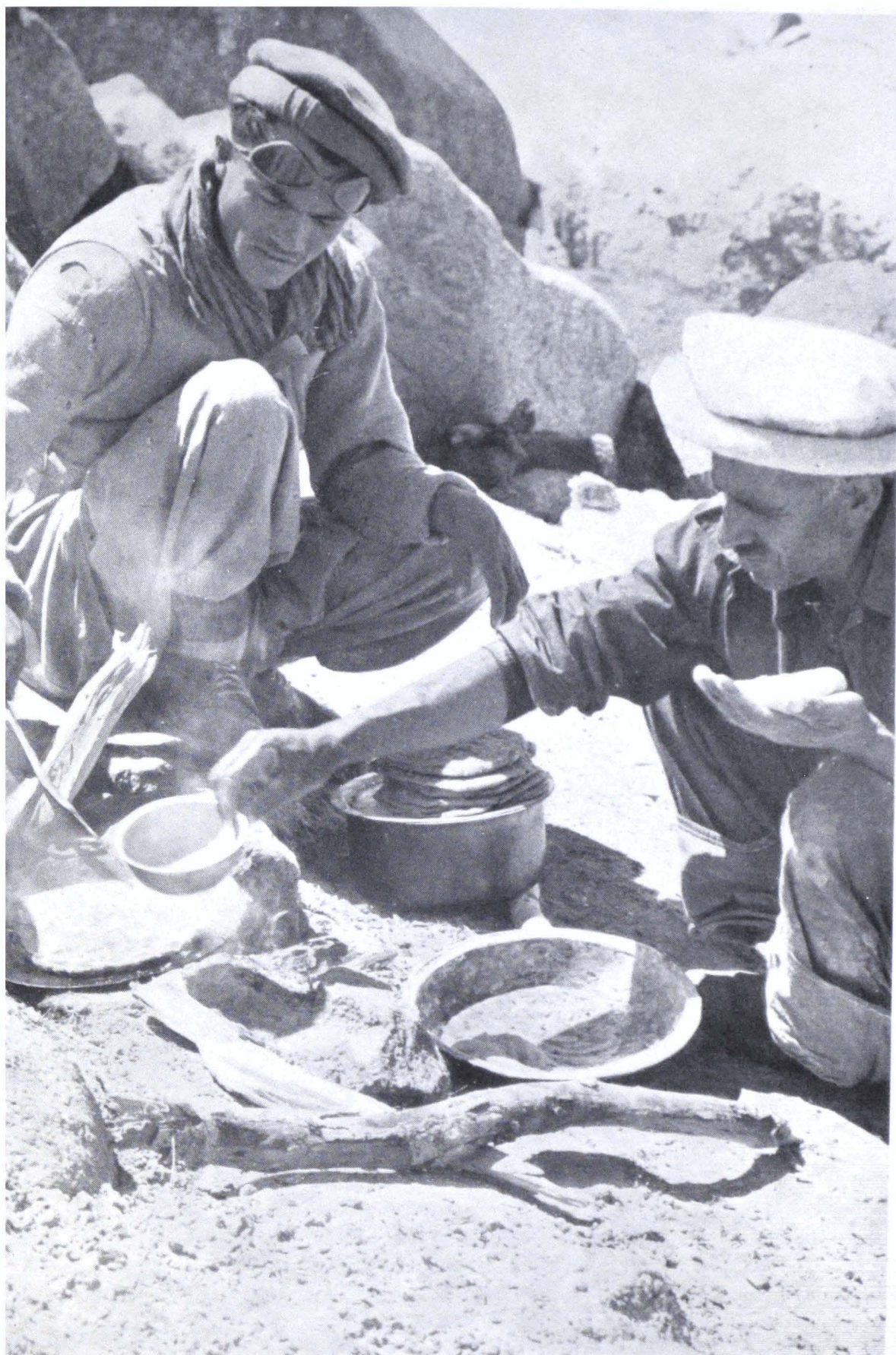


mountain districts we were passing through. Without him we should have found ourselves in great difficulties. We had certainly had some coaching in Khowar—the Chitral language—before we left home, as, from the middle of February, Professor Morgenstierne had done his best to teach us the bare essentials. Unfortunately, we did not remember very much, except Wendelbo, who had learnt sufficient to get along at a pinch.

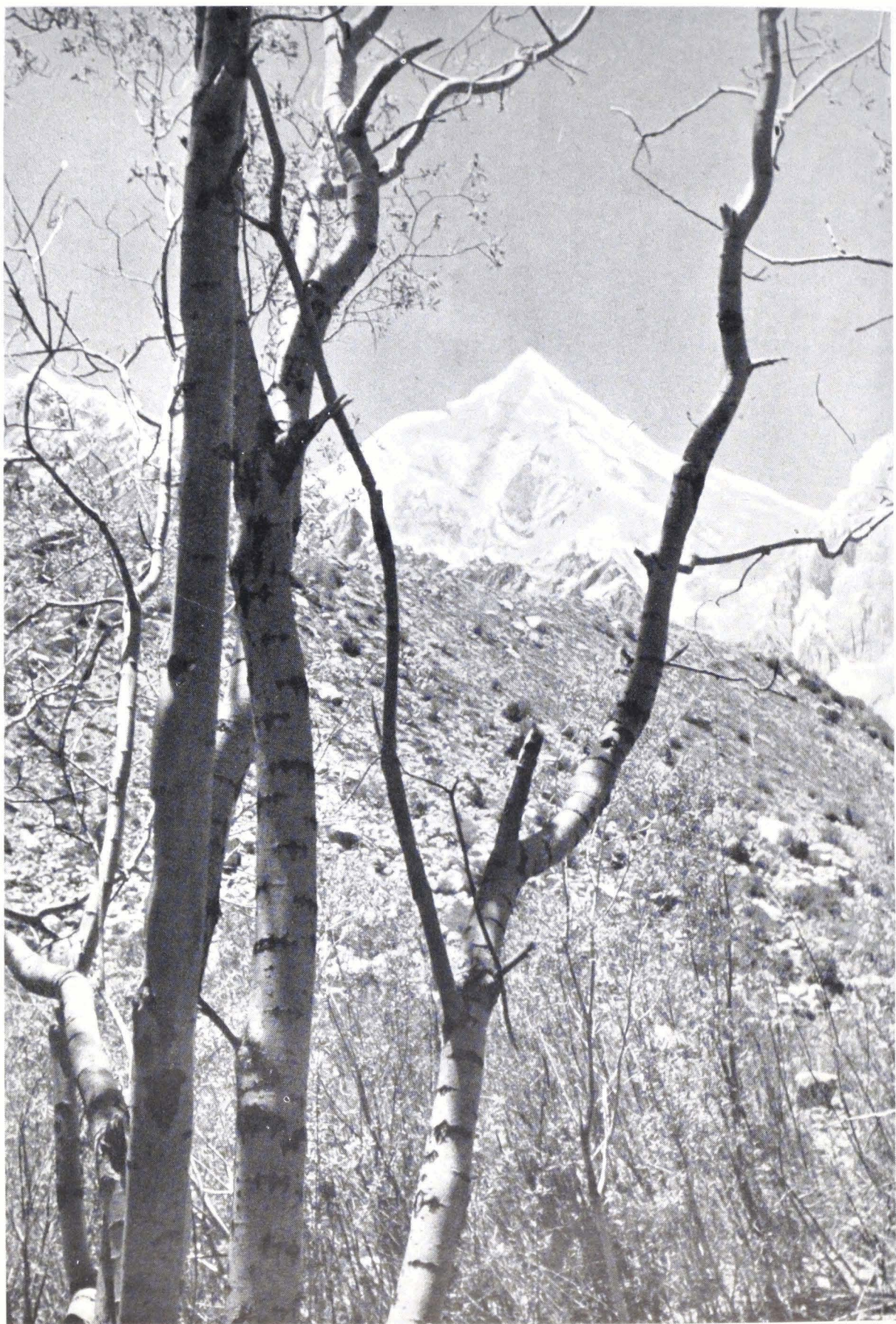
Busy months lay ahead of us, with meetings practically every day, with absenteeism from the office and the family, and with all kinds of questions cropping up at all hours. Added to this, the climbers also had to train in field and forest. The training was arranged individually, so each man could do as he liked. There were many long skiing trips during the winter with heavier and heavier loads on one's back, wood-chopping and gymnastics. Between Christmas and the New Year the candidates were given an opportunity of a training trip to the top of Hallingskarvet, where we particularly gained experience in *igloos* as opposed to tents. At Easter the climbers were again in the mountains, trying out equipment and provisions, and in April to May climbing training began, mostly on Kolsaas, near Oslo.

It was an interesting but exacting job getting hold of tents, sleeping-bags and clothes for the expedition. In Switzerland, Germany, France and England any special shop will get one almost a complete Himalaya outfit. This is impossible in Norway. There are several shops which have delivered first-class equipment for polar expeditions, but they have never been confronted with the problem of producing an outfit which is both warm, strong and, above all, light. Every ounce counts when everything has to be carried on the back in thin air and perhaps under difficult snow conditions. We very much wanted to use nylon wherever possible, but this proved unobtainable. We had to make the most practical use of the materials available in Norway.

The tents were made from down-proof material, with sticks of duralumin, based on a model tested out by Englishmen in the



Native porters cooking *baratá* (a sort of pancake).  
The bearer on the left later lost his reason from terror.



“Idyllen,” with Tirich Mir in the background.

As a rule there was thick snow smoke round the summit—as a foretaste of the difficulties the climbers might expect at the top of the mountain.



Pitching the tent at "Idyllen" about 10,000 ft. above sea-level.



Dr. Lorentzen taking a blood test of Henry Berg.

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Himalayas. We brought two tents for six for the porters, two for four, seven for two and two single tents.

The sleeping-bags were also made from an English pattern. They were eiderdown bags and there were two for each man, so that one could be pulled over the other. They were warm and light and could be rolled up into a small space. As insulation between the bags and the snow we used rubber air mattresses. We had them made just large enough to reach from head to hips, bearing in mind the weight.

As far as clothes were concerned, they were based on accounts we found in books of earlier Himalayan expeditions, as well as the experiences reaped during the reconnaissance trip in the summer of 1949. The clothes had to be warm and light, and it was of special importance to get first-class windproof material. We got the best quality poplin from Switzerland and some from "old stocks" in Oslo, so both wind-cheaters and trousers were as good as anyone could wish. We also had some excellent eiderdown jackets and trousers made from a French pattern. They were very warm and light.

Otherwise we were equipped almost like any Norwegian mountain-skiers: good wool underclothes, thick, good, wool stockings, woollen scarfs and light, wool sweaters, knitted caps and balaclavas. We bought topees in Pakistan, which we used in the sun during the day as far as the top camps. Just before we were leaving, we were presented with a large piece of wool-gaberdine from England, and we had just time to have this made up into very practical jackets and trousers for all the climbers. We all got very attached to these gaberdine suits, which were very light and windproof, and these were used up to the greatest heights.

The boots had been the weak item of many earlier Himalayan expeditions. The fact that many have had their feet frozen at great heights was chiefly due to their using nailed boots. The nails conduct the heat from the feet and easily draw moisture into the sole. We were lucky enough to have the necessary number of "Vibram" soles sent from Switzerland, and every member of

the expedition was equipped with boots with this sole. The Italian climber Vittorio Bramani invented this sole some years before the war and it has revolutionised mountaineering. These soles have been used on all difficult first climbs in the Alps during the last fifteen years, having earlier been tested in the Himalayas. Our Norwegian Himalaya boot was so roomy that we had space for in-soles and several pairs of thick woollen socks or dog-skin socks in severe cold. The boot was comparatively light, and we had it made so that it was possible to attach a piece of sail-cloth on top, covering most of the foot. We also brought large *wadmal* over-boots with long legs which we could pull outside the boots, and finally we brought Canadian felt boots, purchased from the Army.

We usually wore woollen mittens and windproof mittens—as well as catskin mittens—on our hands.

For the porters we brought tents, sleeping bags, clothes and boots.

The job of provisioning the expedition was as exacting as getting the best of tents, sleeping bags and clothes. Those of our friends who undertook this task were very capable and had had much experience of stores and provisions for expeditions in Norway, but never before had they dealt with the provisioning problems connected with an expedition bound for such high altitudes as we were. It took time to wade through all that the Himalaya literature had to say about provisioning, and when the work was started there were only three months left before the equipment had to be sent. Studying the literature did not solve the difficulties either. The reports were contradictory, and the only thing common to all was the emphasis on the difficulties of eating at great heights and the necessity for a plentiful intake of carbohydrates (sugar, etc.).

After a month's work, the Stores Committee had got so far that they could put up proposals for a provision list. There were several things it had had to consider. First of all, the climatic conditions would make very great demands on durability. The

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equipment would, to begin with, have to endure a long sea passage, then a sojourn of up to a month in the docks in tropical heat, then a journey by rail, lorry and porters through Pakistan, mostly at high temperatures, and finally would have to be carried across the glaciers, where the temperature might change from many degrees of frost at night to even more degrees of heat in the daytime. Stores could not possibly be exposed to a greater strain. Secondly, the weight was an important consideration, so it was necessary to bring as concentrated nourishment as possible. Thirdly, the food had to be specially good, to increase the chances of the climbers being able to eat it even at great altitudes, where experience has shown that appetite disappears. At great heights it might also be impossible to cook the food; hence it was necessary to bring cooked food. This is easier and quicker to prepare, with consequent fuel economy. Finally, the various stages of the expedition required different kinds of food. What might be suitable on our journey through the tropics would not be so in the mountains, and what proved most suitable at 10,000 to 17,000 ft. would not necessarily be so on the last climb to the summit.

It was decided to work out three different lists of provisions; one for the journey from Karachi to the glacier, one for the glacier up to the Base Camp, and one from there to the summit. The work in connection with the two first lists—the tropical list and the glacier list—did not offer great difficulties. As there was not much time left, the committee did not dare to suggest provisions which had to be ordered from abroad, except Nescafé, Ovomaltine products and what might be obtained out of bond.

The two approved lists were as follows:

### PROVISION LIST FOR LOW ALTITUDES (105 RATIONS)

	<i>Kgms.</i>
10/2 tins breakfast ham (1 per day for 10 days with eggs) . . . . .	5·00
250 gms. tea (10 rations of 25 gm.) . . . . .	0·25
2,500 gms. lump sugar (25 gms. per ration) . . . . .	2·50
10,000 gms. Ryvita (100 gr. per ration) <sup>1</sup> . . . . .	10·00

<sup>1</sup> Really "crackle bread" similar to Ryvita, etc.



## TIRICH MIR

10,000 gms. biscuits (100 gr. per ration) . . . . .	10·00
12,000 gms. dehydrated bread (120 gms. per ration) . . . . .	12·00
8,000 gms. tropical margarine (75 gr. per ration) . . . . .	8·00
15 tins of sardines in tomato (1 tin per day) . . . . .	3·00
8 kgms. jam (75 gms. per ration) . . . . .	8·00
5 kgms. cream cheese (50 gms. per ration) . . . . .	5·00
5 tins, 1-lb. tins, corned beef (1 per day for 5 days with eggs) . . . . .	2·50
5 tins Cerebos salt, 1-lb. tin per case of potatoes . . . . .	2·50
18 tins tomato soup cubes (1 tomato soup dinner every 3 days) . . . . .	1·00
10 tins fish-balls (3 men per tin) . . . . .	10·00
$\frac{1}{2}$ kgm. flour (for fish-balls) . . . . .	0·50
10 tins meat-cakes (3 men per tin) . . . . .	10·00
10 pieces brown sauce cubes (1 cube per tin meat-cakes) . . . . .	0·50
5 tins pork (3 men per tin) . . . . .	5·00
5 tins beef (3 men per tin) supplemented by chicken and mutton . . . . .	5·00
5 pkts. puffed oats (for sweets) . . . . .	0·50
5 btls. fruit juice (for sweets) . . . . .	5·00
1 kgm. raisins . . . . .	1·00
$\frac{1}{4}$ kgm. potato flour . . . . .	0·25
2 pkts. Ideal flat bread (for meat dinners) . . . . .	—
5 pkts. pepper . . . . .	—
5 tins curry . . . . .	—
5 tins mustard . . . . .	—
10 pkts. vanilla sauce (2 pkts. per dinner for sweets) . . . . .	—
15 tins dried milk ( $\frac{1}{2}$ litre per ration per day) . . . . .	3·00
10 tins Nescafé (1 tin=35 cups) . . . . .	1·50
	113·50

### PROVISION LIST FOR HIGH ALTITUDES (464 RATIONS)

	<i>Kgms.</i>
84·6 kgms. biscuits (100 gms. per ration) . . . . .	84·60
45·0 kgms. Ryvita (65 gms. per ration) . . . . .	45·00
116 tins dried milk ( $\frac{1}{2}$ litre per ration); (1 tin=2 litres milk) . . . . .	29·00
46·4 kgms. lump sugar (100 gms. for coffee and tea) . . . . .	46·40
46·4 kgms. castor sugar (100 gms. for cooking) . . . . .	46·40
3·0 kgms. tea (25 grs. for 10 rations) . . . . .	3·00
2·0 kgms. cocoa=80 litres . . . . .	2·00
46·00 kgms. jam (65 gms. per ration) . . . . .	46·00
18·50 kgms. cream cheese (40 gms. per ration) . . . . .	18·50

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9.30 kgms. honey (20 gms. per ration) . . . . .	9.30
35.00 kgms. tropical margarine (75 gms. per ration) . . . . .	35.00
30 tins liver paste (1 tin per every second day) . . . . .	5.00
60 gms. sardines (1 tin per day) (45 in oil, 15 in tomato) . . . . .	12.00
30 kgms. mackerel in tomato (1 tin every second day) . . . . .	10.00
18 kgms. apricots (75 gms. per ration) . . . . .	18.00
18 kgms. prunes (75 gms. per ration) . . . . .	18.00
24 pkts. chocolate pudding (for 12 dinners) . . . . .	2.00
72 pkts. vanilla sauce (for 36 dinners) . . . . .	4.00
24 pkts. almond pudding (for 12 dinners) . . . . .	2.00
24 pkts. chocolate sauce (for 12 dinners) . . . . .	1.00
40 tins Nescafé at 35 cups (3 cups per day) . . . . .	6.00
11.00 kgms. Quick Quaker Oats (25 gms. per day) <sup>1</sup> . . . . .	11.00
2.50 kgms. dried eggs (equivalent to 25 kgms. fresh) . . . . .	2.50
16 pkts. rose-hip powder . . . . .	1.00
77 pkts. tomato soup cubes (2 rations per cube) . . . . .	4.00
77 pkts. pea soup cubes (2 rations per cube) . . . . .	4.00
24 tins pork . . . . .	24.00
72/3 tins iron rations (3 rations per kgm. tin) . . . . .	24.00
24 tins beef (the rest covered by chicken and mutton) . . . . .	24.00
48/2 tins corned beef (the rest covered by chicken and mutton) . . . . .	24.00
24 tins fish-pudding . . . . .	24.00
9.00 kgms. dehydrated potatoes (365 rations); (25 gms. per ration) . . . . .	9.00
72 blocks brown sauce (1 block per whole tin meat) . . . . .	4.00
0.50 kgms. potato flour (for rose-hip soup) . . . . .	0.50
5.00 kgms. spaghetti (12 gms. per ration) . . . . .	5.00
17.00 kgms. "flat bread" (35 gms. per ration) . . . . .	17.00
18.50 kgms. chocolate (40 gms. per ration) . . . . .	18.50
464 pieces chewing gum (1 gm. per ration) . . . . .	2.00
5.00 kgms. sweets (10 gms. per ration) . . . . .	5.00
464 pieces bouillon cubes (1 gm. per ration) . . . . .	2.00
232 boxes grape sugar (½ box per ration) . . . . .	9.00
1.00 kgm. dried onions . . . . .	1.00
25 pkts. pepper . . . . .	0.25
25 tins curry . . . . .	0.25
18 tins Cerebos salt (1½-lb. tins) . . . . .	12.00
12 tins mustard . . . . .	0.50
10 tins 200 gms. tomato purée (1 per dinner) . . . . .	2.00
72 tins Ovomaltine . . . . .	36.00

<sup>1</sup> Really "easily cooked oats," similar to Quick Quaker oats, etc.

The provision list for the tropics (low altitudes) presupposed only two meals per day as the supply of fresh fruit, and the tropical heat made this number of meals sufficient. The daily ration was estimated at 3,000 calories.

It was assumed that the expedition would be able to buy meat, chickens, eggs, rice and potatoes in the mountain villages below the glacier.

The working out of the provision list for the assault party offered many complications. It is doubtful whether the committee alone could have solved the problem satisfactorily if the military authorities had not given assistance, particularly as regards packing technique. The Quartermaster-General was very interested in the expedition, as he realised the possibilities for testing out various kinds of stores. The Army solved the provision problem with speed and efficiency, with the Director of the Laboratory as the prime mover. To make the provisions for the last lap concentrated and appetising in an easy pack, the daily ration was put into the following four tins:

(i) *The Breakfast Tin*

- 42 gms. tinned dairy butter.
- 90 gms. biscuits.
- 15 gms. lump sugar.
- 60 gms. vitamin sweets.
- 50 gms. fruit cubes (raisins and almonds).
- 7 gms. coffee extract.

(ii) *The Luncheon Tin*

- 65 gms. soup cubes.
- 75 gms. biscuits.
- 15 gms. lump sugar.
- 30 gms. sweets.
- 50 gms. fruit cubes.
- 45 gms. chocolate powder.

(iii) *The Dinner Tin*

Either egg and ham or meat-balls in cream sauce or meat-balls fried with onions or iron rations or chicken in cream sauce. The average tin weighed 450 gms.

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### (iv) *The "Spreads" Tin*

Either cream cheese or honey, raspberry or strawberry jam or marmalade.  
The tin weighed 300 gms.

This amounted to 4,000 calories, with a weight of 1,400 gms. per daily ration. In addition to this, the assault party brought with them Ovosport and glucose tablets. For drinks they brought tea, coffee, cocoa and Ovomaltine.

In the middle of February the three lists were finished and accepted by the members of the expedition, and the orders were given to the various factories. They managed to get everything ready before the equipment of the expedition was sent off on the 30th of March.

Working out the kitchen equipment had its difficult sides also. Through the years the fuel question has pestered the existence of many Himalaya climbers. An ordinary Primus does not work at the great altitudes to which we were going. We were fortunate enough to have with us specially made Standard cookers. They were made after thorough experiments in low-pressure chambers, and they solved the problem in a very satisfactory way. It was apparent during the experiments that while the usual Primus ceased to function at a pressure corresponding to a height of 18,000 ft., our special cooker worked perfectly, even at 26,000 ft. This cooker was provided with a whistling burner, which was rather remarkable, as earlier English experiments had proved noiseless burners to be best at great altitudes.

We brought four ordinary cookers, the usual domestic size, for stationary use on the glacier, and four collapsible tourist cookers. These were provided with special pumps to enable one to pump effectively at great heights. Two of the ordinary cookers were provided with noiseless burners and two with whistling burners. A special noiseless burner had been made for the tourist cooker, but otherwise these were provided with the usual whistling burners a bit smaller than the usual domestic size. For the burners we had jets made in two sizes, one with 0.33 mm. bore and one with 0.25 mm. bore. The jets could easily be changed.

On account of the weight, we brought one Meta cooker for use at the highest altitude.

The climbing equipment was the usual: ropes, ice-axes, crampons, ice-bolts and carbines. We brought both nylon and hemp ropes.

We also brought two pairs of short skis. As we were going to stay for so long on snow-covered glaciers, with many natives around, we felt we ought to be able to show the natives Norwegian skiing, and we also hoped to make a sledge of them to pull the luggage down again.

On Eilert Sundt's advice, the climbers each brought a pair of skiing sticks—regulation aluminium sticks (special alloy). Sundt had used skiing sticks on his winter ascent of Aconcagua, and told us they had been very useful.

Finally, we brought specially made snow-shoes.

The equipment for films and photographs had also to stand heat and cold. Breistein and Nybakken made special tests with their film-cameras. Among other things, they placed them in  $-25^{\circ}$  C. ( $-13^{\circ}$  F.) and later tested them at  $+35^{\circ}$  C. ( $95^{\circ}$  F.). The question of weight also arose here. They contented themselves with 16-mm. film. All told, they brought three ciné-cameras, three ordinary cameras, ten lenses, two tripods, 200 flash bulbs, 23,000 ft. colour film, and still film for 1,000 exposures. As neither of the photographers would be able to go to the summit, one of the ciné-cameras which they brought was small and easy to use under difficult conditions, even for amateurs. Sound film was out of the question; it would have been too heavy with all the batteries required.

The equipment of the entire expedition weighed over 3 tons. We had been very much in doubt as to what packing methods we should adopt, but finally chose strong bags and wooden cases as the most suitable for our purpose. The bags were like kitbags, but of extra strong and waterproof material, and they could be locked. The cases were the usual type: 2 ft. 4 ins.  $\times$  1 ft. 4 ins.  $\times$  1 ft. On account of the lengthy transport by ship, rail and lorry, we

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packed the bags in large cases, which were not opened before we began porter transport. In the last days of March the equipment was packed. It certainly was at the eleventh hour, and we had to pack day and night, even with expert help. But on the 30th of March, S.S. *Silvio* sailed from Oslo with everything safely on board. From London the whole equipment went on by M.S. *Durenda* to Karachi.

## THE JOURNEY TO THE "IDYLL"

By PER WENDELBO

*Attempts at "escape" in Abadan—80 lb. of small change—  
A porter falls into the river—Kicks and rifle butts—Dinner  
at the Palace—The bridge without hand-rails—Conversa-  
tion with the natives in their own language.*

ON the 27th of May we left Norway in Braathen's Sky-master, "The Norse Explorer." Months of preparation were behind us. We were on the brink of adventure and everything seemed promising. The equipment had arrived at Karachi. The aircrew were friendly, the air hostesses nice and helpful. We were met in Geneva by a representative of the Swiss Alpine Club. He was a doctor and had been on a Himalayan expedition himself. Naturally, he talked "shop" and the climbers were given a lot of good sound advice on leaving.

We had bad weather in the Alps and the plane had to change course. We flew over the Rhône Valley at 9,000 ft., not even half the height of Tirich Mir.

About midnight the plane touched down in Rome, our first overnight stop. There was not much time for sleep. The Secretary of the Legation, Moltke Hansen, met us and took us sightseeing in the middle of the night. The next day we saw the rest of Italy from the air. The plane made a short detour via Vesuvius to let us have a peep down the crater. Not long after we were over the Adriatic, which was as blue as the posters.

In Athens we had our first experience of real heat and highly seasoned food. In the restaurant Naess went across to the souvenir counter and returned with an armful of Greek vases to decorate our table. He had to buy one of them as we left the place; and this suffered a sad fate in Chitral.

## THE JOURNEY TO THE "IDYLL"

It was monotonous flying across the sea to Egypt, and most of us slept. But seeing the Nile Delta from the air was an experience to remember.

Our luggage was examined at the airport in Cairo. The Customs officers were only looking for papers and periodicals, and all they found were confiscated, the reason apparently being that King Farouk disliked any reference to Miss Narriman Sadek and himself.

We were taken to an excellent hotel, seething with guides, willing to show all things possible and impossible for a pound. They were most insistent and it was almost impossible to get rid of them. The most effective way was to run so fast that they could not keep up with us.

Engine trouble over Suez forced us to turn back; thus we had another whole day in Cairo. This was spent in visiting the Pyramids. The climbers got some practice by going to the top of one of them. There was a race with the dragomen, who lost, in spite of being on their home ground, and looked rather peeved. Little did they know on what high pyramids their victors had been training.

In the middle of the night we started on the last stage, which was to bring us to Karachi. It was sand and more sand eternally. The stop in Abadan might have had fatal consequences for the expedition, for Naess, Kvernberg and I had decided to have a look round, and as we did not have much time we ran towards an oasis. We had got pretty far when we heard shouts and yells behind us, and we suspected that we had done something wrong. Several soldiers were running after us and a jeep whizzed over the tarmac. Naess had already disappeared among the palm trees, but Kvernberg and I stopped and tried to look innocent. To make things look better still, I stooped to pick some flowers. We were furiously harangued in bad English and carried off in the jeep to a guard-house. Three men guarded us while the hunt for Naess continued. The only English the soldiers knew was "No good." Naess was also finally captured, and we were all three put in the



jeep to be driven away. But our guardian angel in the shape of Second Pilot Hagen appeared, and he was good at parleying and fixing things. After many apologies on our behalf, we were driven to the airport. When the man in charge had seen us running like mad to the oasis, he had not been in doubt that this was an attempt at escape, and he had suggested that the plane might just as well go on, as we might be in jug for a considerable time.

Karachi, our immediate goal, was reached towards evening. No sooner had the engine stopped than the sweat poured off us. There were many to meet us at the airport. People from the various Government offices we had been corresponding with—Colonel Diesen, who held a prominent position in civil aviation in Pakistan, Director Myhre, Grüner Hegge and Sandborg from Wallem & Co., the only Norwegians in Karachi. We were photographed, and quickly got through all official examinations, ending up at a Press conference, where Naess bore the brunt. We went by car to the town itself—about half an hour's drive from the airport. It was a seething confusion of people, cars, hackney traps, donkey—and ox—carts and herds of water buffalo. What struck us most were the dromedaries pulling huge four-wheeled wagons that blocked all traffic.

A day and a half in Karachi went quickly. We had supper at Colonel Diesen's the day we arrived, and Myhre gave a luncheon for us the next day at the Hotel Metropole. The rest of the time we were busy with essential calls and errands. Naess had to see the various Government officials. The rest of us had to get money. We had heard that the porters in Chitral did not like paper money very much, so we went to a bank to change some thousands of rupees into coins. This amounted to a sack weighing about 80 lb., and was to cost us many a headache; it did not become lighter when the porters turned out to be well satisfied with paper money.

Going around in the streets of Karachi was rather trying. The heat, the smell and the flies and the countless beggars and diseased cripples were a strange sight and provided food for thought.

We were all the time assisted by Wallem & Co.; Sandborg and

## THE JOURNEY TO THE "IDYLL"

Grüner Hegge drove us around, and one of the Pakistani officials went shopping with us. He was well versed in the difficult art of bargaining—so much out of our ken. We were assisted in many other ways too. Our 3 tons of luggage in sixty cases occupied a quarter of Wallem's office for some time; besides this, they had a lot of trouble in getting all the equipment on the express we were leaving by.

On the morning of the 1st of July we installed ourselves on the train. The railway station looked almost as if hundreds of families lived and died in the vestibule. We had to thread our way carefully over the sleeping bodies, and watch that we did not stumble over their worldly goods. Porters thronged round us, fighting who should carry our luggage to the carriage. They wondered at the *sahibs* wanting to carry things themselves. But we did not dare to trust them with the money-bag and the most important of our personal belongings. These porters were magnificent to look at in their bright red shirts and turbans, and it was amazing what they could carry on their heads: a large suitcase, with a big bundle of bedclothes on top of it, and small bags and baskets balancing on top of that; added to this a bag under each arm.

The train journey was rather like one's conception of Purgatory. We went second class, and under normal conditions our carriages would have been all right. It was a fast train and punctual all along, but other factors arose. In the first place, the journey was about 1,100 miles and took about thirty-six hours. Two-thirds of the journey passed through deserts with whirling sand and 110 degrees in the shade. Last but not least, our sensitive European insides reacted badly to the heat, food and drink. The journey was horrible, to say the least of it.

The hours dragged by; our only way of passing the time was watching the milling life at the stations. There were impressive-looking types in the most colourful clothes and miserable beggars in filthy rags. We drank tea and wiped away the sand and sweat. Morale was at a low ebb. One of the brighter moments was when Lorentzen chucked Naess' kitbag at him. It struck the wall with

a bang, accompanied by loud groans from Naess—the bag contained his Greek vase. The strange thing was that it did not break. However, when a week later the owner sat on it in Chitral, the pressure proved too much.

During the train journey we spoke with several Pakistanis. They were very interested in where we came from and what we were going to do. In return we asked them about everything concerning Pakistan. They seemed quite prepared to fight Kashmir whenever necessary, and trusted blindly in their Army. This was not without reason. Pakistan allocates 75 per cent. of its Budget to military ends, and wherever we went we could see large military camps and lots of soldiers.

It was strange for us to see the great ardour they showed in their religious devotions. One man we were talking to suddenly said, "Please excuse me"; whereupon he knelt on the seat and started praying. This was a very long and complicated ceremony, with continual mumblings of long prayers.

After a night which only natives and people with a strong constitution can survive, we dug ourselves out of the sand and set to, to drink tea. We stopped for an hour in Lahore, where to our consternation we saw all our equipment being unloaded. We never discovered why, but we immediately got hold of railway officials, who got it put back again. The journey now became more bearable; the sand had come to an end, and we were climbing; we caught glimpses of mountains.

We reached Peshawar on the evening of the 2nd of June and were met at the station by Professor Hamid Beg, our liaison officer, and by the Pakistani botanist Chaudri, whom the authorities had asked us to take along. The hotel where we were to spend two nights did not look promising. We spent the night on the roof, where it was cool and pleasant.

We soon discovered the reason for the peculiar atmosphere of the hotel. Every room had its own small "lavatory," in which there was a covered bucket. Each morning these buckets were emptied into a bigger bucket; after this they were rinsed with

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water, which was emptied into a cement gutter in the corridor. This water ran along the whole floor.

The next day was spent in buying equipment and food and solar topees.

As we had left our receipts in Karachi, they would not let us have our equipment at the railway station. This was purely petty officialdom and was the only time we experienced any unpleasantness in Pakistan. With the help of the Peshawar authorities, we at last got our sixty cases out and were able to load them into a large van.

We again slept on the roof of our hotel, and two hours longer than planned. At five o'clock we all squeezed into the van. It is no exaggeration to use the word "squeezed" in this connection. When we had driven a couple of hours, it was impossible to go on any longer. We had to get hold of a car as well, and six men moved into this. After a few hours' drive we started ascending to Malakand. Here we were silly enough to part with the car and transfer to the ordinary bus. While waiting for the bus to start, we had a chance of studying one of the world's most warlike tribes, the Pathans. Practically every man carried a cartridge belt and a pistol or rifle. Even people working in the fields and small boys were armed. The Pathans are like the Sicilians, with their vendettas. That there were not more murders among them was chiefly due to the fact that the authorities fined the murderer 1,200 rupees.

The bus started and another unpleasant stage began. The heat was unbearable and there was so little room that two of us had to sit on the roof, where we were pretty well roasted. We overtook our van, which had a puncture. An opportunity occurred for the two chaps on the roof to change with two new pale victims. About five in the afternoon we reached Dir, where yet another man joined the expedition. This was Captain Streather, an English officer in Pakistani service, at present posted to Chitral as second in command of the Chitral Scouts. He was twenty-four, but had come to India during the war as a private, aged seventeen.

As it was important to get off early next morning, we had to repack a good deal of the equipment the same evening, in spite of feeling very tired. Our next stage was the Lawarai Pass (10,500 ft.), where it was necessary for us to have mules and porters.

Scared at the thought of bugs, we spent the night in the open, for the first time in our own sleeping-bags.

Early next morning the porters and mules arrived and all was activity at once. The mule-owners wanted winter pay to go over the mountain pass, where there was still some snow high up. This was double the ordinary rate. Streather took over the negotiations for us as he could talk to the porters in their own language and knew how to handle them. The mule-drivers did not give in, however, and left with their animals. But porters more than willing to go for the normal pay soon came hurrying up. They were in rags, and many of them did not look well; but they were excellent porters.

We started for the first time on foot. Lawarai (10,500 ft.) was the highest most of us had ever been. The going was good, not very steep, and very lovely with many flowers and big conifers. The effect of the greater altitude was beginning to be noticeable. Suddenly one was no longer at the top of one's form. It was no good walking fast, and we felt short of breath.

There was a lot of traffic through the pass; we continually met people and mules with large packs. In particular, there were many carrying big balks of timber from the Chitral side. The balks weighed about 85 lb. and had to be carried 40,500 ft. up and down and considerable distances over snow and rocks. These porters were often barefoot. They had a very low wage for this work. An ordinary porter earned quite a lot more on one trip, but then he probably had to take the chance of uneven employment. We also met a flock of women heavily laden. As both hands were occupied with their loads, they could not draw their veils as bidden by Mohammed, and so they stepped off the path to where they could hardly keep going.

Only on one occasion, in a village in Chitral, did we see



Jörstad, the geologist, with three weeks' growth of beard.



The film photographer Arild Nybakken in "Idyllen," with Tirich Mir in the background

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unveiled women. The wife is the husband's absolute property; if she is unfaithful to him, he can even kill her without anybody interfering. It is no easy matter for the authorities in Pakistan to give women a freer position. Her dependence on the husband has its roots in the Mohammedan religion, and it is religion itself which is the fundamental thing in the partitioning of India; hence Pakistan.

From the top of the pass there was a very fine view over Chitral. Below us we had a long, narrow valley. The sides were covered with different kinds of conifers, but they were much larger than in Norway. In the bottom of the valley there was still snow lying here and there, stretching long fingers up towards the mountain. In the background we saw high, snow-covered mountains. The road down was very steep and Naess and Berg took a short cut by sliding down one of the snow fingers. No doubt a magnificent slide, but the majority of us preferred the road.

We were to spend the night in Ziarat which was about one and a half hours' walk from the top of the pass. In Ziarat there was a military post, and here the Mehtar, i.e. the Prince of Chitral, had built a resthouse. The Mehtar's secretary had come up by jeep to meet us, and together with Naess, Beg and Streather he drove on the same evening to Drosh, where they were spending the night in the Chitral Scouts' Depot. An hour after our arrival the porters began to trickle in. One of them fell in the river just below the resthouse, case and all. Luckily, he escaped with a few bruises, but we were very anxious about the contents of the case. The list was examined to find out the contents of case No. 33. The climbers heaved a sigh of relief, but Jörstad and I groaned. It was, of course, one of the cases with scientific equipment.

Dr. Lorentzen bandaged up the unfortunate porter, but he should not have done this. When the other porters realised that he was a doctor, one after the other presented their boils and sores, and he was kept busy to late in the evening.

During the night the Pakistani botanist had 700 rupees stolen from him, but nothing could be done about it.



The motor road from Ziarat to Ashret, the next village, was only passable by jeep. But we were to be met in Ashret by two small lorries which were to take us all the way to the town of Chitral in one day.

We walked the five miles to Ashret. Here the fun started. Two cars were there to meet us, but they either wouldn't or couldn't take all the baggage. The leader and the two liaison officers had gone ahead to Drosh the day before, and there we were, cursing them for leaving us. The porters began to kick up a fuss. They wanted to be paid immediately, contrary to the agreement. The atmosphere was getting more and more tense. The soldiers whom Streather had brought with him when he met us in Dir were very helpful. They were young boys between seventeen and eighteen, but they were respected by the civilians. To start with, they had been with the porters over the mountain and kept an eye on them in such a way that we had not had to worry about them; and now they helped us here. The porters were brought to heel rather brutally. They were pushed back with kicks and rifles. A telephone conversation with Drosh restored order again. Half a ton of baggage was left for a third truck which was to be sent along. After this we scrambled up on top of the load and set out on a drive which our insurance companies certainly would not have covered in our policies, if they had known about it. The road was bad and narrow and in places it had disappeared in a landslide, and here we took the precaution of jumping off. Below the road there was a river, so far down that we should have stood no chance if anything happened. Where the road was just good enough for slow driving for a Norwegian, our man let her rip. Our hearts were in our mouths.

After the driver of the first car had tried to get up a steep hill with the brakes on, it stopped. As our time was short, we all transferred to another car, but this had only done 100 yards when it struck in sympathy. We reached Drosh three hours late. It was nice to see Naess again. He was sitting in an armchair drinking lemonade, while we, grimy and weary, marched into the depot

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with such dry throats that we couldn't say a word. Streater invited us for lunch in the depot.

This meal did not offer so many unpleasant surprises as our former ones; besides, we were beginning to gauge which courses contained most spices.

Much to our joy and surprise, we reached Chitral the same day. We were grey with dust after the drive, but were able to wash off the worst in the outskirts of the town. A jeep bumped us at high speed to the Palace.

Here we were received by all who mattered in Chitral. The Mehtar himself was in Lahore studying psychology, but we met his brother, the members of the Government and the Assistant Political Agent. The latter was the Pakistani representative in Chitral, which is officially an independent principality, but has a common foreign policy and army with Pakistan.

After tea we were shown some small guest bungalows by the river where we were to sleep. We had been asked to dine at the Palace the same evening, but there was plenty of time to wash and change. Our evening clothes were a conglomerate lot; shorts, plus-fours and windproof trousers, but no one could possibly have expected us to turn up in dinner jackets.

Chitral is not a big, rich state, hence the Palace was not quite so grand and exotic as one generally imagines the surroundings of an Indian prince. The taxes were never paid in ready cash, but in kind, a tenth of the harvest.

From our small bungalows we were able to see Tirich Mir. It was far away, but showed up well in the landscape. The climbers sat gazing at it through their field-glasses and tried to find the best route to the summit. There was no doubt that they were beginning to be pessimistic. With an expert's knowledge, Beg announced Tirich to be "a formidable mountain."

We spent two nights and one day as guests of the Palace. We watched a polo match, in this homeland of polo. It was actually from these parts that the English took the game to other parts of the world.

An orchestra consisting of three men played during the polo match; one played a kind of flute, and the two others beat two different kinds of drum. The music seemed rather monotonous to us; it started suddenly and then stopped as if it had been cut off, just like bagpipes or the Hardanger fiddle. After the match there was a great dinner party at the Palace with the same orchestra performing, and as a finale we were shown Chitrali country dancing. Only men, of course, took part in this. Most memorable was a tremendously fast sword dance. The dancer performed all sorts of contortions with a razor-sharp sword in each hand.

On the 8th of June we said goodbye to our kind hosts in Chitral. We had now grown into quite a formidable caravan, thirty donkeys with their drivers and forty or fifty porters. Naess was very ill with diarrhoea, a septic throat and an infection of the eyes, so Dr. Lorentzen decided to stay behind to look after him.

Our daily marches were not especially long, but strenuous enough in the glaring heat with our upset insides. To start with, we had not dared to drink the water even when it looked clear and sparkling, so our throats felt like sandpaper. But we did not prove very strong-minded, in spite of all the warnings we had received. Even on the second day we drank from the brooks. It was all right, however.

The road was hewn out of the mountainside and followed a narrow valley with a big, fast-flowing river. Now and again the valley widened out, and here we found villages. These oases in an otherwise dry and barren valley were the result of a remarkable irrigation system. These irrigation channels stretched mile after mile high up in the mountainside. Even the climbers were full of admiration at the climbing skill which was required both for the building and upkeep of these channels.

The living quarters in these villages were not up to much. They were chiefly built of stone and clay, with a bit of woodwork here and there. They were low and probably full of smoke from the open fires. There were no windows, only some small openings, but we were never fortunate enough to see the inside of these



Porters on the way to Camp II. The higher the expedition got, the less the porters could carry. Between the two upper camps the weight was only 30 lb. for each of the three men who managed to get as far as this.



Resting on the way up to Camp II.

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huts. It must be a miserable existence for these people in the depth of winter in the snow and cold. Firewood was scarce and their clothes were nothing but rags. In every village there was a mosque, not with cupolas and spires, but, like the huts, with flat roofs. The difference was that the mosques were decorated with lots of carvings and colourful, artistic patterns painted on the walls. There were graves everywhere. These had a very characteristic appearance. They were marked by two long, pointed stones, one at each end of the grave, placed at a certain angle. Sometimes there were bigger, more elaborate graves with long wooden stakes from which flew small flags. Later we learnt that these were the resting-places of saints.

We spent two nights in this valley, at Koghozi and Barenis, but four or five miles beyond Barenis we left the valley at a village called Parpish. We crossed the river by a rather unusual bridge. A foundation of stone and timber had been built on either side of the river, loose boards rested on logs which went straight across the river and were joined together in a special way. The construction was not particularly solid; the bridge swayed alarmingly as we crossed one by one. There was nothing to hold on to, and deep below us ran the fast flowing river. A fortnight before we started our return trip this bridge was carried away by the river.

The donkeys could not cross this bridge, and from then on we had to manage with porters alone.

From Parpish we began to climb, and after four hours arrived in Barum, which was our last overnight stay before our base camp, the "Idyll," by the glacier.

In Barum we pitched our camp on a grassy plain, shaded with large trees. But there was no time to enjoy the shade and the cool grass. Ninety porters had to be paid, and thoughtlessly we decided that the pay should be quite just, based on the weight of the packs. This created complete chaos. We had to gauge the weight of each pack individually, compare them and count and recount in a strange monetary system. Round us the porters were

dissatisfied and squabbling, we were tired and hungry and had to keep our eyes about us so as not to be relieved of our own belongings.

The leading man in Barum, Sultan Murad Khan, was a good friend of Naess from his former visit. He was most anxious to help. Great was our joy when he presented us with a newly killed sheep, which Abdul, a cook we had brought from Chitral, for once prepared extremely well. Abdul knew some English and was useful as an interpreter, but as a cook he was practically useless. He had acquired a great respect for tins because while opening one in Chitral he cut his finger so badly that Lorentzen had to put in a few stitches. Ever since then nothing would induce him to open a tin. He would heat them unopened, and leave the opening to one of us. The result was naturally an appalling mess, and all the gravy was spilt. He also had an idea that water should be boiled without a lid, with the result that rice and tea always tasted of smoke.

That evening Bugge called a meeting at which he outlined our future plans. Up to now we had thought we could buy food for the porters in Barum. But this proved impossible. Two men would have to go to Girhim Lasht, which was about a mile further up the main valley on the other side of the bridge at Parpish which I described above. The rest of the expedition, with all the porters, would continue up towards the "Idyll" the next morning. It was Kvernberg and I who had to go "shopping." The next morning we set off with one of Streater's men, who had been given exact instructions about what was going to happen. We were to buy 600 lb. of *atta* (a kind of wheat flour), 100 lb. of rice and one large box of *ghee*, a very uninviting kind of fat with an evil smell. There was a Government store in Girhim Lasht and we had to 'phone Chitral for permission to buy the stuff. After mucking about with the telephone for a couple of hours, we gave it up. Besides, the Government store was empty, so we went on to the next village, Reshun. This was another two or three miles further up.

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Here a crowd collected to gaze at us, and it did not look as if our man was doing anything at all about bargaining. He had obviously not understood a word of the instructions. No one knew any English and we blessed Professor Morgenstierne, who, before we left Norway, had tried to teach us Khowar, which is the chief language in Chitral. We had a list of words which, through a slip of mine in preparing it, consisted chiefly of adverbs and verbs in the infinitive and third person present. With this and the little I remembered, we now had to carry on long negotiations about stores, prices and porters for the purchases. Rather fumblingly, I started "*shor pound grinj, choi shor pound atta*" (100 lb. of rice, 600 lb. of flour). To my great surprise, they understood, but a helpful soul felt sure I knew Urdu better and translated all that the others said into this language, till my head was spinning. We talked and talked from ten in the morning to half-past four in the afternoon without my being any the wiser. In between the negotiations they tried their best to teach me Khowar. The reason why it took such a long time was that the corn had to be ground first and the rice had to be collected from various farms. Rather bewildered, we got away at last. We had succeeded in acquiring 100 lb. of rice and 70 lb. of *atta*, which was all we could wait for. We had paid far too high a price, but bargaining on top of everything else would have been a bit too complicated.

Naess and Lorentzen had in the meantime arrived at Barum. We only just met them on our way down. They had had a frightful trip. All their porters had left them, taking the medicine chest, the food and personal equipment with them, and had joined our party without us having noticed it. All they had left was a man who carried the money-bag. Naess was feeling ill and they had not managed to make anyone understand them.

The next day Lorentzen and Kvernberg went off to the "Idyll." I stayed behind to nurse Naess.

Lorentzen returned the next day with the medicine chest and food. When at last I was able to set out for the "Idyll,"



unfortunately I lost my way in Shabronz, the highest village. I found unveiled women in several farms I passed. The husbands were obviously not at home, as the women did not make any attempt to hide. They even answered questions about the way. They weren't exactly pin-up girls, but they had strong, handsome faces.

A man I met offered to show me the way and we started up the mountain on the worst "road" yet. We balanced on the edge of a narrow irrigation channel in the mountainside with barely room for one's feet on the precipitous slopes. It is possible to overcome giddiness to a certain extent. Some of the porters had carried up to 100 lb. on this very track. It was almost unbelievable.

It was with great excitement that I approached the "Idyll," which was going to be our home for so long. For me, as a botanist, it was particularly exciting whether it would be up to all my expectations. Would I find a rich enough hunting ground to compensate for all the struggle of getting there?

## THE "IDYLL"

By PER WENDELBO

*Daily life in the Sugar Stall—Willow, birch and juniper in the high mountains of Asia—Breistein guarding the money-bag—Insect-hunt in the tent—Earthquake—Hunting mountain goat with muzzle-loading gun.*

THE natives had an amusing name for "Idyllen" (the "Idyll")—Shokor Shal, the Sugar Stall. It provided specially good pastures for their oxen and a fine camping ground for the *sahibs*.

This small wooded area of about a mile long and 50-150 yards wide was an oasis in the otherwise dry and barren Barum Valley.

A small river ran through the whole length of "Idyllen." In the morning it was crystal clear and so narrow that one could jump across it. In the evening, when the sun had melted the snow at its source, it became so swollen and so muddy that the water was undrinkable—and it was only possible to cross it in a few places. The camp had been placed in the upper part of "Idyllen." The tents were pitched among the white-stemmed birches, with flowering honeysuckle everywhere. Towards the west Tirich Mir lifted its snow- and ice-covered, gigantic pyramid. We were surrounded by 16,000- to 20,000-ft. peaks on all sides, but these were small fry compared to Tirich. There was a magnificent view over the valley towards snow-covered mountains about 20,000 to 23,000 ft. high. The Barum Valley ran north-west to south-east and was about 800 yards wide, of which the main glacier occupied 600 yards. "Idyllen," which lay on the north-east side, was protected from the cold of the glacier by a big moraine bank. The mountain and the bank had formed a valley within the valley. This valley continued one and a half miles further up from

“Idyllen” and then divided into three. One branch went towards the North-east, Slate Valley, where the river came from, one towards the North, Cleft Valley, which was narrow and steep. The third branch, Marmano Shal, followed the glacier, which at this point turned towards the west and continued as the North Barum Glacier. This part of the glacier consisted of several steep ice-falls running up towards Tirich Mir itself. From both sides steep tributary glaciers came down on to the big glacier.

Between the moraine on the north side of this South Barum Glacier and the moraine of the main glacier was “Old Idyllen,” the camping place on the reconnaissance in 1949. It had the shape of a triangle between the two moraine banks and the mountain. There was a small shallow lake here with large willow trees and a dense grove of willow shrubs along the river banks.

When we arrived in “Idyllen” on the 11th of June it was still spring; the leaves of birches and willows were not yet out. It was quite warm in the daytime, but no sooner had the sun disappeared behind Tirich Mir than we had to get into slacks. The porters had to be provided with clothes. We had dismissed most of them, but were left with about twenty men. The first days were very active. The climbers went on “recces” up the glaciers. Jörstad and I made a survey of our future working field. Naess and Lorentzen stayed in Barum a couple of days, but on the 15th of June they arrived. Naess, who had looked at death’s door when we left him, had recovered incredibly quickly. True, he was not in top form for some days, but it was not long before he was training Streather and Beg to climb. Bugge and Berg left “Idyllen” already on the 18th of June. For a few days we had the difficult job of dividing the stores and repacking the equipment. The climbers left in small parties at intervals, taking most of the porters with them.

Streather had had to leave for Drosh on service matters the day after he had arrived in “Idyllen”; he returned on the 19th of June. Those of us who had thought “Idyllen” would be a peaceful spot, far from all civilisation, were disappointed, as Streather

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brought back a squad of soldiers. These put up three large brown tents and a high mast. A small engine purred noisily and not long after connection was established between Charlie V, our radio station and the outside world. We had also to stomach a gramophone. It had been handed down through the years among the English soldiers in Chitral, and so had the needles. At the end of our stay at "Idyllen" it was impossible to distinguish between "Ave Maria" and Bing Crosby's "Ain't got a dime to my name."

By degrees a kind of daily routine was established. By and by some people disappeared and it became more peaceful. Three soldiers looked after the radio and we had four porters who went regularly between "Idyllen" (Camp I) and Camp II with equipment, firewood and stores.

We tried to keep the camp as small as possible, so as to be able to keep an eye on our belongings.

Kitchen utensils, stores, cases and the "dining-room furniture" (packing cases nailed together by Berg) were moved up to the "research tent." Here we also built a fireplace to take several cooking pots.

The "research tent" was a five-man tent. We had put up four packing cases as shelves and one as a table. There was not much room left after plant boxes, gramophone, records, rucksacks and other personal equipment had been installed. Breistein lived in a two-man tent with the money-bag, containing about 10,000 rupees, as well as the cigarette store. The result was that he never moved twenty steps from his tent.

An ordinary day in the camp started at seven, when the cook of the day rose. This was either Jörstad or me, as Breistein insisted that he could not cook. Water was put on and then the making of *chapatti* or *barata* began. We soon got sick of biscuits and went over to the native form of bread. *Atta*, a kind of wheat flour, and water was worked together to a suitable soft dough, and out of this a kind of flat cake was made, which when fried in fat was called *barata*, or, without fat, *chapatti*. This latter tasted excellent, particularly when fresh.

At eight o'clock the boiling of water and the bread-making was finished, and whoever was asleep was woken up with coffee and gramophone music. At eight the sun appeared, and then it was important to quit the tents. It was not many minutes before they became unbearably hot, and one risked getting so slack that the rest of the day was spoilt.

Breistein got up before the cook to give orders to the porters for the day's work, but for some reason or other he never appeared at the "research tent" before the food was on the table and, in revenge, he was made to wash up.

Jörstad and I were often out all day, and as it was not easy to combine Jörstad's work on the glacier and my botanising, we separated as a rule.

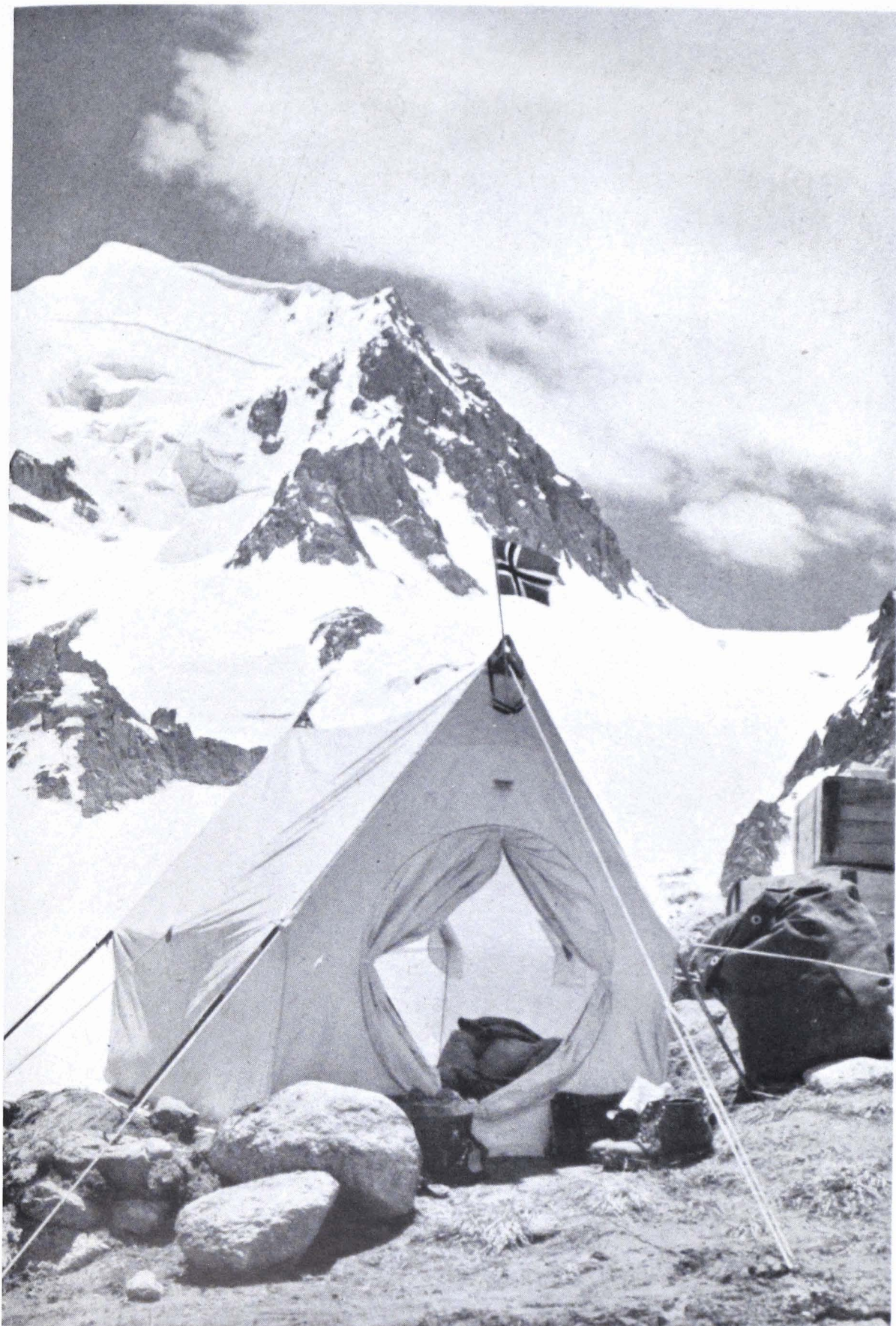
About five or six in the evening we returned to cook the dinner, and while we were busy with the preparations Breistein was occupied with his filming, taking the sunset behind Tirich Mir as a suitable finale to his film.

After dinner and a cup of coffee the scientists withdrew to their tent. It started getting dark already at eight, so we had to work by candle light. The day's observations were entered in the diaries.

Work finished between ten and eleven, and before creeping into our sleeping-bags we made an intensive hunt for all the insects which had been lured into the tent by the lights. Some part of our insect collection, which is now in the Zoological Museum, was caught in this way.

Now and again there was a variation in the even rhythm.

One day, while I was doing some botanical investigations in the lower woods by "Idyllen," I suddenly heard some rustling somewhere nearby. I became alarmed, remembering Streater and Beg talking about bears in these parts. For safety's sake, I sneaked downhill. As I did not hear any more of the "bear," I stopped by a green patch and spread my blotting-paper around me. The small rustling started again, and this time it did not cease. It was obviously wisest to get away. Quickly I pushed flowers and papers down in my bag and made for the camp at high speed.



Camp II was at about 14,000 ft.



Kvernberg outside one of the tents in the Base Camp.

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In the evening when I was looking through my day's bag, I found the "bear." I had caught a huge insect on the way down and as I had no test tube to put it in or anything to kill it with, I had put it in a seed bag, and its scratching at the bag was the solution.

Jörstad and I spent the first days of July in Camp II. We had left Breistein in "Idyllen" with a large pot of *lobscouse*, which we made before leaving.

We were to look after Camp II for a couple of days besides doing some of our own work. We spent one evening with the Hunza porters, who were gay and friendly. They sang some strange songs for us while beating time with their hands. One of them also performed a dance; it was excellent, but became slightly ridiculous because of the costume, which consisted of a voluminous green balloon jacket like the climbers wore, plus a pair of dirty underpants. When the dancing was finished, we took to rolling huge, great stones over the precipice. A noble contest between *sahibs* and porters ensued, in which the latter triumphed by pushing over a stone as large as a small house.

The news of the Korean War was given us by Breistein when we returned. He had not grasped where it was, and told it us as if it was between America and Russia. This was a bit of a shock, and we set to to brew some strong punch of the alcohol I had brought for scientific purposes, to get over it and our exhausting journey back in the dark from Camp II. I should add that my researches did not suffer in consequence.

By degrees we saw great changes in "Idyllen." The summer had come for good. The rose bushes round the camp were in their full glory, and large oxen grazed peacefully on my finest flowers. We had to wire-in the whole camp site with piano wire, which had been brought for other purposes, to prevent the oxen trampling on everything. This fence proved a constant joy to us. The natives had a great respect for it and did not come inside unless invited. We got a certain respect for it ourselves after we had tripped over it several times and fallen heavily.



Apart from the oxen, the animal life in "Idyllen" was not particularly rich. Now and again we saw tracks of mountain goats, ibex and snow leopard. I saw a hare once. On various occasions we caught a glimpse of a small rodent which was probably a mouse-hare. Lizards were the only things in profusion. There were two different kinds: one large and grey, and a small bluish one with red dewlaps. We had great fun trying to catch these. But only once did we manage to do so; they were quite willing to let us tease them with twigs, which they bit furiously.

In the bird line I found we had one magpie rather like the Norwegian variety, many black crows with yellow beaks and legs, and now and again we came upon some large birds which Streather called wild turkeys. They were bad flyers and generally perched on rocks, and when frightened they took off in a majestic glide. Uphill they ran on the ground.

There were not many small birds, though swallows were to be seen in steep mountainsides, and down in "Idyllen" we had a small tit with a tuft on its head.

Our most uncanny experience on the whole trip was, without doubt, the earthquake.

We were sitting in our tent working as usual, one evening about ten o'clock, and Jörstad was helping me to put a strap round a plant press when he suddenly said, "The ground seems to be shaking." "Nonsense," I replied, rather frightened because he looked so serious. "Sit down," he shouted and I obeyed. At the same moment there were some tremendous quakes. White in the face, we looked at each other. Rocks began falling from the mountainside. We blew out the candle and rushed out. I took hold of a sleeping-bag and a rubber mattress, thinking that we had better cross the river where it was safer against landslides.

Over by Breistein's tent we saw a flickering light from a torch, and we heard him calling, "Who goes there?" "Earthquake," yelled Jörstad. Breistein would not believe this. He had gone to sleep and thought someone was standing outside the tent shaking it. The money-bag in his tent had made him very suspicious. He

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was always anticipating robbery. In his bewilderment, he thought that the falling stones were people running away.<sup>1</sup>

The whole thing lasted only a few minutes—perhaps not even that—but we were badly shaken. I did not sleep well the rest of the night and woke up at the smallest provocation.

A few days after this experience Breistein went with Chaudri and Beg to Chitral. Jörstad and I were left with two porters and three soldiers, who looked after the radio station. It was a bore for us, as it meant that one of us had always to be in the camp on guard and see that the porters got their rations at the right time. Besides this, we had to nurse all the wounds and indispositions of porters and soldiers. They were great hypochondriacs. If we gave them salt tablets or glucose and said, "Vez" (medicine), they recovered at once.

Their rations were as follows, per man per day:

4 cups of *atta* (wheat flour)  
 $\frac{1}{8}$  cup *shoker* (sugar)  
 $\frac{1}{3}$  cup *ghee* (fat)  
1 cup *dal* (lentils) or *grinj* (rice)  
1 spoonful *chai* (tea)  
1 piece *trup* (block salt)  
2-4 cigarettes.

From the flour they made *barata* or *chapatti*, which they ate with boiled rice or lentils. Tea they drank as a rule with salt instead of sugar, which they could not usually afford to buy. One day the radio telegraphist made me taste this drink; it certainly was not very good, but is supposed to be an excellent drink in hot weather.

One day Purdum Khan, our faithful old porter, went up to Camp II with Jörstad and Lorentzen—the latter had been down in "Idyllen" for a few days. He returned the same day with a

<sup>1</sup> Seismologists in Bergen reported later that the epicentre of this earthquake was 36° N. 72° E., almost exactly where we were.

letter from Jörstad reporting that they had found no people in Camp II, but that there were bear tracks between the tents.

A talk with Purdum and the radio telegraphist cleared up the mystery of the tracks. It was a snow leopard. This did not seem much better, as we were told at the same time that two large oxen had been killed by leopards on the other side of the glacier a couple of days before.

Purdum was a good example of how these mountain folk love flowers. With the letter he handed me a small bouquet of flowers. To get a certain colour combination, he had picked violet primulas in Camp II and some yellow flowers down in "Idyllen" and tied them nicely together with straw.

Towards the end of our stay we got a constant supply of apricots and eggs from Barum. It was nice having fresh food again, but one can have too much of a good thing. When the people in the village heard that we bought fruit, they arrived in a steady stream. We ate apricots morning, noon and night. In the end we had so many of them that they went bad. We made apricot jam, a feast with newly fried *barata*. One day we had fresh ibex meat too. The father of one of our porters and the radio-telegraphist went off hunting early one morning. We could hardly believe our eyes when they returned in the evening with an ibex. It had been shot at 300 yards with an ancient muzzle-loader. The hunter was a bit of a character, completely imperterbable and surly, with bushy eyebrows and a goatee beard. With his 6-ft. gun over his shoulder, powder-horn and a long hunting knife in his belt, he let himself be photographed with the ibex head under his arm. Usually these people were impossible to photograph. They became stiff and solemn and stood rigidly to attention.

One morning, mail and food arrived from Breistein in Chitral. From the letter we gathered he had only sent one porter, whereas two arrived in the camp. One solemnly delivered the mail and the other the food. They thought they could take us in. When they realised that their trick had been seen through, they gave in



The porters resting on the way up to "Idyllen." Tirich Mir in the background.



Noon at 14,000 ft.

Already lack of appetite was felt; only the most appetising delicacies could tempt one.



Captain Streater with the Norwegian colours on his rucksack climbing where the frost turned the snow into a kind of staircase, easy to walk on before the sun made it hopeless in the middle of the day, when the climbers sank down in the wet powdered snow.

## THE "IDYLL"

immediately with broad grins and were satisfied with one man's pay.

Towards the end of July the days in "Idyllen" became more and more anxious. We were expecting signs of life from the climbers at any moment, but we heard nothing for a long time after we had been expecting news. One evening we saw a light from something which might be a fire in Camp II. We signalled with a torch and got a reply.

We knew now that there was very little chance of reaching the summit, as every day brought the monsoons nearer. During these it would be fatal to make an attempt. If a storm should overcome the climbers on their way down, they might easily suffer the same fate as the Germans on Nanga Parbat, or the Frenchmen at Anapurna. We naturally all wished that the goal would be reached, but also hoped the climbers would take no risks. The stay in the upper parts of Tirich was dangerous enough in itself. We wondered how the earthquake had affected those higher up and whether it had started any avalanches.

The climbers had announced beforehand within what time limits the attack on the summit would have to be made. It was so near this limit that the excitement was becoming almost unbearable.

## UP TOWARDS THE BASE CAMP

By HANS CHR. BUGGE

*The porters' first performance on ice and snow—Our only attempt on skis—Midsummer night's bonfire 15,000 ft. above the sea—A veteran from Nanga Parbat—The great ice avalanche—A narrow escape.*

ON the 15th of June everything was ready for beginning the reconnaissance up the South Barum Glacier to Camp II, which we felt ought to be put on top of the lower ice-fall. On that day the whole expedition was collected in "Idyllen" for the first time since we left Chitral. Not everyone was rested or acclimatised, but as Berg and I felt up to it, it was decided that we should try to find the best route up to Camp II the next morning. Beg wanted to come too.

We got up early next morning, starting off about 6.30. We crossed the tributary moraines of the main glacier near the tents and went through a lot of loose debris and gravel at the back of the moraine, before coming out on the ice. The porters would not like this route before we could get a trail broken for them, but this was put off until later. The main glacier offered no complications; it was quite melted, with much gravel and stone on top, and it was always easy to find a foothold. Even porters wearing rubber boots should manage all right here. It was easy to avoid such crevasses as there were.

As a beginning, we decided to try to find a route up the South Barum Glacier as direct to Camp II as possible. The glacier was chiefly one great chaos of ice from near Camp II till it joined the main glacier about 3,500 ft. below. But the ice-fall was fortunately only broken up completely in the westerly part of the glacier. On the east side there were large smooth plains covered

with snow. Although we could see plenty of crevasses from below, we felt this would be a good place to get up.

The glacier was all right at the bottom. We got on to it from the main glacier without difficulty and advanced on thawed ice, but it was covered with so much stone and gravel that it was easy to get a foothold. By degrees the glacier became steeper and more slippery and soon the ice-axes had to be put into use. Before long it was obvious that this was no track for the porters. We then began to work our way up to the right, or eastwards, but continued still on the west side of the glacier's mid-moraine, which juts out as a sharp ridge in the lower part of the glacier. Soon the glacier was covered with snow and we had to criss-cross along to avoid crevasses, but we reached the less steep part of the glacier without much difficulty, and then the ascent became much easier. From the upper part of the glacier some large boulders rolled towards us with considerable speed, but this was the only danger we encountered. The snow became firmer to walk on, and, ascending a steep, high snowfield further up, it was only with the greatest difficulty that we could get up without using ice-axes. At 1.30 we got up to where it had been decided to put Camp II (14,500 ft.), about 3,500 ft. higher than "Idyllen."

We found cairns from the previous year, and several places where we could quite easily dig out a space for the tent. The camping site was on the east side of the glacier and about 350 ft. above it. Those camping sites that were possible were on the edge of the precipices, and we agreed we should be very exposed here in strong wind, but there was no choice; we should have to guy the tents extra firmly instead. The site had this great advantage: that we could pitch the tents on the bare ground. It proved a popular and lovely camp, dry and warm, with a mass of wonderful flowers between the stones and a magnificent view south to the mountain on the other side of "Idyllen" and north along the glacier towards the many steep peaks surrounding it. We could also see the tents down in "Idyllen," and in the evening after dark we saw the fires.



Berg and I soon went down again to Beg, who had stopped a few hundred yards below. It was the first time Beg had been on snow and ice requiring ice-axe and rope, and he did not hide his excitement.

We went down the glacier further east than we had come up it and found a very good way down as far as the bottom part of South Barum Glacier. Here it fell steeply down on the main glacier and we would have to cut steps if we wanted to get down there. We chose, however, the moraine chaos just below "old Idyllen," where Naess and Randers Heen had camped the previous year. Here we got into scree of the worst kind: stones of all sizes lying helter-skelter yards deep, and gravel so loose that there was danger of starting an avalanche at almost every step we took. It would be impossible for the porters to get up here, and we were facing the possibility of either having to try to find a road up along the middle moraine or taking the round-about route via "old Idyllen," as they had done the previous year.

On the 17th of June, Berg and I went out again. While wandering across the main glacier towards the mid-moraine on the South Barum Glacier, we agreed that it would be hardly feasible to bring porters up along the moraine. The sides of the moraine were steep and sure to be loose, and it would be a tough job to get up with heavy packs before a trail was prepared. We therefore decided to try to make a trail up through the debris mass where we had come down the previous day. It was a warm job in the grilling sun, but it was so loose that it was easy to make a trail with plenty of the best gravel at hand. After four hours' hard work, we had made a fine trail. Jörstad came and helped to finish it on his way home from his studies.

We returned home at two o'clock and could announce that the road to Camp II was ready for the porters. We had cairned the main glacier carefully as far as the trail, and further up the South Barum Glacier as far up as it was possible to find stones; further up it was only necessary to follow the tracks in the snow. This cairn-making cost me my excellent ice-axe. As I was making

a cairn on a large rock out on the glacier, one of the cairn stones slipped down on to the ice-axe, which I had left on the ground, and broke it like a match. It is always sad to lose an ice-axe, and this was a specially good one, which I had had for several years. A good ice-axe becomes a real friend when one has had it on several trips; so it was with real sorrow I put the bits in my rucksack. Fortunately, I was able to take over Randers Heen's axe, which he had sent with us, and this was almost as good.

We were very pleased at having got a comparatively easy and safe trail to Camp II. This was the first stage for the porters on snow and ice. It was important that they should trust us, not immediately get on to a dangerous and difficult route, and be able to spare their energy for the exhausting tasks to come.

It was decided that Berg and I should go up and establish Camp II with every available porter the following day. We had only got six porters left, one having returned home. We fixed all the packs in the evening and gave out clothes to the porters. Hitherto they had managed with their own rags, but as they were going across the glacier, we gave them boots, socks, shirts, overalls and jackets. They were also given sun-glasses. It was amusing to see their delight in their equipment. When everything had been issued, they lined up very proudly, and smilingly gave us a military salute before marching over to the cave where they spent the night.

We left about six next morning. Every porter carried 60 lb., and although it was rather difficult across the moraine before we got on to the main glacier, there was not one who grumbled.

All went steadily and well until we reached the steep snowfield far up the South Barum Glacier. Here we had distinct proof that many of the porters were unaccustomed to snow. They slipped and fell over time and again, placing their feet quite wrongly. To get them up along with us, we had to dig steps in the snow with the ice-axes, and we discovered that it was not like working on ice and snow in Norway. We quickly became short of breath and had to work slowly.

At noon we arrived where we were to establish Camp II. The porters were rather tired, and we understood they were complaining about one thing and another. We also gathered that they thought 2 rupees a day was far too little pay. This was the wage we gave the porters, plus their clothes, on the first stage from "Idyllen." They also complained of the packs being too heavy, that the boots did not fit, that the socks were too short, exposing their legs, blisters on their backs, etc. . . . We made a note of all the complaints and all that would have to be altered, and sent the note down with the porters. We also advised them to start as early as possible in the morning so that the porters could reach Camp II while the snow was still relatively firm to walk on. We introduced, as a regular routine, this sending down of notes with the porters, so that the chaps down below would know what the day had been like and any alterations required.

The porters rested for half an hour; then they went down in a body. They refused a rope, but took an ice-axe. It was with some anxiety that we sent them off, as it was the first time the porters had gone alone on the glacier. Firmly we admonished them to keep together and help each other. All went well; they arrived together at "Idyllen" about four in the afternoon, confident and in very high spirits.

The porters had not wanted to eat anything up with us. The fast had just happened to start that day and they were not supposed to eat anything as long as the sun was up. We had been very anxious about the effect of this on the porters, but it did not turn out half as bad as we thought. Not all the porters took fasting seriously. Those who lived far away—for instance, in the town of Chitral—had the queer idea that they were allowed to eat so far away from their homes, and the higher they got up the glacier, and hence the farther away from their homes, the more certain they were that this was all right. To start with, they ate a biscuit now and again on the sly, but later on they went over to complete meals in the daytime too. The porters from the nearest districts also thought that it was all right for them to eat while

the sun was up when they were in the higher camps. But even when fasting strictly, all the porters were able to carry their packs effectively. All the same, we did take the fast into consideration and never made the stages any longer than that even the slowest porter could manage the ascent in four to five hours.

As mentioned earlier, we had only six porters at our disposal at this time, and Berg and I agreed, after having seen the snow and ice conditions up towards Camp II, that we ought to force the carrying up there as much as possible and try to get hold of many more porters. This stage was very exhausting for the porters, and we could not risk wearing out the best of them at this early stage. Besides, we had got the impression that the snow conditions on the glacier altered quickly and that we might get much more difficult conditions for the porters, with many crevasses and much slippery ice.

When the porters had gone we ate a hearty lunch, pitched the tent and enjoyed being alive in this wonderful camp. However nice and friendly life in "Idyllen" had been, we felt much better up in Camp II. The surrounding mountains, the gentle breeze, the sunshine, the starry sky, the peace and the quiet all contributed to make life exceptionally good. Although at first the altitude made us wake up heavy and headachy, as a rule this feeling disappeared after breakfast, and later on we were able to enjoy life to the full, and when with Berg it all seemed doubly enjoyable.

On the 19th of June we both felt rather feeble, but became more energetic after breakfast. We took things quietly until 10.30, when we saw the porters appear on the glacier below. Lorentzen, Nybakken and Beg arrived an hour later with seven porters. Everything had gone very well with the porters, but the packs were somewhat lighter than the previous day. Nybakken had been filming quite a lot on the way up. The porters were given sweets and cigarettes, and a couple also had tea and biscuits, while the others were still fasting.

After Beg and the porters had gone down and we had pitched another tent, Berg and I made a short reconnaissance up the

mountain slope above the glacier to see where it would be best to get down on to the glacier. In several places along the mountainside there were hollows filled with snow, where it would be possible to get down, but it was not easy to see where would be best. We decided to look into it more closely the following day.

On that day Streather arrived at "Idyllen" bringing a dog, a gramophone and three scouts, who brought a radio transmitter and receiver. Simultaneously, ten porters arrived with provisions for the porters themselves.

The following day Kvernberg arrived with sixteen porters. We were fortunate enough also to get up the ten porters who had come up from Barum with stores for the porters the previous day. Before the porters and Kvernberg returned there was a lot of photographing and filming; it might be a long time before so many of us were collected together again.

After dinner Berg and I made a reconnaissance up the glacier towards the next camping site. We went down on the glacier in the first hollow just behind the tents, but the exit on to the glacier was not too good—a mass of huge crevasses completely or partly covered by rotten snow. It could hardly be worse, and we were aware that it would be impossible to bring the porters here. However, we continued upwards and soon the glacier was much better to walk on, while further up it was very good. In spite of the grilling sun all day, we did not sink in very far. We continued to the top of the sloping glacier fall further in on the glacier about midway between Camp II and the upper ice-fall. We realised then that we might put the next camp at the foot of the upper ice-fall. On the return trip we went into the mountain quite far up the glacier, where we found a good place, but it would be too far for the porters to walk from here in difficult, sloping screes. We thus agreed to take the porters down a snow-field nearer Camp II, a bit further up than where we had gone out on the glacier. It became cloudy later in the evening, and about nine o'clock, when we were in our sleeping-bags, there was a very strong wind which shook the tents considerably. During the

night it changed from snow to rain. When we woke the next morning both Berg and I were floating in our tents; only the inflated rubber mattresses had saved us from getting our sleeping-bags soaking wet. There was wet snow on top of the tents and up along the sides, and water was seeping in through the canvas. We managed to bale out the worst and lay down to wait for a change in the weather, as we did not believe the bad weather would continue, and, sure enough, at eleven o'clock the sun was shining again. We then had a tough job getting the tents and all our clothes dried. They had rain down in "Idyllen" too and the porters refused to go up before it cleared. They even wanted to return home and demanded their pay, but Streather knew them and said that if we could only delay them for a time, while we saw what the weather was going to do, they might easily stay after all. In Chitral rain before seven generally meant sunshine before eleven. The interval was occupied in taking care of a sick porter in the best possible manner. To begin with, he wanted to return home to die, so he said, but Streather managed to stop him, and after he had been given a sleeping-bag, a tent and a morphia tablet, he settled down. When the sun came out at eleven o'clock and the porters had seen how well the sick man was being tended, they declared themselves willing to ascend to Camp II after all. Kvernberg then went up with ten porters. They got into a thunderstorm *en route*, but there was not much rain and the porters made no difficulties. They returned down again alone. Kvernberg remained with us.

On the 22nd of June Naess and Beg came up with fourteen porters and some equipment for the porters, as some of them would now have to go further across the glacier. We chose five porters to go with us the following day and establish Camp III. In addition to the clothes which they had been given in "Idyllen," they were now given some underclothes, food and cooking utensils, too. We helped them to pitch their tent. It soon became evident that the porters were not capable of looking after a cooker, and we were not so flush with white spirit that we could

let them muck about with it. It was better to let them have firewood. In the days to come we put a porter on to regular firewood transport between "Idyllen" and Camp II. Later on we left the porters in this camp to make their own food without interfering; this worked well. We just gave out their daily rations of flour, fat, tea, sugar, salt, lentils, rice and cigarettes.

It was a great help to us that we had so many porters these days, otherwise the transport from "Idyllen" to Camp II would have taken too much time. The days we gained in this way proved extremely useful later on.

On the 23rd of June we started for Camp III. We had arranged five porter loads the evening before, and Berg and I started about seven in the morning, each with a reasonable rucksack. The plan was to get far enough ahead of the porters to blaze a trail up the ice-fall before they reached so far. We hoped to be able to get them up to where we had meant to establish the Base Camp, in one day. Personally, I did not believe we could do this; all the same, we wanted to keep the possibility open.

We were just below the upper ice-fall by about ten o'clock, and it was quite obvious that we could establish Camp III there. Until now we had doubted whether we could reach as far in a day; this depended very much on what the glacier was like to walk on.

The porters were taking a long time, and when we realised that we might not get them further than to the foot of the ice-fall, we emptied our rucksacks and went down to meet them. We had to go quite a long way before we met Kvernberg, Lorentzen and Nybakken with the five porters. They had experienced great difficulties with the porters in the scree before the glacier. The porters had complained very much about this part. Something would have to be done here.

We all went up together. Nybakken, as usual, used the opportunity to do some filming while so many of us were collected together, but the heat and the soft snow made us rather impatient, so he didn't get many feet. To get us all to stop whenever he

wanted to do some filming proved a bit of a problem for him all the time. We were often impatient to get off, and there was always some risk involved in worrying the porters to stop *en route* when it did not suit them, or asking them to go up and down several times until the photographer had got things as he wanted them.

We were up below the ice-fall again about midday, and an hour later all the porters arrived except one. This was the youngest Chitrali boy who later proved so good. He had stopped a bit further down with stomach pains. Berg went down and carried up his pack. All the porters were rather exhausted and so were the *sahibs*. The heat and altitude were beginning to tell. About two o'clock when everybody had gone down again, Berg and I pitched the tent, and Camp III was established at 16,000 ft. The tent stood several hundred feet from the foot of the upper ice-fall on a firm, smooth snowfield. At the time we did not dream of the possibility that the thaw would be so heavy that the camp would have to be evacuated two weeks later, as with the melting of the snow dangerous crevasses appeared everywhere.

Among the equipment which had come up with the porters were two pairs of skis and sticks. Lorentzen and Kvernberg had used them further down the glacier, and Berg and I had some fun with them later in the afternoon. But this was the only occasion on which we used skis.

On the way up we had plenty of opportunities to study Tirich, and we were all becoming more optimistic after what we had seen. The distance was still too great for any details to be observed, but it did not look impossible to get up the ridge from the top of the S-glacier, and we thought that both this and the south-east ridge ought to be attempted.

Later in the evening we began to feel the effect of the greater altitude and of living on the ice. There were several degrees of frost immediately the sun disappeared behind the mountains; it was strange to think it was Midsummer Night. We celebrated it with a small bonfire of paper and wood-wool on the ice. As our



bonfire burnt down, my thoughts went to Norway and all the bonfires round the Oslo Fjord.

Soon after, we were in our sleeping-bags and went to sleep at once as usual. During the night I woke suddenly at a curious sound. I peeped over at Berg and saw that he had woken up too. We heard a regular scratching sound outside the tent, as if an animal was scratching the ice. There had been some talk of bears in these mountains, and both Berg and I immediately concluded that we were having a visit from these bears. We were not particularly pleased, being far away on a deserted glacier, without any means of defence. But the scratching continued and something had to be done. Carefully we opened our sleeping-bags to be ready to defend ourselves with our naked fists, at least; then Berg plucked up his courage and put his head out of the tent opening, flashing his torch about. He could not see a thing and walked out on the snow, and I followed. There was still nothing to be seen near the tents, but a couple of hundred yards away we saw a dark shape. We agreed this had not been there earlier in the day and that it must be a bear. Berg was still the courageous one and walked towards it, shining his torch, but returned crestfallen to report that it was a stone. By degrees it dawned on us that we had been mistaken. The sound was quite simply the movement of the glacier beneath us, rhythmically slipping along. After we had returned to our sleeping-bags, the sound still seemed like an animal scratching outside. We were not sorry to have been woken up, however, as we beheld a moonlight night so magnificent that it is impossible to describe. There was not a breath of air nor a sound; only a fantastic world of mountain peaks bathed in the most intense white moonlight. Quite moved, we both remained outside for a time, and, feeling very small, we crawled back into the tent.

On the 24th of June both Berg and I were feeling very feeble; later in the day we became more energetic. The sun did not bother us as much as usual, as it clouded over, and we also put up a sun-sail over the tent to make it bearable to stay in, even in the

middle of the day. However, it was not possible to do any reconnaissance up the ice-fall on that day. Even the 300 ft. to the water-hole seemed a tremendous effort; we had to sit down and rest afterwards.

About midday Kvernberg and Lorentzen, with nine porters, arrived from Camp II. They had found the ideal way down from the camp to the glacier the previous evening, and had made a good trail here, so the porters would have no difficulty with this stage. They reached our camp in great form, except for one who was sick. All went well down again too. They were singing and in extra high spirits. Kvernberg and Lorentzen went down again too. Naess, Nybakken and Streather received them in Camp II. Beg was still in "Idyllen."

I did not sleep much on the night of the 25th of June. I was still not acclimatised and did not automatically breathe heavily enough in my sleep. The result was that every time I went to sleep I became short of air, woke up and had to take a few deep breaths. It went on like this all through the night, and even after twelve hours in my sleeping-bag I still felt sleepy. Several of the others were worried in the same way before they got acclimatised.

We had meant to get up to the ice-fall, but at 9.30 Naess arrived from Camp II, followed soon after by Lorentzen, Kvernberg and Streather with seven porters, and we spent the rest of the day talking. Streather told us about India and Pakistan. Nybakken was filming in Camp II.

Berg and I wanted very much to get higher up, but this was not much use as long as we could not get the porters with us, and those who came up this day were going down again. Naess, however, continued up the ice-fall and along the glacier plateau, marking out the site for the Base Camp from his experiences of the previous year. He followed the same route as in 1949, on the right-hand side of the ice-fall, where it was easy to get up, apart from a couple of exposed places with treacherous ice-bridges. About three o'clock Naess returned very optimistic about the

south-east ridge. Streather and he returned to Camp II with the porters. Streather was going all the way down to "Idyllen" the following day to arrange about provisions for the porters. We made an attempt at the art of cooking, using the low-pressure cooker for the first time. It worked excellently and was a great help in the time to come; we ought to have had several more.

On the 26th of June Berg, Kvernberg and I went up the ice-fall with some equipment. We took an hour and three quarters to get to the place where we thought the Base Camp ought to be. We moved it about 1,200 ft. further down than Naess had suggested, more east, towards the side of the glacier. When we returned to Camp III our five Chitrali and three Hunsa porters had arrived. They brought a message that Naess had had a relapse and was in bed with a temperature in Camp II. He recovered after a few days.

Before we left Norway, we had asked the Pakistani authorities if they could try to get us three experienced porters from the Hunza district, where we knew they had good porters. We decided that it was best to use these, as we would have to keep entirely to Mohammedans. It would have been useless to get Indians because of the bitter antagonism between the Moslems and Hindus at this time. We were told it might mean murder the very first night. The three Hunza porters we acquired were certainly experienced. One of them had been on the English expedition that tried to climb Istorá Nal and another one had been with the Germans during their attempt to climb Nanga Parbat; they were, however, rather on the old side. Later on it appeared that one of them had a bad knee and he soon had to be discharged, but the two others proved very useful and it was these two and the young Chitrali porter who finally made it possible for us to attempt the summit.

We had now got two groups of porters up on the glacier, the five Chitrali and the three Hunza porters, and it was inevitable that there was some rivalry between the groups. We had primarily asked for Hunza porters with the idea that they might do the

carrying between the highest camps, but we were still well satisfied with the five Chitrali porters and did not want to get rid of them. The three Hunza porters also required some more acclimatisation than they had had hitherto. It was therefore decided that the five Chitrali porters should spend the night in Camp III and after that do the carrying between this and the Base Camp, while the Hunza porters were to be used between Camps II and III.

The rivalry between them was very useful to us. Every time we had difficulties with the Chitrali porters we told them they would have to change places with the Hunza porters, which meant working lower down. They immediately became very anxious to go on with the job. When later on in the higher altitudes the Hunza porters complained of the cold and headaches, it acted as a very good incentive to intimate that the Chitrali porters ought to have another go again. We had certain difficulties about pay, as the Hunza porters said they were entitled to higher wages than the Chitrali porters, on account of their greater experience. The Chitrali porters would not hear of this as long as they were doing the same work as the Hunza porters. Finally, we let all the porters at the same height have the same pay; this increased with the height from 2 rupees plus the clothes at "Idyllen" to 5 rupees per day between the higher camps. The porters were also paid on the days they rested in their tents. By incessantly increasing the pay, we managed to lure the porters higher and higher. We also tempted them with better and warmer clothes the higher they got. There was always a crisis in the morning. Almost every day they awoke with headaches and frozen with cold, but after the usual round of aspirins, tea and sun-cream, the desire awoke for yet another day's carrying. It is nothing short of a miracle that they reached as high as they did when one recalls all the various discomforts they suffered even at the lower camps and all the complaints we received from them.

We looked after the five Chitrali porters who were to spend the night in Camp III as best we could. They had brought the

porters' tent and sleeping-bags from Camp II, and we gave them wood-wool and empty sacks as an underlay. They had brought with them the usual porters' provisions.

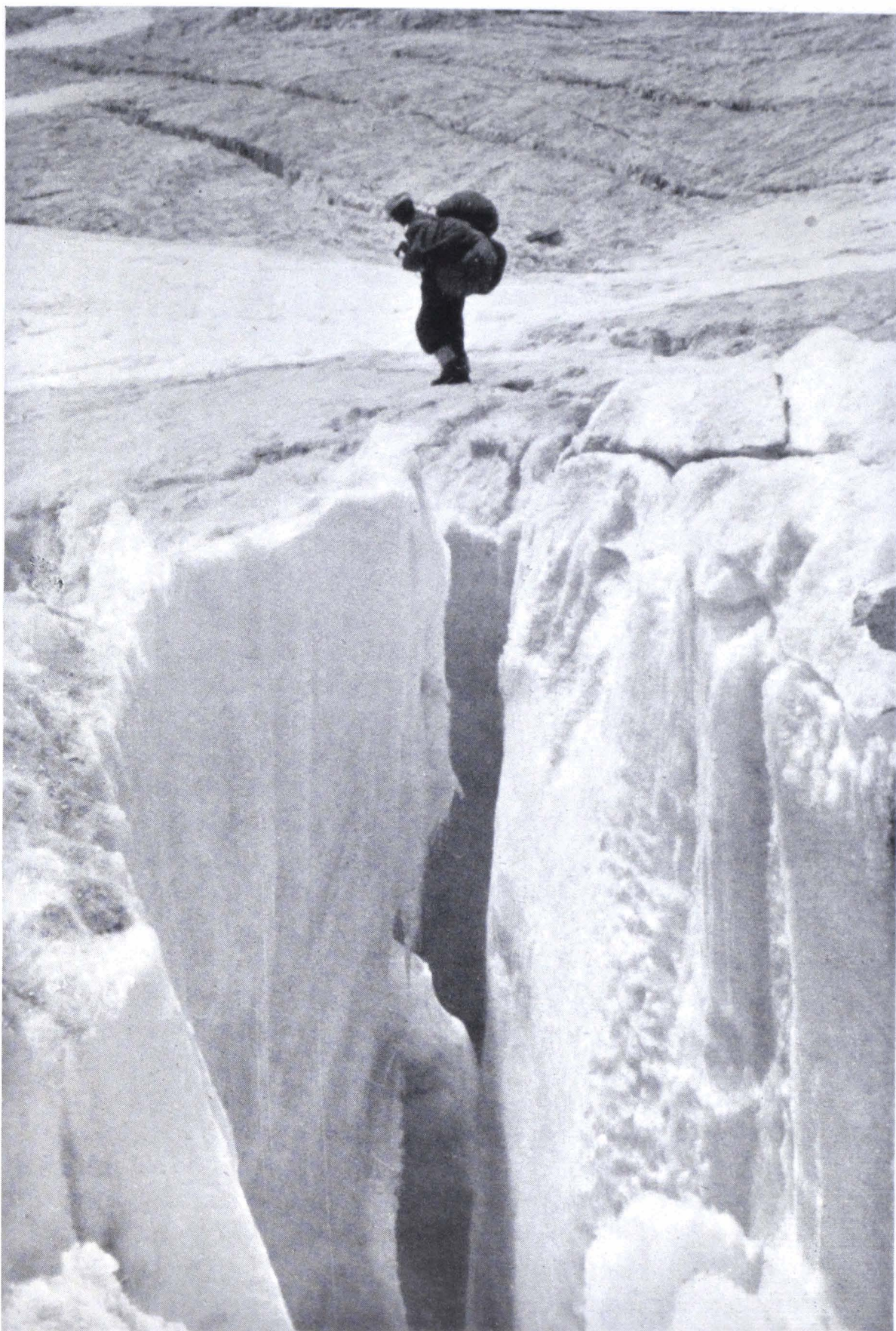
Later in the evening we dug out a kitchen in the snow to get a sheltered place for the cookers and good shelves for all the provision boxes. This proved very successful, and we later did the same in the Base Camp. The two ice-saws we had brought were very useful.

On the 27th of June Berg, Lorentzen and I went up with five porters to establish the Base Camp (Camp IV). We roped the porters together and took two hours to the top of the ice-fall and then about another hour to where we had decided to establish the camp. On the whole, the porters managed quite well, but we realised that with them it was no good starting so early in the morning while the snow was still hard and slippery. It was much better after the sun had shone for a while. But it was no good waiting too long or it got too soft.

Lorentzen returned to Camp III with the porters, and there he met Naess, who had come up from Camp II with the Hunza porters.

After lunch Berg and I pitched the first tent in the Base Camp. This camp had a magnificent situation at about 17,000 ft. To the north we had Tirich Mir, 8,000 ft. above our heads. East and west of the camp there were high, wild mountain ridges. To the south the South Barum Glacier went down towards "Idyllen." Across the glacier there was an impressive view towards a range of sharp peaks. It was as if we had been placed in a colossal pan, and in the middle of the day it became unbearably hot, as there was hardly a breeze. The reflection of the sun on the snowfield was so fierce that we had to be very careful, using sun-specs and cream.

There were continuous avalanches around us. There was no fresh snow to speak of while we were up the mountains; hence it was the hanging glaciers that produced the avalanches. The experience of earlier expeditions seemed to be that the avalanches



A crevasse on the way down from Camp III.



One of the difficult passages. Ice bridges could never be trusted; avalanches swept them away, or they broke down as a result of crevasses that could not be seen on the surface.

in the Himalayas usually happened soon after sun-rise or after the sun had just set; but we found no such regularity. Large or small, they seemed to happen at all hours of the day and night. We soon learnt to estimate the size of them from the sound when we were inside the tents—only seconds of roaring were sufficient for us to gauge the size of the avalanche.

Kvernberg paid us a visit later in the afternoon. He arrived with four biscuit tins. He had taken only about one hour and twenty minutes from Camp III and returned straight away.

The following day Naess and Kvernberg arrived with five Chitrali porters. We discussed the best use of the porters in the days to come and who was to keep an eye on Camps II and III. Lorentzen was in Camp III and Nybakken in Camp II, but it was time for Nybakken to get higher up to do some filming. As Jörstad was spending a couple of nights in Camp II, this was possible. Later on the porters would have to manage on their own in this camp.

During the afternoon Kvernberg and I made a reconnaissance up towards the south-east ridge. It was not as steep as we had expected and the snow was quite firm even in the middle of the day. It had formed into small waves or furrows, as Naess had described from his trip the previous year, and it was impossible to slide down. But it turned out to be so firm that we did not sink into it. Further up there was not so much snow, and where we were near to rock there was only a thin layer of snow on top of the ice, so we had to use our ice-axes. We also put on ropes for safety's sake. It would not be difficult for us to get up on to the ridge, but we realised it would not be easy for the porters with heavy packs. It would certainly mean that we would have to keep an eye on them, and keep them on a rope as soon as we got up towards the ridge. It was sure to be a slow and tough job for us. Neither of us was very enthusiastic about this route when we turned and went down to the camp again. It became windy towards the end of the trip and miserably cold when the sun disappeared behind the ridge.



On the 29th of June I went down and met the porters on the ice-fall. Lorentzen and Streather came with them, so it had not been necessary for me to meet them. Streather brought with him a large mess-tent. It was very heavy, and to begin with we thought it would be a bit too much to lug this tent all the way up to the Base Camp, but we were mistaken. The tent turned out to be quite excellent. It was so large that there was room for all the stores in it, besides kitchen and eating space for everybody. The tent canvas was so thick that the sun did not penetrate and it kept cool all day; it proved a very popular place on our resting days.

Naess and Kvernberg made a fresh reconnaissance up the south-east ridge. Naess went up on to the ridge, where he found quite a lot of snow and ice and difficult conditions for the porters. He also thought we should have a tough job taking them up this way. It would be easier later in July, when much of the ice and snow would have melted.

Later in the afternoon we discussed further plans. We all agreed that we should attempt to get up the S-glacier and the south ridge first, if the reconnaissance here proved successful. It was decided that the climbers should draw lots for who should take part in the first attempt. As Lorentzen at that time did not wish to take part, there was only Berg, Kvernberg, Naess and I who were in question. The assault was to be made by two of us, supported in the rear by the two others, and the porters as well if possible. The objection to drawing lots was that at this point it was quite unpredictable who would be in best form further up; but we agreed that whoever drew the number should stand back for the next if he detected symptoms of altitude deterioration or felt indisposed in any other way, making it necessary to postpone the assault for some days. The advantage of drawing lots was that everyone from now on would have a definite task during the days to come. The two who were attempting the summit could save their strength as long as possible, whereas the two others might sacrifice their last reserves.

We then drew lots with great excitement, and it was the two youngest, Berg and Kvernberg, who were to have the joy of making the first assault. We agreed, however, to wait for a day before beginning the reconnaissance of the S-glacier, both because we wanted to get up more equipment from Camp III and because we would sacrifice one day for filming in the upper ice-fall below the Base Camp. Later in the evening Streather and Lorentzen returned to Camp III.

The 30th of June was a day we shall not quickly forget. I was still sharing a tent with Berg, and at about six o'clock in the morning we were all woken simultaneously by the noise of a big avalanche. Naess was yelling to us to get out of our tents. Berg had only just managed to open the tent when a tremendous snowstorm enveloped us. There was nothing else for it but to close up the tents quickly and to slide back into our sleeping-bags and hang on to the tent as best we could. It was not difficult to understand that it was the snowstorm from a colossal avalanche which had struck the camp. During the seconds that followed it was impossible to tell whether the avalanche itself would reach us, and we spent some horrible moments. But the storm died away and we were able to go out and have a look at the result. It was a sad sight. The large mess-tent had been struck down, our tent had split, Naess' and Kvernberg's tents were partly collapsed and that of the former filled with snow. Snow covered the whole camp.

Naess was just about to get up when the avalanche came; he managed to get out of his tent in underpants and vest without socks. He saw the avalanche cloud roll along towards him and tried to run away from it as fast as he could, but the snow cloud overtook him and he returned covered with snow and shivering with cold.

It was a colossal ice avalanche which had come down the main precipice north of the camp. It had flowed over the glacier plateau with enormous strength. Lumps of ice were strewn far below our tents over an area of about two to three square miles. Fortunately, our tents were so far out on the side of the glacier that the lumps

had stopped about 50 yards from the tents. Later on we found one of our large sacks several hundred yards further down, where it had been deposited by the wind.

We had plenty of work for several hours, tidying up and getting the tents pitched again. We agreed to move our personal tents further down, while we decided to leave the mess-tent where it was, as it would mean a lot of work to move it and get it fitted with shelves, tables and a cooking place. We postponed moving the tents to the following day, as Nybakken was going to do some filming down by the ice-fall, and the rest of the day was occupied with this.

The following day we moved the tents further down the glacier. Just as we were discussing where to put them there was a large avalanche from the main precipice; once more the mess-tent was enveloped in the avalanche smoke, but remained standing. Lorentzen and Streather came up from Camp III with four porters, and about midday Berg, Kvernberg and Naess made the first reconnaissance up the S-glacier. Thus began the first assault on the summit.

## THE FIRST ATTEMPT

By PER KVERNBERG

*With raquettes on our feet and ice-axe in each hand—Camp site on the edge of the precipice—Mental case transported by sack—Danger of sunstroke and frost-bite—Pneumonia.*

NONE of us was sorry that we had had to give up the south-east ridge for the time being. If we could get up the S-glacier and further along the ridge, it would be a far simpler solution, as this would lead us directly up the west peak, which is the highest on Tirich Mir and hence our ultimate object. But if we had followed the south-east ridge we could not have avoided the east peak, which is a few yards lower than the western peak. From the east peak we should have to climb down into a gap and from there up to the main peak. We could not have avoided this gap, and we might have met great difficulties here. At such altitudes one has no strength to fight unaccommodating crags or other complicated defence works with which Tirich might be equipped.

On the 3rd of July we were ready to make a further advance; but much of the day had passed before we got going. The job of loading up took time and the grilling sun on the S-glacier also made us postpone the start.

Not until 3.30 in the afternoon did we get off. There were ten of us, Berg, Bugge, Streather and myself, with six porters. We took the course towards the S-glacier. There had been some colossal slides on the slopes below Tirich Mir during the last few days. We were getting accustomed to slides. It was a nerve-racking but overwhelming experience to witness these natural phenomena. An inferno of ice and snow clouds filled the air,

accompanied by roaring gusts of wind and ear-splitting noise the long seconds they lasted.

When we crossed the glacier cirque between the Base Camp and the foot of the S-glacier, we were plumb in the usual course of the largest slides. It was most urgent to cross here as quickly as possible, for who could tell when Tirich would deem it necessary to let go another Bikini bomb? Just as we were in the middle of the course, the porters decided to sit down for a rest. These chaps, who were so terrified of slides, showed an uncanny indifference in this case. Our loud warnings were of no avail. The will of Allah was irrevocable. If their hour had come, there was no avoiding it. We were to use this argument later when they refused to cross dangerous-looking places. But it obviously made no impression on them to be caught out in such a contradiction.

However, it was not long before we got the porters to move on from their dangerous resting-place in the course of the slides, and we continued on our way towards Camp V.

We took two hours up to the camp, which was put on the edge of the glacier where this turns to form an "S." When in the camp, we had the S-glacier to the left of us and a bit lower. It soon appeared that the glacier was greatly exposed to slides, but fortunately the camp was well protected. It was situated on a snow-ridge which ended higher up in a crag at a height of 19,000 ft.

Berg and I stayed the night in Camp V so that we might continue up further the following day. The others went down to the Base Camp in good time before dark. We began cutting out a site for our tent, but Berg was unfortunate enough to break his ice-axe in two. We succeeded, however, in clearing a level space large enough to take the tent. After a good meal, we slid into our sleeping-bags, hoping for a restful night with refreshing sleep. But Tirich Mir thought otherwise. Later in the evening the giant filled its lungs with icy air and began blowing it out at our tiny camp. The canvas was stretched for hours; it whirled and whizzed,

while several times the tent threatened to drop round us. It took time getting to sleep in all this noise.

When we awoke on the morning of the 4th of July, we were very curious to see whether the wind had sent our boots flying during the night. It took some time before either of us crept out of our sleeping-bags to look for them and bring them into the tent. Luckily, we found the boots where we had left them the previous evening.

It was getting warm when we got off about 9.30. The altitude was beginning to affect us greatly, and it was hard work walking more than twenty steps at a time. The S-glacier did not inspire confidence. It looked like a funnel where the slides would find their natural course. We reached a huge crevasse offering protection against the suspended upper edge of the glacier. We settled down here for a long rest.

The glacier became steeper and harder further up. Berg took shelter in the crevasse, as he had not got an ice-axe, and waited for me while I went a bit further up. I wore crampons, and both these and the ice-axe gripped well. The trip upwards amid magnificent ice formations was very exciting. In one place I had to go close beneath two huge ice-towers. They looked far from friendly and it was not very nice moving about in those threatening surroundings. Fortunately, they remained quiet as long as I was in their vicinity. Further up the glacier looked better, but I soon turned and went down to the large crevasse where Berg was waiting for me, and we returned together to Camp V.

The same day Naess, Bugge and Streather arrived at the camp with three porters. Berg and I discussed the glacier with Naess and Bugge. We agreed that we might be able to make a new route up here, but that it would be indefensible to let porters go up and down it with provisions. As we were having a meal later on, one of the huge ice towers toppled over and carried a colossal slide with it down the glacier. Luckily, it stopped short of the camp, but near enough to envelop us and the tents in a cloud of snow and ice. The S-glacier had personally taken

part in our conference with such a powerful argument that it need not fear any further visits from us. During the days that followed, there were several slides in the upper part of the glacier. We felt quite definitely where the route ought *not* to go. But we were not equally definite where it *should* go.

In 1949 Naess had, as previously mentioned, noticed a snow-and-ice ridge going up to the right of the S-glacier where this made a bend. A steep snow slope would have to be conquered before we could get up on to the ridge from Camp V. The ridge, which was both steep and sharp, ran crossways up to the left towards the great south ridge leading directly from the gap above the S-glacier to Tirich Mir's west peak.

On Wednesday, the 5th of July, the four of us went up to have a better look at the sharp snow ridge. It was already noon, so it was just a flying visit; but as far up as we could see the ridge looked a possibility. We could not see the upper part, however. But we presumed that this would offer difficulties in the form of deep, loose snow and steep ice-falls.

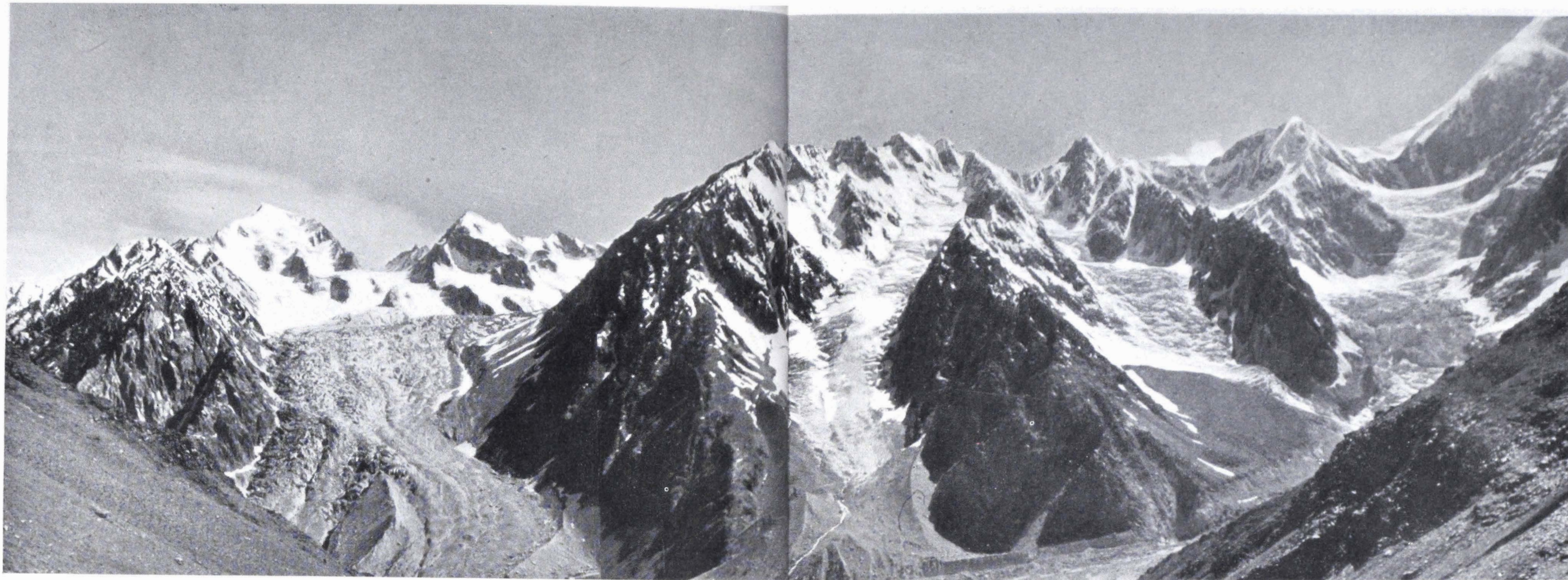
On Thursday morning we left Camp V to make an assault on the ridge. Naess and Bugge were the first to leave. Streater, Berg and I left an hour after. We took four porters with tents and equipment. The porters went well the first part of the way, but it became so steep further up that we had to put them on a rope. Some way up the ridge had a "hump" which one could not bypass. In the middle of the steepest part, deep, loose snow lay like a carpet over the hard ice. Naess and Bugge were up to their waists in this treacherous snow and the ground was so steep that they were not justified in continuing. The danger of slides was obviously great—loose snow on steep ice is no joke. Once more it was consideration of the porters that was the chief argument for not using the route. The thought of going down here under even worse snow conditions was not very pleasant either. Thus the route was abandoned, at least for the time being.

Bugge, Berg and I spent some time on the slope discussing the situation. The S-glacier had been abandoned long ago,

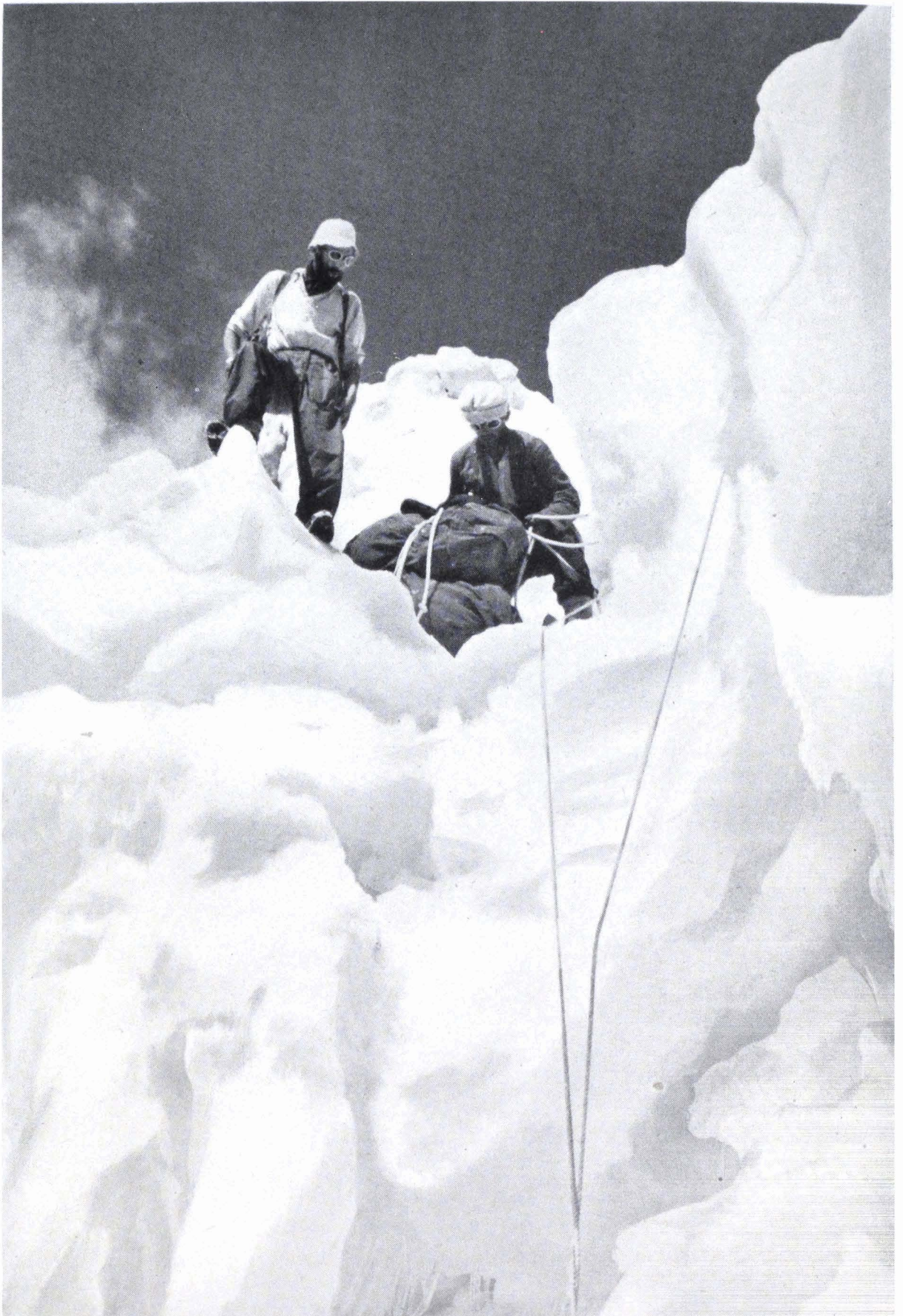


This was what it looked like at the edge of the upper ice-fall; but considerably steeper than appears from the picture.





View of the mountain-terrain through which climbers passed before they came to Tirich Mir itself (furthest to the right). They went the S-shaped glacier to the left and climbed on both sides of the mass the middle of the picture.



In ice walls like this it was not possible to move many yards an hour. They also changed their aspect, so that climbers were confronted with fresh difficulties when they returned.

because of the slides, and we did not much want to try the south-east ridge with its appalling snow conditions again. Hence there was no better alternative than to make a fresh attack on the "hump." We agreed to make an attempt the following day. Time was precious, as it usually is in the Himalayas.

There was a slide on the S-glacier during the night, and when we were having breakfast too. About two in the afternoon a third slide thundered down. Naess had meant to take a trip over to the glacier. It was not easy for him to give it up. But after this last danger signal from the restless glacier even he had had enough of it. About 2.30 Bugge, Berg and I set off to make a serious attempt on the "hump." We were all three unusually lethargic, so it took us three hours to get up to the place where Naess and Bugge had turned the day before.

I asked if I might try raquettes at the most critical stage, and I tied these on in a special way so that I could use the edge of my boot at the same time. With an ice-axe in each hand, I set off up the loose snow which covered the steep ice slope. It was not exactly elegant climbing, but a sure and steady way of getting up. The method proved most effective. When I had walked two lengths of the rope, I anchored myself with the aid of both ice-axes. Bugge and Berg then had no difficulties in getting up to where I was standing.

Further up the route looked quite possible. Just ahead of us there was a distinct ridge. It was rather steep, but the snow was firmer and safer than where we had just come up. We therefore agreed to try this. But it was getting late and we would have to get down to the camp again. We had joined two ropes so they would reach down the whole of the critical stretch of the "hump," and this was solidly anchored on two ice-axes. This fixed rope was used on every trip up and down this stage. It naturally made it much easier and safer to have this.

On the following morning, Saturday, the 8th of July, we went up and established the camp just above the "hump." There were nine all told setting out that morning. Besides the four of us,

Streather and four porters also came. We had all got heavy packs and unfortunately two of the porters failed us, and others had to take their packs. The ascent to the new camp was therefore very heavy. Abdul Karim, our youngest porter, was the only one who managed to go all the way up. He even went down several times to get up the packs of his friends.

We dug out a place for two tents. The ground was very steep and there were formidable precipices on either side of the ridge. This camp at 20,500 ft. had the most magnificent views eastwards over the towering, beautiful Himalayan peaks.

We spent the night here. The following morning Naess, Berg and I reconnoitred further up. I had to turn back after a short time, unfortunately, feeling too exhausted to continue. Even the trip down to the camp took a lot out of me. Bugge left an hour and a half after the others. But none of them stayed away for very long, they all turned at a huge glacier crevasse that looked very nasty. Naess dug out a snow cave and left some provisions, before returning to Camp VI.

We slid into our sleeping-bags as early as seven in the evening. Two and a half hours later I woke up feeling the ground shaking and trembling beneath me. At the same time I heard the roar of snow and ice loosening and whirling over the precipices. So it was to end like this after all, I thought, and pulled the sleeping-bag over my head. But it was strange how long it took before anything happened. I heard the slides thundering down while I myself remained in peace and quiet under the canvas roof, which did not even sag over me. The camp was unscathed!

In a moment I was out of my sleeping bag and saw Berg already out of his tent. We still heard the thundering of slides far down below, while up in our camp all was as before. It transpired that the slide had begun some way below us, and this had moved the glacier on which the camp was situated. Was it possibly a slight earthquake which had set the slide going? The others did not think so, but I felt reluctant to abandon the idea. Later we were told that the air pressure of the slide had been so powerful

that it had blown down the tents in the Base Camp. But the slide had gained momentum down the 3,500-ft. precipice towards the glacier plateau.

Both Berg and I took sleeping tablets after this stirring experience. Neither of us liked the thought of the recurrence of this experience, and did not feel safe in this camp.

I had meant to get up early the following morning, but the sun was high up when I crept out of my sleeping-bag. Bugge and Berg also had difficulty in getting up. We all three felt slacker and more indisposed than ever before on the whole trip. Naess felt considerably better and set off to do some reconnoitring, and to bring up some provisions, while we others decided to wait some time to avoid the bright sunlight.

About midday three porters arrived at the camp: Abdul Karim, the young Chitrali, and two Hunza porters. Abdul Karim, our best porter, brought a letter from Lorentzen as follows:

*“From Camp V—Monday.*

“Yesterday was very complicated and unpleasant for us. In the morning Streather’s porter had an acute mental aberration (after a very strenuous Saturday). Everyone who felt fairly well had to hold him, tie him up, etc. He tore his tent to bits, and was just waiting for an opportunity to throw himself down the precipice. Besides this, everybody felt very feeble yesterday, headaches, etc.—even the seventeen-year-old. S. came down to Camp IV to fetch me. We have been struggling to give the porter an injection, pour medicines into him, etc. Morale very low, and this morning all, except the seventeen-year-old, wanted to go down—stomachs—heads—lassitude—depression!

“We were miserable at not being able to send anyone up yesterday. Now the patient is sleeping deeply after all the injections, and is quiet. Luckily, he seemed much quieter this morning too. Perhaps the lack of oxygen has something to do with it. The snow bridges will soon be useless. Streather and I, with the old Chitrali porter and one Hunza porter, must

take the patient down. It will probably be a ghastly burden—most likely tied up in a sack, unconscious after all the injections. We are sending you three men. As things are, we think it would be both stupid and hopeless to try to get up the extra things involved to enable the porters to spend the night in Camp VI.

“It seems that you are rushing so much that the base cannot keep up with you.

“It must also be possible to give some kind of signal—for example, calling us at 20.00 hours (sound) to let us know that ‘all is well.’ If we don’t hear anything, we will be suspicious. I am sending you a flare signal which you can shoot at 20.00 hours to show us that the summit has been reached or that there are good chances of it. In that case you might use Arild’s signalling system.

“I should have liked to get further up, but this ‘loony’ porter is a problem and is probably going to stop me. Most likely Streather will have to take him to II as well.

“Arild does not suffer particularly from mountain sickness, but is sick with longing to get on with his filming, and would like to take two men with him.

“May I say, be careful and keep in touch with lower down.

“Be sparing with Per and Henry.

“FRIDTJOV.

“In case you can persuade one (or two) of the porters to stay, we send windproofs and a single tent.”

This was a hard blow for the expedition. But Berg and I wanted to make an assault on the summit without porter help. About five o’clock in the afternoon we set off with our packs. We took provisions for three days and what equipment we thought would be required. We did not take a tent. To save weight, we would spend the night in snow caves. These primitive quarters are warm and give good protection against slides. They are often preferable at great altitudes, where the cold is very severe

at night. The provisions we carried were estimated to last for three ordinary days, but we counted on being able to live for a week on it. One's appetite is not very great at such altitudes.

After a while we met Naess who was on his way down. He had passed the glacier crevasse where he had dug a snow cave the previous day, and had got up to a suitable place for Camp VIII, where he had left some provisions, but had not attempted to get up on to the south ridge. He did not think it would be very difficult climbing up to the crest, but was afraid that the snow would be loose and deep all the way up.

It was an exhausting ascent before we reached the snow cave. The snow was lying heavily on the steep glacier plateau where the route went, and we had to bypass several crevasses. The rucksacks felt like lead and we began to notice the lack of oxygen in the air. It was snowing a bit, so we could not see very far ahead. When we arrived at the snow cave, we dug this out a bit more; but it was still too narrow and the loose snow whirled round us when we straightened our backs. It was far too low under the ceiling; and besides, the floor was sloping suspiciously. But at 21,000 ft. one does not feel much like shovelling snow after a wearisome ascent. It would be wrong to say we were comfortable that night, and it was worse for Berg, who was lying at the bottom, but we had some sleep in spite of all. We both went outside for a spell during the night—to stretch and to have some elbow room. It was radiant moonlight outside. Above were the cold, glittering stars, and far below distant lightning flashed in rapid succession from the heavy banks of clouds.

On Tuesday, the 11th of July, at about nine o'clock in the morning we set off to make an attempt to reach the south ridge. The ground was very steep and the rucksacks were very heavy, especially for the thigh muscles. Soon it began clouding over all around us, but this was an advantage, as the blinding sunshine is a fearful strain at great altitudes.

During the afternoon we reached close up below the south ridge. It was not easy to get up on to it. We tried going straight

up, but met ice work that called for more energy than we had left that day. We also tried to follow a kind of snow ledge out towards the left. But the new snow was so deep and loose that the danger of slides was too great. We decided to stop for the day and make a fresh attempt the following morning. Some way further down we dug a snow cave. It was a good bit roomier than the one in which we had spent the previous night. Unfortunately, I dropped our cooker over the mountainside just as we were going to prepare some food for supper. It certainly had a wonderful slide down glaciers and precipices before stopping far, far below. The disappearance of our excellent Meta cooker did not improve our miserable appetite.

There was a magnificent view from this camp—especially at night, when the lightning sparkled from the dark clouds between the sharp Himalayan peaks. But we were not able to enjoy all this overwhelming beauty as we might have done at a lower altitude. The lack of oxygen was having such stupefying effects on the mind that there was no room for æsthetic experiences. Only those who themselves have been up at great altitudes in the Andes and the Himalayas know the strain of struggling through deep snow and over steep ground at an altitude of 20,000 to 23,000 ft.—with a heavy rucksack in addition. Often ten steps at a time is all one can do, with long pauses in between. One had to heave for breath, to get sufficient oxygen not to collapse. One cannot avoid breathing through one's mouth; but this exposes one's lungs and wind-pipes to the dry, cold air, which easily promotes catarrh and pleurisy. The lack of oxygen has a lowering effect on one's whole metabolism; headaches, bad appetite and sleeplessness are the usual symptoms.

On Wednesday, the 12th of July, we left our snow cave in the morning to make an attempt to get up on to the south ridge. Berg, who was the first on the rope, chose a route which looked to be leading more diagonally out on the ridge. We had not gone very far before I felt lassitude seeping through me; I could only just manage a few steps between every pause. It was no good



continuing in this way; if I tried to go on by "will-power" alone it might lead to a complete breakdown. I asked Berg to continue by himself, while I tried to crawl back to the snow cave. But he did not continue for long after I had left him. He would not risk going up on the ridge, as he had no one to secure him. He had turned back by a small hollow where a thin layer of snow covered a treacherous ice fall. But on the other side of this hollow a small ridge ran up to the south ridge itself. In the afternoon we sat in our snow cave dreaming about Norway and of all the good things we had left in order to wear ourselves out on Tirich Mir's eternal snow and ice slopes. Our thoughts were chiefly about good food and drink, in spite of our miserable appetite. We longed for the good things of civilisation, but perhaps even more for the lovely woods and mountains of Norway, where the air never makes one sick and the climate is the best in the world. Nostalgia of this kind often obsessed us high up here close to the ceiling of the world.

It was with some effort we turned out of the snow cave the next morning. Lassitude, headaches and poor physical balance were the order of the day. In addition, the opening of the snow cave was on a steep glacier slope, so that we had the feeling of looking straight out into space, and when outside one was met by the fierce, glaring sunlight which blinded one completely and even affected our snow-goggles. Probably this white-hot sunlight was the worst of all our troubles. A well-known English Alpine and Himalaya climber once wrote that it was quite possible to get sunstroke and frost-bite simultaneously in the Himalayas. I had difficulty in believing this when I read it, but I now understand that he was not exaggerating.

It required a tremendous effort to get going as usual, but after much battling and many pauses we finally reached the point where Berg had stopped the day before. The south ridge seemed so temptingly near that one almost had the feeling of being able to take hold of it. We sat down by the treacherous hollow to have a good rest before we went on towards the ridge. Neither of us

wanted to go any further after we had rested for a while; we felt so strangely slack and weak-minded. It was then that Berg reprieved us with the words: "Let's go back." There was nothing else for it. Worn out as we were, it would have been madness to go on. Of course, it was a great disappointment to have to give up so near to the enthralling ridge, and it was no fun having to return to the others to report that it was still a long way to the top. But neither of us felt finally defeated; we were both convinced that we would return as soon as we were fit again, after a few days' rest in the lower camps. And then we would return, not only with renewed strength, but also with the experience that we had acquired in our struggles of the last few days.

Also Naess and Bugge were ready to advance up here and continue our assault of the south ridge and the summit, or so we thought. But when we reached Camp VII in the afternoon we found that the situation was very different. It appeared that Bugge had fallen ill after the reconnaissance of the 9th of July. He had first noticed a depressing lassitude in the morning and had a sore throat and a bad cough. As his condition was getting steadily worse, it was imperative to get him down to the Base Camp as quickly as possible. He did get down, but his strength was ebbing fast, and it was only with the utmost effort of will that he succeeded in reaching the camp. Dr. Lorentzen diagnosed pneumonia and administered penicillin immediately.

After this it was impossible to prepare another attack on the summit as we had thought. So Berg and I went on down to Camp V while Naess remained to try to persuade the three porters who were still there to go with him to the top camp with provisions. Unfortunately, this did not come off, as the porters sat down halfway up, and it was useless trying to get them any further. Naess had to leave the loads and go down with the porters. Later in the afternoon he was back in Camp V.



Porters on the top of the upper ice-fall.



Kvernberg taking a "breather" at 20,000 ft.



The Base Camp at 17,000 ft. *From left to right: Berg, Kvernberg.*

## THE FINAL ASSAULT

By ARNE NAESS

*Bad weather approaching—The climbers draw lots—Kvernberg's rush tactics—Cutting steps—The porters give up—Rounding corners without "handrails"—The night in the snow cave—A summit toast in chocolate and dried milk.*

THE result of the first attempt at reaching the summit of Tirich Mir had a depressing effect, and we were all more pessimistic about the possibilities. The south ridge, which had not yet been reached, looked longer and steeper than ever, and the thought of having to put one or two camps on this ridge from 23,000 ft. and upwards had a damping effect on former optimism.

The more hours we had to count on spending on the south ridge, the more stuff we would have to carry up to 23,000 ft. How were we to get the strength to go back and forth in this terrible snow?

The race with time began in earnest. If the second attempt up "The Third Way" did not succeed, what then? After having dragged ourselves up from Camp V several times, we agreed that we could only bear to do this trail once more. The steep, broad snowfields were horrible; we might struggle up them for an hour without the landscape changing. Besides, the snow limit receded further and further every day. Below the limit, crevasses split the shiny icy slopes which were covered with a layer of porous, treacherous snow. As the ice appeared between Camps V and VI, the advance became so difficult that the porters refused to continue. It was most probable that after a second attempt the

ice belt would have reached so high that perhaps a thousand steps would have to be cut to reach Camp VIII.

The worst was, however, that a second attempt would bring us into a new weather period. Towards the end of July we had reason to expect more wet and unstable weather. As there is only one kind of wet weather at this high altitude—namely, snow—those precipitous stretches of the route would be the places for continuous avalanches. This point alone made it clear that only one attempt could be made on “The Third Way.” If this did not succeed, we would have to abolish Camp V and try to get up the south-east ridge all the way from Camp IV. This ridge offered less danger of avalanches, but, on the other hand, was very long, with the traverse in the end from the east to the west top. This latter was about 30 ft. higher.

All this pointed to one thing: Now or never! The second attempt *must* succeed.

Four men had already suffered for the first attempt: Bugge was down with pneumonia in Camp IV. He recovered quickly, but was definitely not in the running. Berg and Kvernberg were pretty well “finished” on the return trip. Never shall I forget when, a little above Camp VII, I caught sight of the outlines of a man in the thick fog a couple of yards higher up. It was impossible to see who it was. The figure came down in jerks. It is very difficult to tread carefully in the snow on steep slopes, and at almost every step the figure half disappeared in the snow. It rose again, stood quietly for a while, then took some fresh steps. A few yards behind another figure, luckily, appeared. Not a word was exchanged. I ran up towards them to the rescue, without reflecting how stupid it is to hurry oneself at that altitude. Soon I had to stop completely and wait till the chaps came down to me. They were still carrying enormous packs, and it must be attributed to the stupefying effect of the height that they had used the last of their strength to take a lot of things down which it was important to leave as high up as possible.

It was quite obvious that Berg and Kvernberg could not count

on being in top form for some time. As for myself, I had spent a long time above 20,500 ft. and felt definite signs of reduced capacity. One night in the cave at Camp VII (22,000 ft.) I had a feeling that the supply of air was giving out, and I went outside to sleep. Later I realised that it could not possibly have been bad ventilation, but was an attack of breathing difficulty.

While Kvernberg was in Camp IV and Berg in Camp V, I made a lightning visit to "Idyllen." It was good to be able to throw oneself down in the grass and study flowers.

A second attempt was immediately planned. The chief point was that the leading party of two men should be saved from carrying anything until the south ridge had been reached. As only three porters were capable of carrying on, only two of us could be given the privilege of porter assistance. Even for these, it was out of the question that they could get all their equipment brought up to the south ridge. The porters had to bring their own stuff to enable them to stay the night in the higher camps. We could not expect them to carry more than 30 lb. each from Camp V to Camp VIII. As their own equipment for the night plus food weighed at least 20 lb. there was only 10 lb. useful load left per man, i.e. 30 lb. all told. We had to count on taking provisions for a week to be on the safe side. Any stay between Camp V and Camp VIII would be fraught with acute danger in case of snow-storms. The only place we could hope to survive would be in deep caves, preferably in connection with big crevasses where snow avalanches could pour over us without touching the roof of the cave. With a week's provision, a stay in a cave might be fairly tolerable, until the worst danger was over. Some firewood had been brought up to Camp VIII on previous trips, but much remained to be brought up.

When drawing lots, Bugge and I came out Nos. 3 and 4. It was decided to put Berg in Bugge's place.

On the 19th of July I returned to Camp V from "Idyllen," and we got ready to start next morning (the 20th of July). Streater had already exceeded his leave and would either have to be given

an opportunity immediately or he would have to return. This latter was out of the question after all he had done for the expedition, and he was finally allowed to come. Streather had proved a good bearer all the time. He had carried all his own stuff, except his tent and food.

Kvernberg was in Camp IV and would not sit quietly by and watch the preparations of the others. We had at all events meant to make three assaults to give six people the chance of reaching the summit. But delays are unpleasant and Kvernberg made a bold plan calculated on the minimum of carried equipment.

Kvernberg records this himself:

“Berg and I had to abandon the first attempt chiefly because the porters gave up. It had taken too much out of us having to carry at this altitude all the food and equipment, etc., without any help which reasonable measures of safety demanded. We had three porters at our disposal when ready for a second attempt, and were hopeful of getting them with us as far as needed. Naess was an obvious participant. He had not joined in the first attempt, and was probably the one who could stand heights better than any of us. Bugge, who should have been the second, fell out because of illness. Berg was chosen instead, as he had proved to be very fit. There was a possibility of my going if I carried everything myself, in which case I would have to be content with the barest necessities. But it was therefore tempting to try the assault in the shortest possible time. I would have the advantage of the shortest stay above 21,000 ft., over which height there is practically no chance of becoming acclimatised. One loses all appetite and becomes slacker and slacker. All attempts at climbing the highest mountains on earth have shown that ‘rush tactics’ are too risky. Considerations of safety demand that the assault should be made with care and with sufficient food and equipment to survive a couple of days of bad weather. In this case, however, a rush assault might be justified. We were already fairly high





One of the many dangerous crevasses.  
They were often covered by a layer of snow which made them invisible.



Ice formation on the way up.

up and had made snow caves further up, provisioned with some stores at the previous attempt, and by starting a day later it might be possible to join the others if the weather should deteriorate."

The advantage of this plan was that we could try "rush tactics" without the dangers and uncertainties usually associated with them. The main party would look after reserves of stores and everything else required if the "rush assault" should not succeed. If the one undertaking the "rush assault" kept within a couple of hours of the main party the danger and uncertainties of changing weather conditions would be greatly reduced.

At nine o'clock Berg, Streater and I started from Camp V (19,000 ft.) with the two Hunza porters and Abdul Karim. The latter was our one remaining Chitrali porter. Unfortunately, he soon developed a headache, and on arrival at Camp VI (20,500 ft.) he flung himself down in the snow, clutching his head in his hands. Many of the porters may have been putting it on, but the pains of Abdul Karim were real enough. The snow was terrible and became worse during the day as we were toiling up to Camp VII (22,000 ft.). It was good to get Little Tirich (20,869 ft.) below us. We could now look down on its magnificent ice shoulders. At the same time the horizon widened in the direction of the Karakorum, where we could see ice "cupolas" several hundred miles away. They seemed phosphorescent against the blue-black sky.

In Camp VII the porters were put in one tent, Berg and Streater in another, while I withdrew to my snow cave. Much time went in heating food for everyone on the one small cooker.

Next morning, the 21st of July, the porters wanted to go back, but sun and heat gradually made them more amenable. We served good food and spiced it with golden promises. During these negotiations Kvernberg turned up. He had started very early and reported good snow conditions. The snow was partly

“crusted” in the morning, so that it was possible, by going carefully, to make one’s way without going through to the knees. He did not stay long, but went on at a steady pace. By and by the main party also moved off, but the blazing sun had now melted the last bit of “crusted” snow and we sank into bottomless soft snow. Between Camp VII and Camp VIII (22,700 ft.) the route went continuously up steep, snowy, glacial “cupolas.” It was like ascending an enormous white eiderdown edgewise. There were very few crevasses or rough surfaces on which the eye could rest and which could show how one was progressing. Everyone was exhausted.

At two o’clock we reached Camp VIII, where we pitched the porter’s tent and hurriedly prepared some food. Further advance was out of the question for that day. We fixed ourselves up in the snow cave which had housed Berg and Kvernberg during their first painful attempt. We looked around for Kvernberg, who could not be very far away. Suddenly something flew past the tent and we felt sure it was a tin. It disappeared noiselessly over the precipice below the camp, but we were glad to have contact confirmed. Later on it transpired that the “tin” could not have come from Kvernberg, nor could it possibly have been a tin.

The afternoon was spent in making tea and food for the porters and the *sahibs*. Camp VIII lay just below a granite precipice which was part of the steep wall along the south ridge. The hanging glaciers over the precipice were due to constant west winds, which also caused the snow they brought to start slides. The snow cave lay on the lower edge of a large crevasse (Bergschrund) immediately below the precipice, and was assumed to be safe from slides. We took it for granted that the snow would rush over the upper edge of the crevasse and fall beyond the cave. The porters’ tent was dug deeply into the snow so that slides would not easily reach it.

What had happened to Kvernberg? It appeared later that he had made tremendous headway during the day. Here is his own account:

"I started early in the morning of the 21st of July before the sun was up. This is impossible with porters, as they have to thaw in the sun first and do not like hard snow on steep slopes. But it is just at this time that one can make a quick getaway. Considering the height, I went upwards at an even tempo. After about two hours I reached the camp where the others had arrived the day before, and after some food and a short rest I went on without waiting for the others to get ready to set off half an hour later. The snow was still relatively firm. The next camp, the top one from our former attempt, was passed a couple of hours later. From here it was not far up to the snow ridge, but it required some ice work. It was very important to try to reach the foot of a rock jutting out of the glacier some way up. By going along this I could walk with more safety than on steep ice, as I was alone. I cut the steps extra big for safety's sake, even if it meant more work, which one usually avoids at such an altitude. The ascent was slow but sure and at last I reached the rock, and *via* this and a short but steep snow slope I finally got to the much-longed-for south ridge. I was very anxious to discover what the snow would be like here. At this height (23,000 ft.) the sun had no longer a very great effect. Many expeditions have had to turn back when they reached this altitude because of loose snow a yard deep. We had counted on the incessant west wind having done its work here and made the snow firm. For the moment this turned out to be correct, but further up the route lay in a hollow between two ridges, and here it was very loose. It was no use going on any further after a day's hard struggle. It would be necessary to start with renewed strength. I found a small rock with some gravel, just sufficient for a bed. So it was best to stop here, get some food down and then slip into my sleeping-bag to wait for the night and the next morning. I had reckoned on getting up early next morning, but a strong wind blew up during the night, so there was no hope of getting up before sunrise; that would only have meant frost-bite."

Next morning (the 22nd of July) sighings and pantings from the porters' tent showed that morale was not very high. Streather, who had the important job of cajoling the porters, brought tea and other good things, but the Hunza people insisted that they were dying. We did not doubt that they were suffering, and we were thinking of giving up the attempt of getting them any further. Although Abdul Karim was better than the others, none of them wanted to go on. However, the sun did the trick once again. Some time during the morning, about 10.30, all three porters were ready to offer their last assistance by coming with us from Camp VIII to the south ridge (23,000 ft.). As we saw nothing of Kvernberg, we concluded that he had already completed the traverse and had settled down on the ridge. This turned out to be correct.

The route from Camp VIII up to the south ridge could not be picked out in advance, and was one of the most exciting of the whole expedition. It was impossible to judge in advance whether we could reach the ridge itself from the steep ridge leading all the way from Camp IV along the glacier in the direction of the south ridge. One can compare Tirich Mir to a pyramid with the south side cut off, forming a steep, broad south wall. "The Third Way" might be compared to a supporting pillar, leading some way up the south wall without reaching all the way up to the summit or either of the sides. It finished blind about 300-500 ft. vertically below the south ridge where this reaches about 23,000 ft.

The chief argument against "The Third Way" was that its latter part—the above-mentioned 300-500 ft.—might easily offer unsurmountable difficulties or at least great danger of slides. The wind from the west heaps the snow up in great drifts just below the south ridge, exactly where the route would have to go. During the reconnaissance for the first assault, I had come to the conclusion that it would not be difficult to cut a path straight up to the granite precipice and then follow along the side. There was bound to be some danger of slides, but far less than one would normally expect in such a steep, exposed place. During the first

attempt Kvernberg had arrived at the same conclusion, whereas Berg had an idea that it would be better to make a traverse straight out to the left from Camp VIII, as it looked far steeper straight up. Above Camp VIII we found good tracks after Kvernberg. He had taken the route he chose at his first attempt.

The immediate danger of slides was small, in view of the stable weather. This influenced our provisioning. We just took the chance that the constant good weather would last another few days. It was out of the question getting any provisions up to the south ridge with our three exhausted porters. We ignored our splendid intentions of never going higher up without food and fuel reserves for at least five days. Such provisioning would mean that after we had climbed the south crest we would have to descend to Camp VIII for another load. It was an untenable thought and might have exposed Kvernberg to danger too, as he was counting on our being just behind him.

The passage from Camp VIII to the south ridge offered some real climbing, and those with a long training behind them would naturally have a great advantage. All the same, the porters managed splendidly under the great strain. It was particularly impressive to see the way they sneaked round corners with poor or no hold. Close below the south ridge we had to pass some places like that. The heavy loads projected straight into the air and made it difficult to keep close to the mountain without a hold. Every step was taken with hair-breadth calculation. In spite of some quick lessons in the use of ropes, the porters were still at the stage where they could not yet grasp the possibilities of securing each other by the help of the rope. Berg and I could not possibly secure the porters with our ice-axes, as the snow was far too loose for the axes to get a grip, and there was no hold for the axes in the rock either.

It was quite obvious that one false step by one of the porters would drag us all over the steep, hanging glaciers, which would land us 4,000 ft. below—at Camp VII. How did the porters manage to keep their balance? Their balancing power is actually

developed at a very early age on their trips along the precipitous irrigation channels, carrying large bundles of sticks jutting out about a yard from their backs. One could not possibly have a better training than this. In this connection, Streather must also be mentioned for his admirable assistance. He followed without hesitation, in spite of the unaccustomed circumstances.

It was a great moment when we got our heads over the edge of the south ridge. At last we would be able to get a view towards the west. We were now definitely out of the glacier basin, where we had been bathing in soft snow and maddening sunlight for four weeks. The biting wind had the tang of Norwegian mountain air, but we did not feel up to enjoying it. At the edge the snow was crested, a thing we had not experienced until then. Further in on the ridge it was sheltered, and we immediately dug a snow cave at about 23,300 ft. This was our last camp, the ninth.

There was no question of going further up, as in that case we would have had to bring with us the equipment the three porters had brought up to the edge of the south ridge. The amount the whole lot of us could have got on our backs would hardly have been enough to equip a camp which would be our main retreat for from three to four days. We actually ran out of fuel in two days.

We had looked forward to the view from the south ridge for weeks, and fortunately our condition enabled us to enjoy it to the full.

We took it in turns to dig a comparatively large snow cave, and while one of us was struggling with the cave, the others were half reclining in the snow, gazing into the crystal clear air. From time to time small clouds, appearing round the corner from the west, enveloped us in a dense snow flurry, only to disappear round the ridge to the east. The clouds themselves seemed just like whirls of snowflakes rushing between us and the blue-black cave. There was no mist or fog to be seen.

Above the camp there was the beginning of a long ridge of large-grained, hard granite—the Giant Rock. We had seen the



formation all the way from Camp III. It was exalting to feel that we had at least reached the final big ridge before the upper part of the summit.

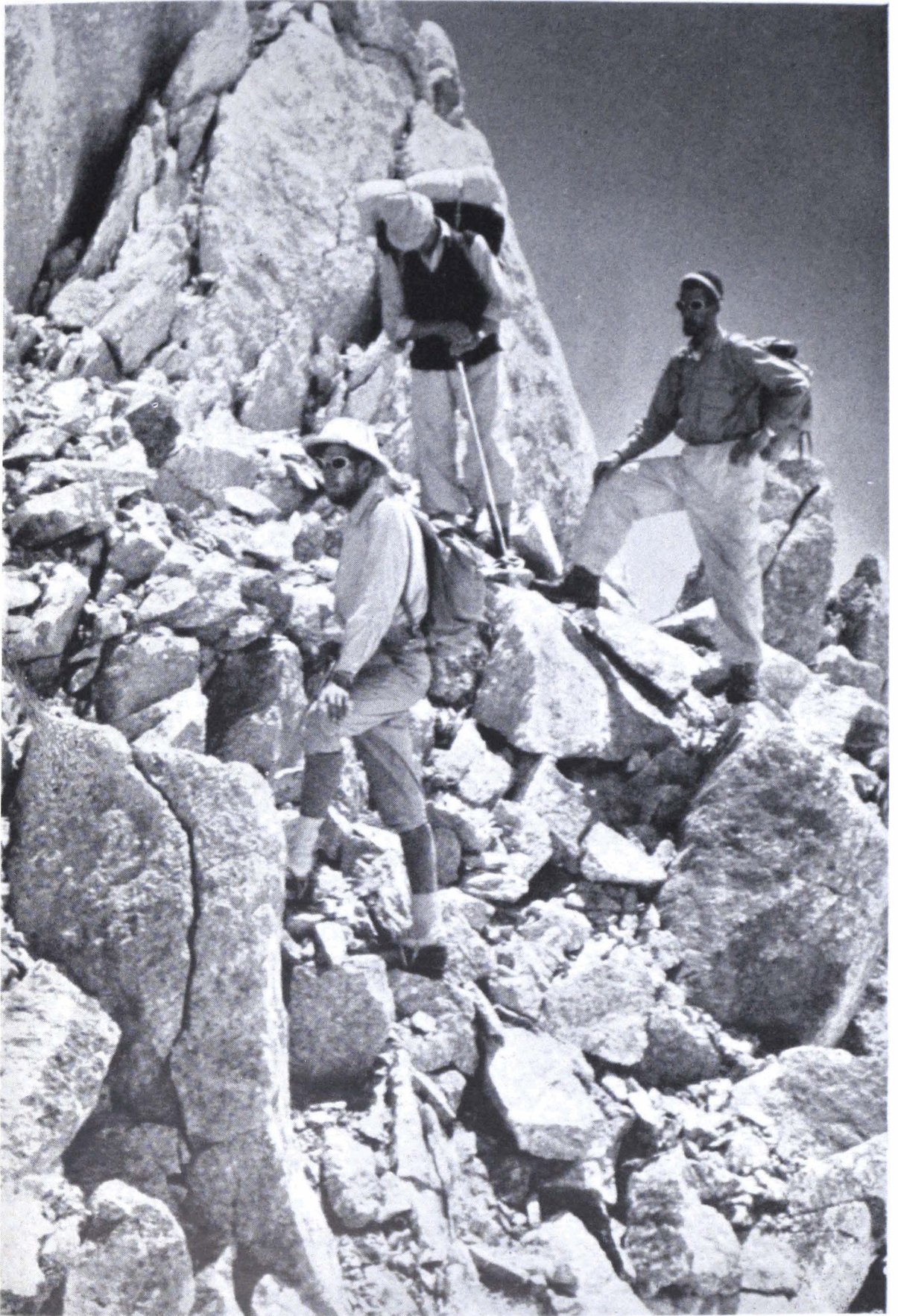
Straight above the Giant Rock we suddenly discovered a figure moving extremely slowly upwards. There was only 600-1,000 ft. difference between us, and hardly a quarter of an hour's walk down, but we had to go *up*. The difference was great. To us it looked as if Kvernberg had reached the gates of Heaven, while we were still in the Vale of Sorrow. There was no question of our reaching the summit that day. We gazed at each other for a bit, but we did not attempt to call him. There was nothing that needed saying; we just wished each other luck and then set about our chores. Kvernberg disappeared behind a col and we continued with the snow cave. It was big and looked fine, but was not correctly made. It had far too big and grand an entrance in Gothic style. When at last we could move in we were very frozen, but the food Berg had prepared in his "kitchen" tasted all the better. The cooker worked just as well as further down. The test in the low-pressure chamber had been reliable.

As we were having our meal with a good appetite in spite of the height, we heard someone calling just above our heads. Kvernberg? Had he reached the summit by going on the whole afternoon or was he returning because of lack of equipment or other difficulties? He looked very pleased as far as we could see in the semi-darkness. The summit had been reached. *The aim of the expedition had been achieved.* It did not matter to those who were congratulating him that Kvernberg had been the first to stand on the highest point. Our joy was real and deep. We made a note of what he reported about his equipment. It was admirably planned, but presupposed a remarkable resistance to cold. Berg and I had not felt any too warm in our double sleeping-bags in our open snow cave, more like a veranda than a bedroom. Kvernberg had only brought with him a single sleeping-bag and his eiderdown clothes. Anyway, now we were able to offer him room in our cave, and hot food.

We decided to celebrate beyond all bounds. External circumstances made culinary extravagances out of the question, but whatever was served could not have tasted better. We drank a toast in chocolate made of milk-chocolate and dried milk. The night was long and cold.

Very early the next morning, the 23rd of July, we parted, Kvernberg returning to Camp V. We agreed, if at all possible, to meet there to celebrate in the evening. If we set off immediately and nothing unforeseen happened, there would be time to go *via* the summit before the celebrations. But it was impossible to soften the boots. It was just a physical impossibility to get them on. Streather particularly had difficulties with his feet and was afraid of frost-bite. This proved to be well founded. We were nearer to frost-bite than and the next morning before sunrise, than we were aware of. The symptoms appeared later on. The most elementary rule for spending the night in an open snow cave is to keep the boots in the sleeping-bag. Berg had done this on previous winter expeditions and so had I. But I forgot to do so one Christmas night in the Alps, and the following morning I had to find my way down the mountain side in nothing but socks. The boots would freeze as early as the afternoon in Camp IX; they would also get a thin layer of ice on the inside, which we were unable to scrape off in spite of the most energetic exertions. It was quite crazy not to have put the boots into our sleeping-bags. We did not actually feel any altitude deterioration, but this is the only thing that could explain our neglect of one of the first rules for spending the night in the snow.

About eight o'clock the sun appeared over the edge of the south ridge. Rarely could it have been more welcome. If it had not come, we would have had to use fuel to thaw the boots, which might easily have made things worse. We started off, but the snow was so cold that about ten o'clock Berg and Streather decided they had better take some time off to thaw on some sunbaked granite ledges. Stiff boots, stockings and inlay soles were all spread out for thawing, looking like frozen plaice. I went on, slowly.



Returning from the summit. *From left to right: Kvernberg, Streater, Berg.*



A view from the upper barrier.

The weather was fine as usual, and Kvernberg's tracks from the previous day were a great help to start with. The route changed from loose snow to very hard, crusted snow, but not so hard that we were not able to kick small footholds. After we had kicked our way up along "The Giant Rock," we once more got into deep snow and thus reached the edge of the south crest facing towards the south-east. Below us was the enormous precipice we had looked up at for so long from the Base Camp. Here we found many of the loose snow drifts which were carried down by the slides. Once more we could look down with satisfaction on the Troll towers. The camps were completely invisible. It was a pleasant thought that we were now higher than places liable to slides. They could no longer get us. They were conquered. All was quiet. At last we were higher than all the sweat and toil of the camps too. We were alone. We were enjoying the thought that there was only one supreme effort left before the last of our duties were done: the planting and the photographing of the flags.

Beyond this point on the edge of the south crest, above the south-east precipice, there was one terrible, long, heavy slope with the worst kind of snow. Kvernberg told us that his hope of reaching the summit sank when he got into this snow. The most unexpected thing about snow lying sheltered from the wind was that even if one prepared and stamped the snow together with one foot before transferring the weight to the next step, as a rule one went through the hard, trodden surface. The result was that one easily lost one's balance and thereby 1-2 ft. of height, a very painful loss of strength. To encourage myself to make the track as good as possible, I tried setting a record to the number of steps I could tread which held when I was putting all my weight on one foot and was about to go on to the next step. The record was twelve steps. I was not able to beat this.

"Make better steps," Berg yelled from below. It was a well-justified demand, as the most carefully prepared steps which would hold my weight would often not hold that of Berg and

Streather. In decent Norwegian snow the bottom of a deep step gets harder and harder, but up here no such thing happened. In fact it almost seemed no use making steps; each man sank deeper in than the man in front. What made the final stage up the south crest less trying was some steep ribs of dry granite on which we crawled "ashore" at about 24,400 ft. It meant a tremendous lot to have firm rock under one's feet. From the platform at about 24,600 ft. it was sufficient to make one jump before every step, while earlier it had been necessary to make two or three, as we always sank in deeper when we had the weight on one leg. On the firm mountainside we often had to use our arms to lift ourselves up, when it was very steep, but this isn't half as heavy work as treacherous and incalculable snow.

We had all been through our worst bouts of deterioration before we reached 24,000 ft. Berg spent some extremely unpleasant hours at the Giant Rock. Streather announced that he was using the last of his reserves, but it was obvious that he was going to put in all he had left. Personally, I managed all right as far as the platform at about 24,600 ft., but after two hours' sleep here in the sun, I felt completely exhausted for a while. I could not stand with the edge of my boot against the steep-crested snow, and I slipped down at each attempt. Berg energetically pulled out his camera. He did not listen to my complaints, but ordered me up and down, backwards and forwards. Breistein, the film expert, used to tell us to look exhausted whenever he was filming the ascent. It was not difficult for me to play this part.

From 24,600 ft. we took almost three hours, but it went much more easily than before. Here we had sheltered, slack rock formations and screes in which to walk along the side towards the north-west. It is probably too windy here for the snow to get massed up and form a glacier. Continually we thought we could see the highest point, but it was always a bit further. In the end we reached a less steep top plateau, and our steps unconsciously quickened. Our exhaustion was no longer so painful, with the certainty that we had sufficient strength left. We reached the

summit at sunset. Berg was a few yards ahead with his ciné-camera, wanting to film the last few yards which we had left to crawl. But this time it did not come naturally to appear weary and exhausted, as Breistein had instructed. We could easily have run the last few steps for sheer joy.

But this state of intoxication did not last long; we had to tackle the complicated task of hoisting the flags side by side. Just here on the highest point there was an icy wind. It pierced through bone and marrow. Kvernberg had been here the previous evening about half-past six; he had spent about half an hour and had managed to drag a heavy stone of at least 30 lb. from the north-west side of the summit towards the centre of it. Thus we had a kind of cairn ceremony in good Norwegian style. But we still had to hoist the four flags of Norway, the United Nations, Pakistan and a colossal Union Jack, which Streather had dragged with him. This was the only size procurable in Chitral.

We tried fixing the flags to skiing sticks, but as soon as they were fixed a gust of wind would blow them down. Finally, we succeeded in securing them somehow. Breistein's instructions had been followed to the last dot. I don't know how many letters, written on lavatory paper, we had received from him about the tremendous importance of the flag filming.

According to old tradition, all expeditions hoist the flag of their country on the spot of their achievement. We wanted to mark that Tirich Mir belonged to our friends, the Pakistanis, and especially our excellent Chitrali helpers, deep below in the camps on the Barum glacier. Hence we brought the Pakistani flag, and the U.N.O. flag as a symbol of our feeling of a part of an international fellowship.

When the work had been finished, it was blowing so intensely that there was no point in staying up there any longer. It was too cold to enjoy the views of China and Soviet Russia for very long. Drifting clouds a thousand yards below us hid most of the view towards the north, where the highest peaks in the Hindu Kush are to be found. We saw their wild, hanging glaciers and sharp

ridges with overhanging precipices in the rifts of the clouds. For one moment I wondered if we really were higher than these gigantic mountains. They looked so much grander than our own Tirich, which had now been reduced to a snowfield with flags on it.

Tirich's east peak looked splendid and almost as high as our west peak. According to the map, it is about 30 ft. lower. At last we could look down the mysterious couloir between the two peaks, which was where we would have had to come if we had laid the route up the south-east ridge to the east peak. The couloir looked pretty long and we would certainly have had a hard job traversing it.

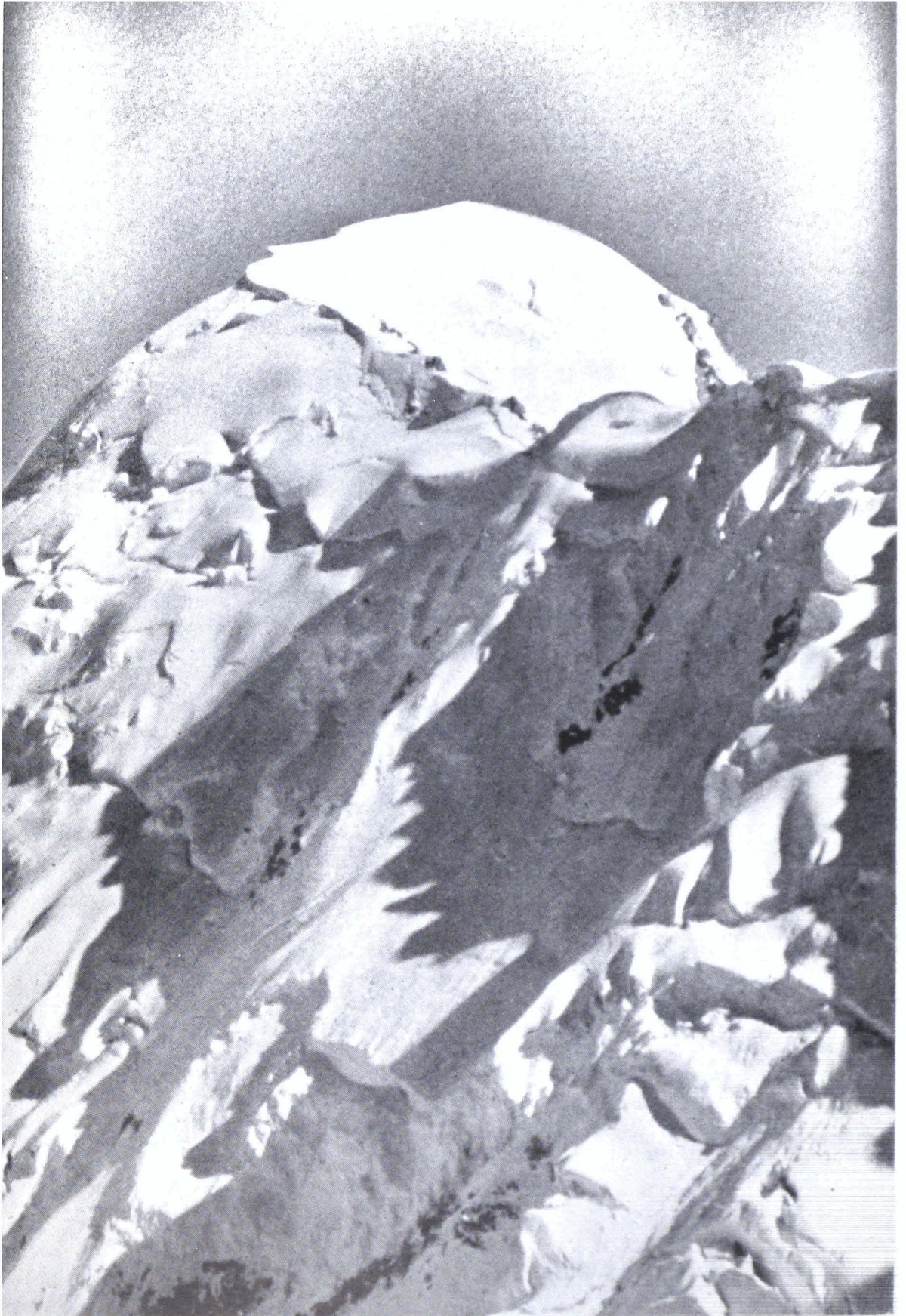
There was no discussion about remaining longer on the top. We turned our noses to the south and sauntered down at a fine speed. We soon got into sheltered pockets.

Now there was nothing to prevent our enjoying the view to the full. There were two things in particular that made a great impression. Even if they were the same height as Mont Blanc, the thousands of square miles of peaks round us looked like dwarfs. It gave one a curious and strangely real sensation of being on another and bigger planet. Deep down below us we could see the area round Camp II and the peak of Ausher (17,333 ft.). This was reduced to a Lilliput mountain. It was a funny thought that in Camp II we had looked up to this pinnacle with awe. Seen from Barum and the valley, it was an enormous giant with strutting crests and peaks.

Another thing that made a vast impression was Susum—the tiny, intensely green mountain valley about 17,000 ft. below us. It is one of the most beautiful parts in the whole of Chitral. The contrast between the cold, enormous peak world and the small green spot unconsciously held one's attention. As a symbol of the peaceful lowlands, we saw a tiny river flowing in lazy bends in the flat valley.

The deepest and largest valleys towards China and Afghanistan were enveloped in a hot, dusty haze. Above the haze we could





View of the top of Little Tirich.



Sixteen-year-old Abdul Karim was the best porter and showed great sportsmanship with a 70-lb. sack on his back at heights to which no Chitrali bearer had ever been before.



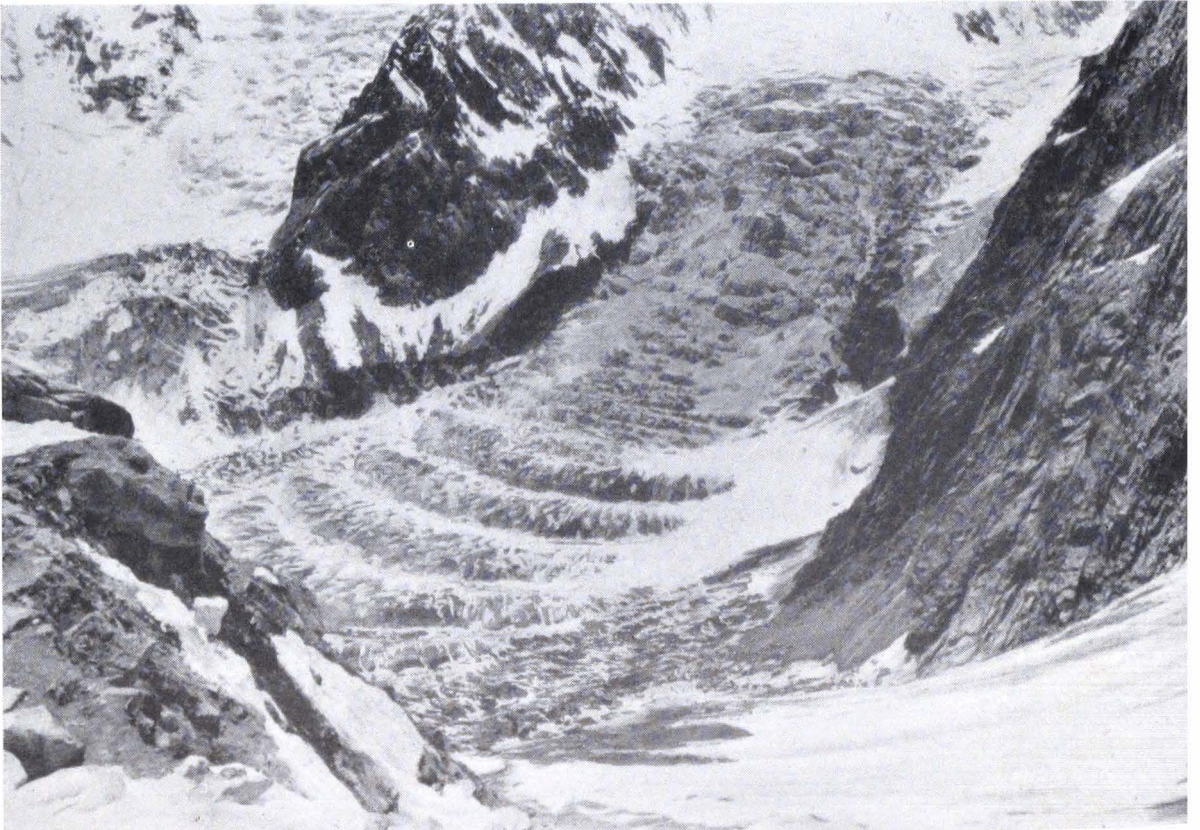
The View from Camp V.



The S-glacier taken from Camp V after the avalanche.



South Barum Glacier taken from the camp.



The North Barum Glacier was an interesting work-field for the geologist.

just see mountains of 10,000 ft., chiefly bare, metal-coloured, sunbaked rocks. Innumerable peaks with large or small glaciers reached higher into a layer of thunder and good-weather clouds. Above this layer, in intensely clear air, were only giants the size of Tirich Mir. In Afghanistan, an enormous giant, the size of Tirich Mir, reared up. This was unknown to us.<sup>1</sup> We saw Nanga Parbat, several giants in the Gilgit area and several giants in the Karakorum. The colossi in this family belong closely together, in spite of the hundreds of miles that part them. It was not easy to distinguish the various peaks we could see there. One of them was probably K.2, the second highest in the world.

The trip down to Camp IX went without mishap in less than two hours. We spent a cold night in the snow cave. The wind increased and blew the snow straight in upon us. At dawn it was covering us like a 2-ft. eiderdown. A white frozen sock indicated where we could look for our boots. It was impossible to get them on. In the middle of the day the snow melted both inside and outside the boots. But when the sun set everything stiffened. We had to wait for the sun.

We cooked some food while we were waiting, but we had almost come to the end of the paraffin. About 7 a.m. we put our heads over the edge of the south ridge and soon found ourselves down in warm sun. Here we had long, lovely pauses of rest, with thawing and drying our stockings, in-soles and boots. We stayed so long that our friends, following us in their field-glasses from far below in the Base Camp, thought that something had happened.

In Camp VIII there was great joy and celebrations. The porters were sent up to take our rucksacks, but they were no keener on further exertions than we were. Consequently, a lot of equipment was left behind in Camps VI, VII and VIII.

<sup>1</sup> Later it dawned on us that the peak need not necessarily be so very high above sea-level. What we could judge from Tirich Mir was that it was overwhelmingly high in relation to the surrounding peaks.

## THE RETURN JOURNEY

By FINN JÖRSTAD

*Fights for the equipment—Polo without rules—Guard of honour and Garlands—Rumours of frogs as big as elephants.*

ON the 26th of July we were once more all collected together in "Idyllen," except Breistein, who was in Chitral. Three days later we were ready to begin the homeward journey. As usual, there were minor battles with the porters, particularly as seventy-five had turned up and twenty-five were all we required. Everybody was hoping to get as much as possible of what we had to leave behind. They were all waiting to throw themselves upon it. Even the smallest thing was valuable to them—a piece of paper or a board from a packing case. At 8.15 a.m. the whole caravan at last began to move towards Barum, which we reached in three hours, each porter carrying about 80 lb. of our equipment, plus the "perks" they had managed to scrounge after a hard fight in the camp. When we turned the last mountain ridge, we had a wonderful view of the highest village, Shabronz, with its green maize-fields, yellow corn and tall, characteristic poplars.

On the last stretch down to Shabronz we followed the irrigation channel of the village. This was magnificently built, in some places from yards of slate slabs or cut into the mountainside. In places it is quite dangerous to walk along it with one side running precipitously down to the river and on the other the overhanging mountain; we had to crawl on all fours because of our rucksacks.

In Shabronz they had begun the harvest. In some places the corn had been cut and in others they had begun threshing. Tied to a post, oxen and donkeys circled round, stamping the corn from the husks.

In Barum we shared out our superfluous provisions among the

inhabitants. They were certainly very welcome. We had previously decided to take another route down to Chitral than the one we had come up. It was slightly shorter, but, on the other hand, we had to cross the Owir Pass, about 14,000 ft. But it had the advantage of remaining longer in a higher altitude and thus avoiding the heat and mosquitoes.

The road between Barum and the village of Shungush, lying about 2,000 ft. higher, passes through impressive moraine masses with a curious erosion formation. From Shungush and further up to Muzhen (10,390 ft.), where we were spending the night, there was a good steady rise, with cultivated fields most of the way. Here we spent the night out in the open. There was quite a strong wind in the evening, and threatening clouds were collecting in the west.

It took four hours to do the 3,500 ft. from Muzhen up to the Owir Pass. Here I found the first fragments of fossils, after having spent six weeks in the Barum Valley without finding a single one. Near the pass there was very colourful flora of known and unknown plants.

Our goal for the day was the small village of Susum on the west bank of the Ojhor River. A little higher up on the east side lies Kiyar, which we had to pass. We were accustomed to seeing most of the women veiled and hiding themselves when they saw the *sahibs*. In Kiyar's market-place we were met by three unveiled young women offering us milk in small wooden saucers. It is dangerous to drink milk, so we had to hurry on pretending we had not seen them.

In Susum we were the guests of the District Governor and the Assistant Political Agent, Mir Ajam Khan, who happened to be there on a trip of inspection. After tea we watched a polo match. The polo grounds in Susum are supposed to be the highest in the world. They played without any rules. Both the players and the audience found this much more amusing, and the match we saw was certainly most entertaining. The handsome, spirited horses and the players in their colourful garments were a fine

sight. They got very excited by the game, spurring their horses terrifically, rushing about at a furious pace uttering their characteristic war-cry: "Haw, haw, haw." They seemed like the wild Asiatic horsemen of the Middle Ages. All the players seemed just as good friends after the match.

After an excellent dinner, we slid into our sleeping-bags under the trees below the Governor's residence.

The following day we had a short rest in Siwarth and were given plenty of apples, apricots, mulberries—and water so thick with slime that it looked like grey soup. Just by Siwarth the path went through a small graveyard. In one place one of the walls had fallen out of the tomb and one could look straight in at the skeleton.

The Lutko River is the biggest tributary of the Chitral River. At Skoghot it is very wide and flows quietly, but just below it rushes through a canyon with almost vertical walls up to 600 ft. high. There were caves high up in the mountainside caused by the decomposition of the chalk, and just by the exit from the canyon there were clear springs bubbling out of the mountain. The water was about 60 degrees and provided a refreshing bath for us, hot and sweaty as we were. The last twelve miles to Chitral we went by car.

As the first car swung into the courtyard of the Palace in Chitral, it was met by a great gathering, led by the Prime Minister, the Mehtar's secretary and members of the Government. Flower wreaths were put round our necks, a band played and a guard of honour presented arms. We had tea in the palace. The small reception was short; they realised we would like to wash and change, as we were due for dinner at 9 p.m. It was an excellent dinner, not too highly spiced for a change; we were, however, delighted to be able to go to bed in the small guest bungalows down by the river at 10.30.

We had a cable from Karachi about the possibility of seats in the plane leaving on the 7th of August. For this reason, we could not stay very long in Chitral, as we were very anxious to be off.



There was a parting lunch for us the following day at the palace about twelve o'clock. It was most enjoyable, and the same notabilities who had received us the day before were present. The Assistant Political Agent made a speech. He said he was speaking to us with a mixture of pleasure and regret. With pleasure because the expedition had reached its goal and shown what energy and initiative could achieve; with regret because the Norwegians were leaving Chitral. He hoped the inhabitants of Chitral would also become interested in climbing and exploring the mountains after the conquest of Tirich Mir. Furthermore, he hoped that this achievement would make Chitral and the young Pakistan better known in Norway and other countries. Naess replied to the speech, saying how sincerely grateful we all were for all the help, sympathy and friendliness which had been shown us from the very first by Chitral and Pakistan; and that we left with regret, as we felt we were parting from friends.

While we were in the mountains rumours had been rife in Chitral. There were old tales depicting large snow frogs and fairies living on Tirich Mir. It had been told that the expedition had had to kill a snow frog as large as an elephant before being able to attempt the climb, and that one of the chaps had had to marry one of the fairies.

In Ashret we had to hire new porters and mules to transport our luggage across the Lawarai Pass. We went on foot. In several places the road had disappeared; in others it was completely covered by gravel and stones which had been washed down by the flooded brooks. We were rather late in starting from Ashret, so it was dark before we arrived at Ziarat. We saw the woodmen's fires on the other side of the river. They showed up well among the large pines. Towards the south, above the Lawarai Pass, there were flashes of lightning; we did not hear any thunder, but there was some rain. About midnight we finally reached Ziarat, where we were spending the night.

We left Ziarat early, fearing the heat in the middle of the day, and reached the Lawarai Pass about 10 a.m. It was foggy there,

but we had not gone far down the south side, before the rain poured down, turning the paths and roads into brooks. We finally reached the Gujar Levy Post, wet to the skin.

When we arrived in Dir, we were told that we were to be the guests of the Prince for dinner and were also to stay the night. The guest-house, just below the town, was surrounded by a handsome, colourful garden. It was indeed a pleasant place, and the food was exquisite. We did not see the Prince, but were entertained by his son, Shahzada Mohd Shah Khisro Waliad.

After an excellent breakfast, we set off from Dir about seven. We often drove through water over the wheels. About 2 p.m. we reached Malakand, the residence of the Political Agent for Chitral, Dir and Swat, Major Mohd Yusuf, M.C. We were invited to lunch with him in his lovely house on the hilltop above Malakand fortress. We spent some pleasant hours with this cultured and sympathetic man.

Malakand (4,000 ft. above sea-level) lies on the ridge of the last arm of the mountains. From here one looks over the endless plains to the south and almost the last "hillocks" rising above the plains. South of the mountains there was rather a poor supply of water. But water was taken out here by a canal through the mountain from the Swat River, where it is first used in a power station and later distributed in irrigation canals.

Towards evening we arrived at Peshawar, and were able to get rooms in the Club there, because of Streather. However, it was not very easy to get seats in the train going south, but, thanks to the excellent assistance of the station officials in Peshawar, we did secure seats for the train south in the evening of the 4th of August. The day in Peshawar was chiefly spent in shopping and looking at all the lovely rugs there. We had a bathe in the Club swimming pool where the water was about 80 degrees. About 8.30 p.m. we were installed in the train and the long-dreaded, interminable railway journey began.

The rain was pouring down and it was not much help being inside a train. From Peshawar to Lahore we had some first- and

some second-class tickets. From Lahore it was impossible to get more than three second-class tickets; the rest were inter-class. Those who enjoyed the latter class sat and walked in water. It poured steadily through the roof of the carriage. However, the rain did not last so long and it was overcast, so the heat did not bother us; and when later we discovered we could spend quite a lot of the day in the restaurant car, the journey went relatively easily.

In Lahore Dr. Lorentzen left us to go to New Delhi and Bombay. He rejoined the expedition in Karachi by plane.

We also spent the night of the 6th of August in the train and arrived at Karachi in the morning; where Grüner Hegge from Wallem & Co., met us. We were driven straight out to our old hotel, the Merchant Navy Club. There was no time to waste: the Press conference had already been fixed, and was followed by a luncheon at the Hotel Metropole, given by Wallem & Co.

We had hoped to leave Karachi by Braathen's plane on the 7th of August. This turned out to be impossible, so we had to be content to wait for the next plane on the 14th of August. We were not very happy about our extra week in Karachi, but the few Norwegians there did all they could to give us a good time.

We went out to some islands near the town, where we could surf-bathe and take it easy. Naess and I went to Manora to study the tower-building crabs and to have a peep at the mollusc fauna. The others went out to Sand Spit. Colonel Diesen and his wife drove some of us out to Mauripur and Hawks Bay, about eight miles north-west of the town, an ideal place for bathing.

Another day Mrs. Diesen drove us out to Manghopir, about nine miles north of Karachi. The first thing we saw was a small pool with about thirty crocodiles. They looked half dead and barely moved even when we hit them with sticks. In this area there are sulphurous springs used for healing purposes. A small, ill-kept village had grown up round the place, where, among others, one could see lepers walking about.

On the last day but one in Karachi we had been asked to a reception by the Governor-General of Pakistan, Khwaja Nazimuddin. Besides the members of the expedition, Colonel Diesen and his wife were there, with Grüner Hegge and Sandborg, the two chiefs of Wallem & Co.'s Karachi office, and the Norwegian Consul. The reception was very solemn. We were arranged in rows. The Governor-General entered and pressed everybody's hand. A Pakistani flag which had been to the top of Tirich Mir with us was handed to the Governor-General. After that we enjoyed tea and a good cigar.

At last the 14th of August arrived, and the last stage of the journey home. We were called at 1.30 a.m., arriving at the airfield at 3 a.m. At 5 a.m. Braathen's "Norse Trader" took off, with Captain Skaara as pilot. It was still dark, but there was not much of interest to be seen even when the day did dawn, as we were flying above a thick cloud formation. Not until 8 a.m. was it clear enough to see the Iran coastline a-starboard. Nothing but desert, with a mountain here and there. An hour later we passed the Oman Peninsula in Arabia. There was no vegetation to be seen from the plane, although there were plenty of built-up areas on small mountain plateaus in the yellow-brown landscape.

We touched down on the Bahrein Island in the Persian Gulf about 11 a.m. The island, as much British as Iranian, has a great oil production and is the chief place for the famous Persian Bay pearl fisheries. After breakfasting here, we continued westwards.

At 7 p.m. we arrived at Farouk Airfield outside Cairo, after having been south of Suez an hour earlier.

We had a long trip ahead of us the following day, so we rose at 12.30 a.m. and took off from the airfield at 3 a.m. Four hours later we reached Athens. Then followed rapidly Rome, Geneva, Amsterdam and Sola. We did not arrive at Sola before 11.30 p.m. and were met by good Norwegian rain.

Then came the last day. We left Sola at 11 a.m. and arrived at Fornebu at 12.15 a.m. Eager faces pressed against the windows of the plane: "Would she be there?" There was a great crowd of

## THE RETURN JOURNEY

relatives, friends and acquaintances, journalists and Press photographers. Then followed a simple reception in the restaurant, with flowers and kind words.

The summit had been reached by the climbers, the scientists had collected material and the photographers had filmed. All very good and interesting. But think of the human relationship? Nine Norwegians had gone out and really made contact with each other, seen new countries and new peoples, living under utterly different conditions to those they were accustomed to. What exchange of knowledge, experiences and thoughts! The motive may be different, but the will to reach some form of understanding is the same.

Surely this also means something?

## EXPERIENCES

By HANS CHR. BUGGE

*Frostbite—Tent canvas—Sleeping-bags—Nylon ropes—  
Skiing sticks—The "Fifth Special."*

AS mentioned earlier, while preparing for the expedition we did try to collect as much advice as possible from the existing Himalaya literature. But we did not find much information there, and besides, in the main, we were obliged to use Norwegian equipment. It might be of some use to other expeditions to relate some of the experience we reaped.

We were well satisfied with our Himalayan boot. This was an unlined boot, made from Scottish Zug, as light as possible. Reference has already been made to the fact that we had obtained Vibram soles from Switzerland. These are quite waterproof, and as they are heavily ribbed, boots with these soles are a kind of copy of nailed boots in hard rubber. This kind of sole would probably be too slippery on wet ice, but on the glaciers below Tirich Mir, which were covered with stone and gravel where the snow had melted, these soles got a very good grip. We had the boot made sufficiently roomy so that we could wear several pairs of stockings or socks. We also brought a specially made dog-skin sock, which was very warm. Under the snow and weather conditions we experienced, changing from broiling sun and wet snow to intense cold, it was not easy to keep one's feet warm and dry; but by incessant and careful greasing of the boots we kept them watertight. Anyway, we often trod so deeply that the snow came over the tops of our boots and our feet got wet, however waterproof the boots. Those of us who used gaiters were best off. The boots were made so that one could fix a piece of sailcloth on top of the instep and toes; but this was of doubtful

value, as it was difficult to prevent the snow getting in between the boot and the cover, and when this froze it became a cold instead of a hot compress.

The large *wadmals* boots, with long tops for pulling outside the ordinary boot, were not much used—except on rare occasions in the camps. They were far too heavy to walk in. The Canadian felt boots were also chiefly used as camp boots. They did not stand the wet, but were roomy and pleasant to wear and kept the feet nice and warm.

The down jackets and trousers were copied from a French model; they were made from down-proof material and filled with the best kind of duck's down. The trousers reached to below the knee. One suit weighed 2 lb. These down suits did much to make life pleasant, even in the highest camps. They were too hot for climbing, but we were aware of this before we started.

The rest of our wardrobe has been described in another chapter, and it must suffice to say it was all up to our expectations, and we practically avoided frost-bite with the equipment we had brought. Those who reached the summit suffered from slightly frost-bitten feet, but only had slight pain for about a week. But no one was able to use the dog-skin socks between the highest camps and the summit. In this cold the boots were frozen stiff in the mornings and it was impossible to get them over the dog-skin socks. Captain Streather, the Englishman, suffered more from frost-bitten feet than the others. He had not got our Himalaya boot, but had borrowed Naess' reserve pair, used on his reconnaissance the previous year. Streather suffered badly for several weeks, but he did not receive any lasting injury from the cold.

It would certainly be possible to get better tents than those we used, in respect of insulation against heat and cold, but under the weather conditions we experienced on Tirich Mir our tents were quite adequate. We had to use any material we could get, and made the tents of down-proof material. A light material in another weave might be stronger and not so easily exposed to tears and split. To give good protection against the sun and the

cold and avoid condensation on the inside, tents with double walls and ceilings, so that there was an insulating layer of air between, had often been used on these expeditions. This makes the tents heavier, and we preferred to make them as light as possible, using single canvas. They turned out to be adequate against cold, but we always had to put something over the tents in the hot sunshine during the day if we wanted to stay inside them. We brought with us extra sun-sails of down-proof material, but they did not offer sufficient protection against the sun. Condensation was not so great that it worried us. Ground-sheets should be of some kind of rubber material. We were restricted to a material which was much stouter than necessary and therefore somewhat too heavy. Former Himalaya expeditions have generally used coloured tents; it is not easy to say what is best: if one has them coloured, they are apt to be too hot in the lower camps.

We brought two tents for six (for the porters), two for four, seven tents for two and two single tents. The tents for six were standard tents, 8 ft.  $\times$  6 ft. 6 ins.  $\times$  5 ft. The two-man tents were a modification of the internationally known Meade type, which the English have used in previous Himalaya expeditions, shaped like a small pitched-roof tent. These were 7 ft.  $\times$  5 ft.  $\times$  4 ft. to reduce the pressure of the wind. The sidewalls were 2 ft. high. The single tents were very low bag tents with one tent-pole—purely a kind of “draw-in.” We never used them.

All the tents were supplied with a sack entrance, but it is doubtful whether this is preferable. Eric Shipton had warned us that the tents easily became too hot with this sack entrance, and it may be that the usual large opening with good broad flaps and laced fastening are the best. Apart from the single tents, all had two ventilators, one at each end; and these were very effective. The tents were provided with duralumin posts, to which we had fitted skiing-stick rings so that they should not sink too deeply into the snow. This proved very practical.

We were well satisfied with the sleeping-bags, which could



hardly be improved. They were down bags, copied from an English model, two for each man, so that one might be pulled outside the other. Each set of sleeping-bags weighed about 7 lb.—the inner bag about 2 lb. and the outer about 5 lb. Reindeer bags can also be made light, but they are too bulky.

We also brought tents, sleeping-bags, clothes and boots for the porters. But it must be confessed that this equipment was not good enough for the porters who had to spend the night on snow and ice. The boots and clothes ought to have been warmer, and the porters ought to have had double sleeping-bags too. As it was, they just sufficed, but the porters took note that they were not provided with as good equipment as the *sahibs*; and they certainly suffered considerably from cold during the nights. Economically, it would not have meant a great difference to us if we had brought first-class equipment for ten porters, and we can be thankful that this mistake of ours did not have serious consequences. After the reconnaissance the previous year, we had got the impression that what we had brought for the porters would suffice.

There is not much to be said about the climbing gear. The nylon ropes were by far the best. They are considerably lighter than the hemp ropes and always keep dry, while the hemp ropes got stiff and difficult to handle in ice and snow. Crampons were only used on a few occasions, as were ice-bolts and carbines. We only brought twelve ice-axes, but certainly ought to have had more. We lost or broke half of them, and we were rather short in the end.

The skis were not much used, nor did the porters take much interest in them. Coming down, the glacier was so full of crevasses that all equipment had to be carried on the back, so our plans of making ski-sledges did not materialise.

We were most grateful for Eilert Sundt's suggestion of bringing skiing sticks. At the altitudes to which we climbed there was no question of such steep climbing as in the lower mountains in Norway or the Alps. Here it was primarily a case of walking on steep ice and snow slopes and often in deep, loose snow, and

under these conditions the skiing sticks were of great assistance. We used them right to the summit of Tirich Mir. On occasion, the light, specially made snow-shoes were also most useful.

The provisioning of the expedition has been mentioned before. It is not easy to pronounce judgment on the provisions. We reached our goal and returned with energy to spare, and had no more difficulty with the food than other well-equipped expeditions have had. Surely this is as good testimony as any. I should think there has never been an expedition in which every one of the members has been satisfied with the provisions brought for the highest altitudes. The whole thing is so individualistic. What suits one may not suit another, and whoever undertakes the difficult job of provisioning has naturally no idea of what the desires of each individual will be at, say, 23,000 ft.; anyway, it was impossible for our people to know.

Besides one main meal, we had, first of all, based our diet on biscuits and Ryvita,<sup>1</sup> but we had only brought one type of Ryvita and one type of biscuit. Here it may safely be said that we would have been much better off with different kinds of Ryvita and biscuits. Our Ryvita went down fairly well even in the higher camps, but the biscuits did not get very high up. Everybody was sick of these already in the Base Camp, and further up there might be days between anyone touching them. The provisions committee had taken up the question of dehydrated bread, which certainly would have been a welcome change from Ryvita and biscuits. But after the experiences of the last war, the bread would have had to be hermetically sealed in tins, and as it is very light it would have taken too much room. For the same reason, corn-flakes and Grapenuts<sup>2</sup> were also struck off the list.

Furthermore, we arrived at the conclusion that it would have been a great advantage if we had brought more oatmeal and porridge. Anything from which we could make gruel or soup

<sup>1</sup> Really "crackle bread," but sold in this country as Ryvita, etc.

<sup>2</sup> "Oatnuts" similar to Grapenuts, etc.

was valuable higher up. We often longed for various kinds of fruit juice. More dried fruit and potatoes would also have been useful. The same applied to dried vegetables, which had been suggested as very nourishing. However, when the recipes disclosed that the vegetables would have to be soaked overnight and then boiled for a considerable time, we abandoned them.

It would also have been a good thing if we could have had more fruit, both fresh and tinned. Some apricots were brought up from the villages, but it took a long time to get them brought up to the higher camps, so that they arrived in rather bad condition. Towards the end we made jam from the apricots, and it was extraordinary how infinitely better this fresh jam tasted than the various kinds we had brought from Norway. We had renounced tinned fruit, as we thought it would be too heavy. But it is a point whether we ought not, after all, to have added a few tins as provisions for the last assault.

We had more meat than we required, and fat meat like pork we hardly touched. We had one or two meals of it, and that was all. Apart from this, people's taste varied enormously in the higher camps. What one person liked and managed to swallow might make another person retch. A case in point was Ovomaltine: in the lower camps many people loved this, but higher up it was only Streather who could touch it. Ovosport and glucose tablets, which we had tried at Easter in the Norwegian mountains with excellent results, proved satisfying as far up as the Base Camp only. Later many found them sickly; Kvernberg, however, enjoyed Ovosport to the very summit, while Berg stuck to glucose.

Many will want to know what we lived on chiefly in the higher camps. Tea and coffee were always acceptable, and gruel or oatmeal and barley soup was very much in request, and so was our "Fifth Special." It was Lorentzen who first prepared this delicacy, and Nybakken who named it in Camp V. Dried milk was mixed in cold water, and to this was added crushed flat-bread and a lot of jam and sugar. No other dish attained the

great popularity of this one, and we ate it as long as we had any flatbread and dried milk left. Sugar and jam were luckily never short. Chicken in cream sauce, meat-cakes and onions, cocoa and chocolate made with dried milk were also much coveted.

The preparation of the food naturally played a tremendous part, and, with all due respect to the chaps who sacrificed themselves to the cooking, there is no doubt that it would have been a great advantage if we had brought a capable cook who might at least have come as far as the Base Camp. Before we went on, he might have taught us the most important points.

There was photographing and filming practically every day from the moment we left Oslo. The experience Breistein and Nybakken had gained on their journey to the West Indies and South America on their flight round the world in 1947-8 was of the greatest use on Tirich Mir. The first thing the photographers discovered when they arrived in Pakistan was how easily they miscalculated the light. If, for example, they were under the impression that stop 8 would be suitable in the sun, the exposure-meter showed that they would have to use 11. Up in the mountains they used down to 22.



Part of the route between Camp V and the Base Camp.



Arne Naess going towards the top at a height of 23,000 ft.  
Captain Streater is in the foreground.



Siesta on a spot where most people would not manage to get to their feet again, but the Chitrali porters were exceedingly strong, carrying loads of up to 100 lb. for days.



One of the porters being assisted across a crevasse.



Henry Berg on the left, and Per Kvernberg, before the start of the first assault on the peak.



The moraine formation at Tirich Mir.



## HEALTH AND OTHER THINGS

By FRIDTJOV VOGT LORENTZEN

*Mountain sickness—The deciding examination—Our medical equipment—The ideal sun-cream—Sun-spectacles indoors—Everybody sick—Slimy water—Hallucinations—The health of the natives—Individual reactions to the same food.*

AS is well known, the air pressure, and consequently the oxygen intake by breathing a certain volume of air, decreases at an increasing height. At 16,500 ft. the pressure is half what it is at sea-level; and one has therefore got to breathe much more quickly and/or much more deeply to take in the necessary supply of oxygen—in other words, one's breathing is proportionately heavier at great heights. The strain on muscles, legs, the back, etc., is the same at all heights. It is most striking how one neither can nor ought to walk so fast or take as long steps or ascend as quickly as one is accustomed to lower down. One is forced to walk slowly with short steps, with frequent pauses. At times it may be preferable to take ten relatively quick steps and then pause to have a deep breath. Various experiences seem to point to the fact that this is more effective than a slow, steady pace.

Altitude-deterioration—mountain sickness—is due to lack of oxygen. It may appear suddenly, as, for example, during a flight, when it will be more acute than when the ascent is gradual. All the cells and bodily functions suffer from lack of oxygen. In flying, the first and most important symptom of lack of oxygen is reduced vision in the dark. During mountain-climbing the particular troubles are lassitude, fatigue, heavy and often irregular breathing, headaches, sleeplessness and bad appetite, sometimes accompanied by retching and stomach pains. The heart beats

quicker and there are palpitations. In the case of serious lack of oxygen, the brain is affected. This may appear in various ways: a waning of the critical faculties or powers of judgment, melancholia or depression, but sometimes even by amazingly high spirits and foolhardiness.

After two or three weeks in a high altitude, acclimatisation takes place, and all the unpleasant symptoms of lack of oxygen will diminish or disappear. The symptoms may reappear when one proceeds to a higher altitude, but by stopping for some time at this new altitude one may get acclimatised once more. The degree and ease with which various individuals are affected by mountain sickness and then get acclimatised varies considerably. Experience has shown that some may get an acute attack of mountain sickness, but may, after some time, be able to stand great altitudes extremely well, or not at all. Some may acclimatise easily one year and not another. At present there is no method by which these reactions can be examined or prejudged.

Satisfactory acclimatisation may happen up to 20,000-22,000 ft. as long as physical exertion is not too great. Above this height human beings can only remain for a couple of days without their general condition and strength deteriorating seriously. The assault and climbing of high peaks must therefore take place from a height of 20,000 ft. in about four to six days.

All this was taken into consideration during the examination of the prospective candidates for the expedition. All the candidates were given a taste of lack of oxygen in the low-pressure chamber of the Air Force, and had an opportunity of seeing others affected by low oxygen pressure too. During the test one of the candidates had to receive additional oxygen after a few minutes at a pressure equivalent to a height of 23,000 ft., while another reached about 28,500 ft. At this point he became quite hilarious and wanted to chuck himself over the edge. The examining doctor hoped to get some idea of individual reactions to lack of oxygen. No candidate was, however, preferred or excluded purely on the test in the low-pressure chamber. There

is no satisfactory way of judging how well a person may acclimatise, which is after all the deciding factor in his usefulness on a Himalaya expedition.

Very thorough clinical examinations were made: electrocardiographs, X-rays of lungs and heart, measurements of respiration volume and various lung volumes taken. Everybody's pulse and blood pressure was determined on a bicycle ergometer while loaded with various kinds of work, in order to be able to get an impression of his physical condition.

None of the candidates had suffered from sun eczema or other skin disease, none had ever had frost-bite, circulation of the hands and feet seemed all right, all breathed through their noses—all conditions that might prove of great importance. Everybody had good teeth. Of the four men chosen for the final assault three were tall, slender and comparatively lean, factors which are probably advantageous for high climbing.

More important than all tests was the personal knowledge of these candidates, based on many years climbing together. It is on such expeditions that one gets the best impression of the physique of each individual, of the ordinary human qualities, and altogether of the many factors which are so important, apart from the physical ones. The doctor and the Selection Committee were obviously aware of these important matters. A Training Committee was formed after the selection of the candidates, and I believe the latter made a valiant attempt to get into the best possible form by P.T., skiing, rowing and climbing.

As far as I know, there are no effective breathing exercises beyond those provided by actual physical exercise.

The selected candidates were vaccinated and inoculated against smallpox, plague, cholera, typhoid, paratyphoid, typhus and yellow fever. All told they made about six to eight visits to the Public Health Department. One of the candidates reacted violently with great pain and high fever.

The medical equipment of the expedition was decided taking into account that a doctor would accompany the expedition, and

also with the idea of being able to render help to the porters and the natives in the villages we passed through. We regarded this as very important. It would increase the porters' feeling of security, and hence their reliance on us and attachment to us.

We decided early not to take any oxygen for the climbing itself, but we had thought of taking oxygen for use in frost-bite, accidents, etc. The question was thoroughly discussed with English and American experts, and it ended with us deleting oxygen from our long list, because of the great weight of the necessary equipment. Also the moisture in the breath condenses in the oxygen masks in the cold and often freezes. There is thus a risk of the valve freezing and ceasing to function, so that the patient suddenly has to breathe in free air with a low oxygen content. It has also been argued that an artificial oxygen supply weakens the capacity to acclimatise, and that a patient who is taken off oxygen is probably worse off than someone who has not had any oxygen at all. There has been no research on this question at all, but I have recently heard it suggested that oxygen in solid form might be used for the last 900-1,000 ft. with advantage.

*Sun-cream.* It is the ultra-violet rays which burn the skin. This is in reality an inflammation. Rays with a wavelength of about  $3 \times 10^{-4}$  mm. burn most, and those of  $3.5 \times 10^{-4}$  mm. tan most. Theoretically, it is therefore possible to get brown in a particular light without getting burnt, and vice versa. Most people prefer a cream which filters out the burning rays and lets through the tanning ones. It was, however, of no importance to us whether we got brown or not. We discussed the question with the Department of Dermatology at the State Hospital, and after we had waded through the literature on the subject we decided on a sun-filtering cream which, among many others, had been tried out in America.

The sun-cream was made in various concentrations and with different cream bases. The light-absorption was examined spectrographically, and at Easter the cream was extensively tried

out in practice. The result of the tests was very satisfactory and we decided on this cream. We also brought other creams in case anyone should develop supersensitivity.

We have every possible reason for being completely satisfied with the cream. We had no serious sunburn, at any rate not with those who used the cream as prescribed. I did not think beforehand that it would be possible to get such effective protection, and there is probably no previous expedition which has got off so lightly. On the other hand, one of the expedition who swore by a "sun-bathing oil" from a local chemist was made to feel the full force of the sun. On our return many remarked on the fact that we were not brown. The porters, who were very dark-skinned, loved to use the cream, although, apart from their lips, they hardly required it. It was extraordinary to watch the porters drink glacier water and eat snow and ice without getting sore lips.

*Sun-glasses.* For the eyes, as for the skin, it is the ultra-violet rays that are dangerous. But the light rays are those that really worry one, as they dazzle and make the pupils contract.

One gets tired of using one's eyes, particularly for distances. Ordinary clear glass is sufficient to remove the ultra-violet rays, whatever the colour. But for dimming the light, dark glasses are necessary. There is no certainty about which is the best colour. We made spectrographic tests with several spectacles and tried them out in the mountains at Easter. We decided to use dark grey or brown glasses framed in perforated aluminium cups, with felt next to the skin and elastic round the head. For lower down we used lighter spectacles with dark yellow-green glass, with the metal parts rubber-lined wherever they were in contact with the skin.

Besides these, various other reserve glasses were brought for testing. We did not take any polarised glass.

The spectacles also proved satisfactory, none suffering from snow blindness or sun irritation.

*Headgear.* At great altitudes one may be exposed to sunstroke

and frost-bite at the same time, so that the head has to be protected accordingly. Smythe, in his book, recommends the "planter's terai." We did not manage to get hold of this garment, and used the ordinary topee, which proved excellent for the conditions we encountered. At greater altitudes we used knitted caps as well.

It is difficult without having actually experienced it to realise the intensity of the sun's rays in the Himalayas. It became hot directly the sun rose over the mountains in the morning, and the light became glaring and irritating. When Bugge was ill, I had to cover the tent completely immediately. In addition to the sun-sails with which we had fortunately equipped ourselves, we also had to cover the tents with our double sleeping-bags and the rest of the night-clothes directly the sun rose. In spite of this, we had to wear sun-spectacles inside the tents. Because of the intense radiation, the heat was very troublesome later in the day, and probably was the chief reason for the lethargy we felt. Anyhow, it was very much easier to do one's chores in the evening after sunset or before sunrise if the cold was not too trying. At that time we also had the advantage of firm snow under foot. Altogether we found the heat the greatest trial, although, of course, it is the cold that is dangerous.

## OUR MEDICAL SUPPLIES

### *Instruments and Equipment*

- 1 sterilizer for instruments, 15 × 8 × 4 cm.
- 2 artery forceps, 13 cm., with teeth.
- 3 artery forceps, 13 cm., without teeth.
- 2 forceps, surgical.
- 1 forceps, dissecting.
- 1 splinter tweezers.
- 1 scissors, curved.
- 1 scissors, straight.
- 2 scalpels, round, in case.

## HEALTH AND OTHER THINGS

1 scalpel, pointed, in case.  
2 small retractors.  
1 needleholder, 13 cm.  
1 box suture needles (0-1-2).  
Nylon thread.  
Catgut.  
1 tube suture silk (0-1-2).  
Gauda file.  
1 tongue depressor, metal.  
1 probe, steel, 14.5 cm.  
1 sound.  
Trocar and canula (for puncturing bladder).  
1 catheter, metal.  
1 corneal spud.  
3 thermometers.  
2 pieces of soap in box.  
1 towel.  
10 pieces soda tablets for instrument boiling, 1 gr.  
5 Record syringes. (2, 5, 10 and 20 c.c.).  
1 stethoscope.  
1 sphygmomanometer, aneroid.  
1 headlamp with pocket battery.  
2 Martin's bandages.  
Rubber tubing with glass junctions.

### *Medicines, etc.*

Iodine, tincture, 10 bottles of 4 c.c., in small boxes.  
Iodine strong, 2 bottles of 100 c.c.  
Spirit, surgical, 2 bottles of 500 c.c.  
Penicillin ointment, 24 tubes of 8 gr.  
1 per cent. penicillin in sulphathiazole powder, 10 tubes of  
5 gr.  
Cotton-wool, 6 pkts.  
Cotton-wool, compressed, 6 pkts.  
Cotton bandages, 30 pkts.

TIRICH MIR

- Cotton bandages, compressed, 6 pkts.  
Sterile gauze, 10 pkts.  
One-man dressing (with morphia), 4.  
One-man dressing (without morphia), 8.  
Elastic bandages, 8.  
Crepe bandages, 10.  
Norwegian plaster, 4 big rolls.  
Sleek plaster, 2 big rolls.  
Quick plaster, 3 big rolls.  
Elastoplast, 2 big and 2 small rolls.  
Plastic skin, 3 tubes.  
Triangular bandages, 1 pkt.  
Splints (Finnish, special cardboard), 1 set for arm and 1 for leg.  
Safety pins, 4 pkts. assorted.  
"Pigmentan" sun-cream, 16 boxes of 30, 14 of 10 and 30  
tubes of 20 gr.  
Some Canadian cream and other sun-creams.  
Aspirin (0.5 gr.), 400 tablets.  
Neuralgin, 600 tablets.  
Codeine (0.025), 40 tablets.  
Morphine (0.01), 100 tablets.  
Dolantin (pethidine) (0.025), 100 tablets.  
Citopan, 100 tablets.  
Prodorm, 100 tablets.  
Fenemal (0.01), 40 tablets.  
Caffeine (0.10), 200 pills.  
Ephedrine (0.05), 40 tablets.  
Amphetamine (0.005), 30 tablets.  
Acetisatin (0.005), 40 tablets.  
Opium (0.05), 40 tablets.  
Sulphacombin, 250 tablets.  
Bicarbonate of soda,  $\text{NaHCO}_3$ , 200 gr.  
Sulphaguanadine, 200 tablets.  
Enterovioform, 200 tablets.  
Hexylresorcin (0.10), 100 pills.



## HEALTH AND OTHER THINGS

Flocillin (penicillin in oil), 10 bottles of 3 mill. units.

Aureomycin (5 bottles), 10 gr.

Rhinal, 4 bottles of 10 c.c.

Amphetamine inhalers, 5.

### *Eye Equipment*

Eye lamellæ, 40.

Pantocain (0.001), 50 tablets.

Atropine (0.00032), 50 tablets.

Argacid ointment, 5 per cent., 2 tubes.

Lucosil pro inst. (10 c.c.), 2 bottles.

Cetricin (thyrotricin), 4 bottles.

Eye pipettes, 6.

Lakris tablets and camphor tablets.

Chewing gum.

D.D.T. (well-prepared), 10 per cent. in talcum, 8 tins, about  
90-95 per cent., 300 gr. for mixing in white spirit.

Calcium permanganate, 20 gr.

Calcium hypochlorite (CaOCl).

Sodium thiosulphate.

Indicator for testing for chlorine.

Chloramine (0.5), 20 tablets.

Mosquito oil, 12 bottles.

Paludrin (0.125), 400 tablets.

Media for mixing: zinc oxide, 50; glycerine, 100; spirit (30  
per cent.), 500.

Talcum, 100 gr.

Foot powder, 6 boxes.

Foot ointment, 6 boxes.

Salicylic powder, 6 tins.

Frost ointment (Swedish Army), 10 tins.

Amycen spirit, 100 c.c.

Inotyol, lanoline.

Benzocaine ointment, 100 gr.

Sterile vaseline.

## TIRICH MIR

Allergin, 40 tablets.  
Digitalis tablets (0·10), 100.  
Mercurgan, 5 ampoules.  
Dilatol, Priscol, Doryl.  
Salt-glucose, 500 tablets.  
Sulphosalicyl reagent, 2 tubes (to test for albumen in urine).  
Wismut's reagent, 2 tubes.  
Procain-adrenalin ampoules, 20.  
Novocaine-adrenalin ampoules, 100.  
Evipan (0·5 and 1·0), 10 ampoules.  
Corespin, 10 ampoules.  
Dolantin (2 c.c., 0·050 per cent.), 24 ampoules.  
Pantopon (1 c.c., 2 per cent.), 36 ampoules.

### *Vitamins*

A-D "Afi" (3,000-300 I.E.), 500 tablets.  
B "Afi" (3 mg.), 300 tablets.  
B-total "Afi," 300 tablets.  
C "Afi" (50 mg.), 1,000 tablets of 50 mg.  
  
Empty boxes, cartons, bottles, labels, corks, string.

### *Dentistry Kit*

#### *Sun-glasses*

Celluloid, 7 pairs.  
Dark glasses in aluminium cups, 15 pairs.  
Yellow-green in "pilot-goggles," 10 pairs.  
And various others.

Aniline colour to dye the snow.  
Dichlorphenolindophenol tablets.  
Heparin.  
Nitromannit.  
Chrome salts, Retikulins (which is supposed to speed up  
acclimatisation).

We preferred to use tablets, pills and ready-made powders rather than liquid solutions. Transit through the tropics required special consideration. Some ampoules were specially made with glycerine and spirit to stand the cold. All liquid medicine was tested for sixty-two hours at  $-25^{\circ}$  C. Everything was divided and sent in two cases to Chitral. A few necessities for the journey—as, for example, Paludrin for malaria—we took with us. All the equipment arrived safely, except two thermometers which had a maximum of  $42^{\circ}$  C. We had considerably higher temperatures.

Fortunately, we returned from the summit with most of the medical equipment unused, but this does not mean that we had taken anything superfluous. Perhaps one should take more salicyl. The porters used an enormous lot and it was a very good stand-by when the porters imploringly asked, “Doctor *sahib vez*” (*vez*=medicine). Perhaps Euphyllin ought also to be included for breathing difficulties at night. This drug often has excellent results with breathing difficulties in heart patients.

Apart from all this I took with me some equipment for special respiratory-physiological examinations; this was packed in a specially made “medical kit.” Some of this was unfortunately damaged during transport.

There is always the possibility of carbon monoxide forming when an open flame comes into contact with a cold cooking vessel, and this danger is far greater in high altitudes. We either used a special tent for cooking or cooked in the open air. We did not want to perish from carbon monoxide poisoning.

*Health conditions, etc.* Irregular living conditions, unusual and perhaps insufficient food, little sleep, exertion, heat and flies are more than sufficient reason why the whole lot of us suffered from acute intestinal infections both on the flight and on the way to Barum—some even quite violent, but luckily not for long. Naess, however, had a high temperature for several days, and remained behind with me for quite some time.

The trip from Chitral to Barum with the sick Professor *Sahib* on horseback offered several unusual situations. We had only got

light day clothes, sleeping-bags and a pocket-knife. Our toilet things, food, knives and forks and medicine had gone on in front with the other porters and the rest of the expedition by mistake, and we were unable to make contact for several days. But at any rate we had the complete money supply, several thousand rupees, although we did not know the language sufficiently to be able to make any use of it.

In Barenis one of the natives delighted us greatly. He was a kind of orderly in the bungalow belonging to the Mehtar of Chitral; he kept the masses of natives, watching us with curiosity, at a distance. He provided us with a bed each under a magnificent walnut tree; for the first time we were given plenty of boiled water. Usually we were given strong, well-cooked tea with plenty of goat's milk and a lot of sugar to wash down the food, too highly seasoned for our interiors and taste. But this orderly seemed to have a seventh sense in divining our gestures and gesticulations accompanied by English and Norwegian words. From the word "go," he seemed to guess that our insides were, mildly speaking, in a state of flux. We had only to make a clucking noise or at most wave a feather and he would immediately bring a live chicken dangling by its legs. This, by the way, was how chickens, several together, were transported long distances. We did not discuss the price; our spirits were high at the thought of some light food, but these same high spirits sank quickly below the daily low level when the chicken was "served" by another chap with a million flies as the only garnishing. When also, after an attack with our only eating utensil, the pocket-knife, we found that the chicken was raw and uneatable, it went sky high and fell down to the porters.

I felt very desperate during the day, being left with a patient whom I could not even provide with food. The only possibility of contact was *via* Chitral town, where the Government secretary spoke English. The telephone had just arrived in this valley. "Telephone" was understood, and I was brought to the only instrument in the village. It stood on a stool which was the only

piece of furniture in a clay hut 6 ft. by 6 ft. by 6 ft., without a window. "Secretary, Chitral," was also understood by them. It really was a joy talking to the secretary, and even more so to Jörstad when he 'phoned me—as we had agreed. In the evening we were given decent food, and went to bed under a large mulberry tree. There was a strong wind during the night, and to our annoyance we were literally chased away by a rain of mulberries; the ground was quite white with them.

In Barum I made a "nursing home" for Naess under a large dense chestnut tree. It was difficult to keep "callers" away. The philosopher could not stand anyone coming near him. Personally, I had become rather suspicious too and kept people away, as, by degrees, the expedition was "losing" a considerable number of things. Spectacles, knives, pens, pencils, notebooks, combs, string and empty tins and other small articles kept on disappearing, and I was particularly annoyed when my toothbrush vanished. It was not much help the philosopher trying to pacify me by saying that we ought to look on this procedure as a sound and normal form of taxation—a form of social equality in a feudal community.

The first day in "Idyllen" everyone suffered from stomach upsets, probably due to the considerable change in altitude and the hard work after a rich dinner. But the various stomachs settled down again after a couple of days and remained all right until we reached the lowlands again after the summit had been reached.

Dysentery and other stomach and intestine infections are always a great danger to Europeans coming to the East. We therefore intended to drink nothing but boiled or chlorinated water. It is usually said that "one does not know what good drinking water means before one has come east of Suez." Dysentery, cholera, typhoid and other infections are carried by the water; in addition, the water was muddy, turbid and most disagreeable. The Indus is famous for its mud. In the districts we passed through, it is very dry for several months. The brooks begin at the glaciers and the water is led in long irrigation channels *via* farms and cultivated

fields, and quickly gets muddy with fine, dredged particles. I kept the water from a river in Barum standing untouched in a deep tin and after three days it was still muddy. To begin with, we did not touch the water purely because of its looks, and we envied the natives who drank it as a matter of course. By degrees our thirst got the better of our reasoning. This happened more and more often, and particularly on the way down we repeatedly broke the commandment of not drinking "fresh" water.

Fruit, vegetables (and fingers) were rinsed in water to which chlorine or permanganate had been added.

We all took Paludrin against malaria four hours before landing in Karachi and daily thereafter until we arrived in "Idyllen."

To get time to acclimatise, we took about two to three weeks over the ascent to "Idyllen" (11,000 ft.), Camp IV (the Base Camp, 17,500 ft.) and Camp V (18,000 ft.). The lack of oxygen made itself felt, at every fresh ascent, in lassitude, heavy breathing, headaches, poor appetite and sleeplessness, but no one suffered seriously from mountain sickness. Irregular respiration, particularly Cheyne-Stokes type, was common. This means periods when respiration ceases completely, or superficial respiration followed by periods of rapid, deep and strenuous respiration, which was particularly unpleasant at night. One almost went to sleep during a period of weak respiration, but woke up with a choking feeling in the next period of strong respiration. Sometimes it helped to lie with the top of one's body high. We made the underlay of snow accordingly. Personally, I had the feeling of having the same type of breathing difficulties during great exertion in the day too. But I did not hear of anyone else experiencing this. I strongly recommended and personally used salicyl, neuralgin and antipyrincaffeine for headaches, and took light sleeping draughts. The use of these drugs in moderate doses is not harmful, even for weeks on end, and may be extremely useful under such conditions.

I will mention two of the special illnesses which I treated and which might have had serious consequences.

This was about the time when the first assault was to be launched. The porters had had a very strenuous day on the 8th of July. Some of them just could not stand any more and put down their packs. Some of the others who were able to stand up to it had consequently got huge packs. One of Streather's porters, who had been one of the best of the lot, collapsed completely on the 9th of July. He had previously shown great anxiety about "trolls" and frogs, etc. Streather ran down to Camp IV, where I was, and we hurried up to Camp V together, where the patient had managed to make a large tear in his tent. He was ferocious and dangerous both to himself and things around him. In the end four men succeeded in tying him up. I quote from my diary:

"... The porter was lying in a partly torn tent in scanty and torn clothes, tied up with a heavy climbing rope. He attempted to tear himself loose and succeeded at times. He was rolling his eyes, making faces and biting. He became quiet after some tablets and injections; but he had had a bad effect on the morale of the other porters. They were suffering to a great extent from mountain sickness, headaches and sleeplessness, and they felt cold and complained bitterly. Several decided to chuck up their jobs. They were tired and above everything superstitious and terrified now they saw the result of assaulting Tirich Mir. Some departed alone without food and their wages. It was no good for Streather, who had pacified them so often before, to try to offer them more clothes, higher wages and easier jobs. Rarely before have I been so thankful for good weather as I was this day. We ourselves were feeling lethargic and apathetic, and a bad storm would probably have robbed us of our last vestiges of organising capacity. The patient required the assistance of several porters, and so there were no porters to carry food and equipment further up; neither were we able to send a message, and this was just about the time of the first assault."

Our seventeen-year-old Chitrali porter, who had won our hearts long ago, impressed us once more on this day. The average porter was not generally blessed with much initiative or public spirit, but Abdul Karim lit the cooker, made hot drinks and tried to pacify the patient, altogether a different person from the one who a few days previously had gone for one of the other porters with a hefty stick, in a wild rage. I thought there was quite a good chance that the porter would recover from his hysterical fit, but I was not certain. It was all important to get the patient down as soon as possible. But what kind of transport was there? The S-glacier down to Camp IV had several ugly crevasses with small, narrow snow-bridges which the sun had been thawing rapidly. I quote the diary again:

“Desperate about the lack of contact with those further up, miserable about not being able to support the top chaps. Transport down may be all right provided I can give the patient sufficient injections—and put him in a sack—I dread it.”

Fortunately the patient did recover, so we reduced the doses of narcotics and postponed the trip down to the following day. 11th of June: “He mentioned ‘trolls’ again to-day, dressed in red; they are threatening him from the tent roof. He also made a ferocious attack on the old Chitrali porter; otherwise he is fairly quiet.” At 1 p.m. we began the trip down. I went first on the rope, then the patient, followed by Streather and two porters. It was anxious work across some of the widest crevasses, not least because the patient was feeling giddy and heavy. All went slowly but safely down to Camp IV. After a good night, the porter was so well that he was able to go down quietly with two men.

During the afternoon of the same day, Bugge came down with the assistance of the oldest Hunza porter, who had also to come down because of feeling weak and sick. It was easy to see that





Resting at 20,000 ft. above sea-level. Captain Streater on the left.



The porters at the same height. All are wearing the typical Chitral cap.



The 22nd of July, on the top of Tirich Mir. Henry Berg with the flags of Norway, U.N. and Pakistan. The 30-lb. stone in the foreground was taken up by Per Kvernberg, who made the climb without assistance from the porters.

Bugge was suffering from something besides mountain sickness; and examination showed that he had got pneumonia. It was astonishing that he had been able to walk down by himself, but he had not much strength left when he arrived at the Base Camp. It was quite obvious that he was out of the high game; this was a great blow to Bugge and the expedition. As it turned out, fortunately we had sufficient fit climbers left. Bugge had felt in fine form, but had probably forced things by supporting Berg and Kvernberg on their first assault. He told me himself how he had often to breathe heavily through the mouth to get sufficient oxygen. It is impossible to avoid breathing through the mouth during exertion at great altitudes. There the dry, cold air gets deep into the air passages and throat, and windpipe catarrh develops easily. In this case infection had gone further down, for we have always got the bacteria there. He was given penicillin treatment and recovered quickly.

After a week in the Base Camp, Bugge felt sufficiently well to go down to "Idyllen" with the old Hunza porter and me. The porter had a bad knee, which I had to puncture to let out the water.

Bugge was soon able to go for short walks. After three days in "Idyllen," I went up again to be present at the next assault on the summit, and Jörstad came with me.

Apart from these two cases, we had no other serious illness. I treated, of course, lots of blisters, specially on the porters' backs, from carrying the cases. On the way up one of the porters fell into a big rapid brook, and on the way down one of the porters fell into a river and hurt his back; but, strangely enough, neither received any lasting injury.

Our hair, nails and beards grew slowly in the higher altitudes, and the half-moon at the base of our nails disappeared altogether. Probably all signs of undernourishment. These symptoms appear in various illnesses.

During the passage up and down the mountainside there was plenty of work for the doctor. It was something of a sensation to

have a doctor in these out-of-the-way places, and people (only men) flocked to see me.

The husbands would not allow a doctor to talk to or examine their wives, even if they were seriously ill and I made it an urgent matter. The natives had a tremendous belief in medicine. The belief in Doctor *Sahib* and medicines was far too great here as in so many other places. Often I gave them salt tablets or some other innocent medicine. The effect was greatest when the tablet was coloured and packed in a grand box.

In these districts, so deficient in Iodine, there was quite an amount of enlargement of the thyroid gland. Goitre was a common complaint. Among the seventy porters in Barum there were eight or ten who suffered from giant struma. I saw no one with Basedow's complaint. Several suffered from malaria, and our Paludrin tablets were in great request. On the way to Chitral I examined our chauffeur, who was running a high fever and diagnosed malaria. The trip down to Chitral was rather nerve-racking, but both he and the jeep "held." He certainly was an adept at driving on precipitous and dangerous roads. As we were not allowed into the native huts, there was not much chance of helping those who probably were most in need of it. Quite a proportion of those who came to see me were hypochondriacs, full of complaints and afflictions. The situation often turned to amusement and laughter. Several of the men had hysterical fits. One day I found one of them unconscious. I feared he had stolen some red sleeping tablets; I gave him an "injection of water!" Five seconds afterwards he "came round."

In the day-to-day life, our porters were high-spirited and keen. On the average, they were lean and slender with big muscles and an incredible staying power. They might carry up to 100 lb. from six to eight hours and at a good speed. During the ascent they were very firm about their rest pauses and it was no good trying to force them on. They always kept together and were very helpful to each other. They start their coolie profession at an early age. They had magnificent teeth. It was

always a joy to see Abdul smile and show his shining white teeth. If there had been time, it certainly would have been very interesting to make some research into their diet.

One could say quite a lot about their feet; to a great extent they walked about barefoot; and if they did wear anything it was usually rags, pieces of leather or other things they wrapped round them. Some of them had some special and very practical shoes. It was very usual for the porters when they came to a scree or some other difficult part to take off whatever footwear they had on, and shoot off like arrows without a moment's hesitation about where to put their feet, carrying up to 100 lb. on their backs. It was a hair-raising sight.

On several occasions I had the opportunity of watching the natives treating their wounds. A mixture of various kinds of fat, *ghee*, was cooked with quantities of soot. This paste they smeared over the wound, and the skin was then covered with leaves and wound round with rags. A boy with a small leg wound had large swellings with stinking masses of pus covered with flies. Green leaves, which, according to modern science, should prevent infection and smell, had certainly done no such thing in this case.

We found D.D.T. very useful against lice and bugs on several occasions. We had been prepared to de-louse the porters for fear of typhus; however, there had been no signs of this illness in this part of Pakistan for some time. As de-lousing would have led to great difficulties with the porters, we refrained from this, but we were always careful to avoid lice. Anyway, the Mohammedans are very clean in their persons, in accordance with the teachings of the Koran.

We were not particularly pestered by insects. Some evenings and nights there were some, and the mosquito oil came in useful. But we never used mosquito nets.

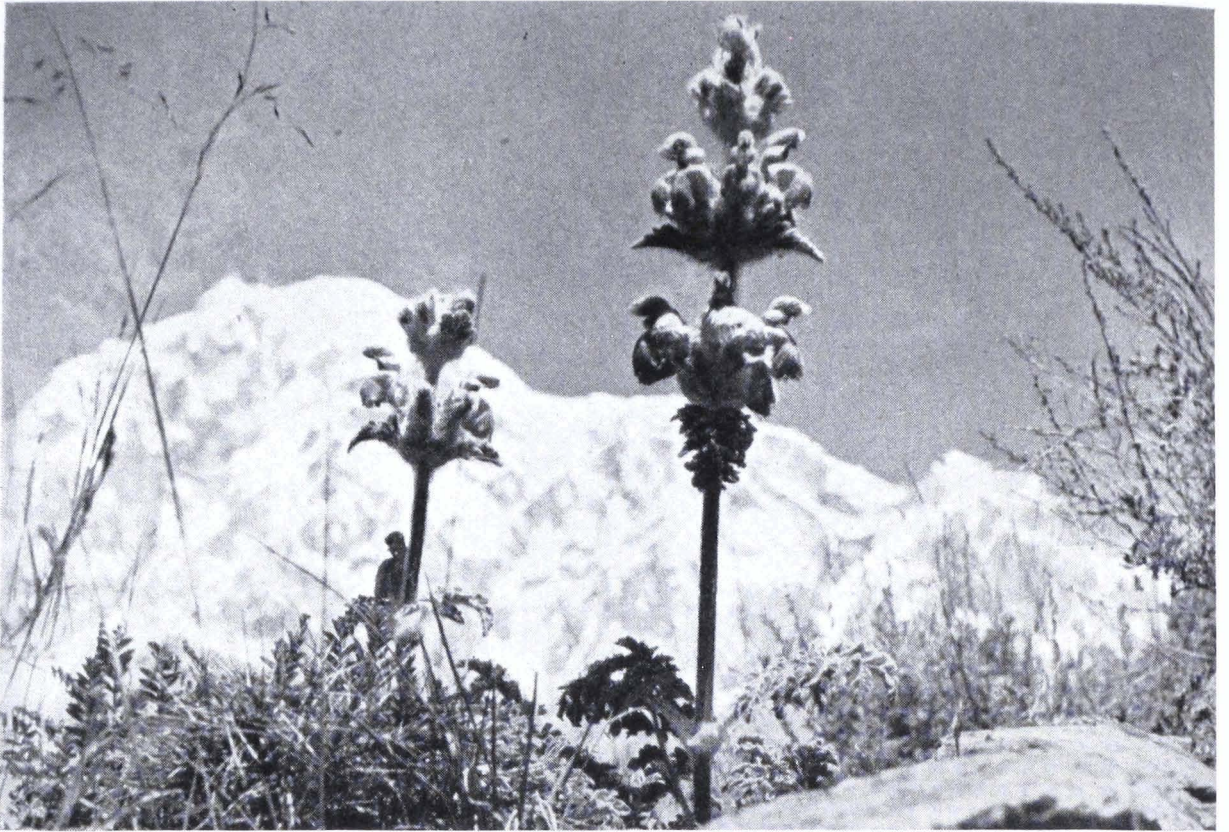
It is a well-known fact that humans down at low altitudes can manage for days on nothing but water. Those porters who fasted did not eat from before sunrise to after sunset, and they were in good condition all day.

It certainly is individual taste, mental condition, belief and custom—in short, psychic conditions—which are the determining factors in the choice of food and the reason why even the sight of some particular food is repulsive to one while another asserts that “it saved his life.” At very great altitudes not even the most choice and delicious food will tempt one. Liquids and soups are the best form for nourishment. On some days calorie shortages are unavoidable and so one is living on one’s reserves.

Our diet contained very little fat-soluble vitamins (A and D), and the C contents were practically nil. There were some of the B group vitamins. The lack of vitamins in the diet was covered by vitamin preparations in the following ways: B total and B<sub>1</sub>, Afi, one tablet three times per week. C, two tablets per day. AD, two tablets three times per week. The need of B was particularly great, in view of the high consumption of carbo-hydrates.



The botanist Wendelbo examining one of the many mountain plants he found at above 10,000 ft.



One of the beautiful plants discovered on the mountainside of Tirich Mir.



One of the lovely mountain flowers growing at 13,000 ft.



## THE BOTANICAL ASPECT

By PER WENDELBO

*The ox that ate the orchid—Many magnificent flowers—  
Primula for eye disease—The tree worshipped for its shade—  
Irrigation.*

FEW botanists have visited Chitral, so that the flora is relatively unknown. British officers have collected a certain amount. A rich collection was brought to England after the Chitral Relief Expedition in 1895. A German agricultural expedition in 1935 was allowed into Chitral, but only a small proportion of its results have been published.

The position of Chitral between the great mountain ranges of the Himalayas, Karakoram, Pamir and Hindu Kush, which have rather different types of vegetation, ought to offer great possibilities of interesting flora.

My chief task was to collect and press flowers. This work could be tackled in two ways. I might separate from the rest of the expedition and cover as great an area of Chitral as possible or, on the other hand, remain in "Idyllen" and investigate the immediate surroundings more thoroughly. As I was best qualified to deal with mountain flora and as I lacked experience and knowledge of conditions in Chitral, I chose the latter. The advantages of not severing connections with the rest of the expedition were self-evident. The area under examination thus only comprised the upper reaches of the Barum Valley, from 10,000 to 16,000 ft. Compared to Norway, this corresponded to the sub-alpine and alpine belts of vegetation.

The first week in "Idyllen" I used for looking around. In this way I got an impression of the various plant communities I would have to deal with, and I got a general idea of most of the plants. At the same time I set up ten summarising thermometers in different places for registering the temperature over any length of time, to see whether it was possible to find some connection between the temperature and the vegetation. The continual hot,

dry air provided excellent conditions for pressing plants, and they were done in record time. But there were also some obstacles to my work. Two of the summarising thermometers were stolen. They were made of brass and weighed 2 lb., and were therefore a great temptation to the natives. Two were upset by bulls which had been rubbing themselves against the stands. To my despair, these bulls also used some of my best hunting grounds as pastures, and at the same time an orchid vanished, which I had been nursing since it was 2 in. high. It was impossible to find another specimen of this orchid. The steep and difficult mountain-side almost required a botanist-cum-climber, which I was not. Once or twice the temptation to climb became too great. But having found myself, on one or two occasions, in positions from which I could hardly return, I refrained from further attempts at climbing even when I discovered green and luscious ledges high up. The plants within reach provided more than enough work.

The woods round "Idyllen" consisted chiefly of two species of willow, one with long, narrow leaves and red twigs. Birch was scarce and resembled the Norwegian birch. There were also two species of the coniferae; a tree (*Juniperus macropoda*) about 15 ft. high, and our own juniper bush (*Juniperus communis*).

There was a great variety of shrubs; three kinds of honeysuckle (*Lonicera*), two with yellow flowers and the third with pink flowers. As far as I could see there were at least five different roses, with pale red, dark red and white flowers. Some of them had a diameter of about  $3\frac{1}{2}$  in. Besides these I found a small bush with tiny little neat leaves and lovely yellow roses (*Rosa Ecae*). Early in the spring a bush about 3 ft. high flowers, and is completely covered with pale pink cherry blossom. This belongs to the same genus as the cherry or almond tree (*Prunus* sp.). An exaggerated copy of our homely berberis grew in several places. The flowers were larger and had a stronger yellow colour. Finally, I must mention two shrubs which grew in dense thickets, interesting because they seemed similar to the Norwegian kind: *Myricaria* and sallow-thorn (*Hippophae*). There were many herbs, but one

dominated the rest, a 3-ft. tall plant belonging to the pulse family, with large clusters of mauve flowers (*Hedysarum Falconeri*). In some places there were large fields of this. Otherwise there were white carnations, a kind of stonecrop (*Sempervivella acuminata*) and large tufts of pale pink flowers (*Acantholimon lycopodioides*). A low yellow milk vetch (*Astragalus*) which had long, vicious thorns also occurred; it was cushion-shaped, but not exactly pleasant to sit on. White chrysanthemums and yellow groundsel became very prominent during the summer. There were surprisingly few kinds of grass, and what there were did not show up very much. Round the small brooks there were in many places fine green carpets of moss-sedge and *Kobresia*. Low-growing plants with flowers of different colours were interwoven, such as pink primula (*Primula rosea* var. *Harrissii*), which only grows in Chitral, yellow potentilla and dandelion (*Taraxacum*), violet orchids, blue gentians and veronicas. A small white puffball peeped out of the carpet, and in the same company I often found the little, strange moonwort (*Botrychium lunaria*).

The contrast between the garden in "Idyllen" and the surrounding grey stone walls, the gravel-covered glacier and the snow mountains was a constant wonder. It was always a joy to come back to "Idyllen" after a long day spent in wandering over the glacier, and for the climbers who returned after five weeks stay in snow and ice it was pure Paradise.

A long, steep slope went up from the lower part of "Idyllen." In spite of the fact that it was exposed to the sun all day and was very dry, the vegetation was quite dense. At a distance it looked grey because of a grey matted artemisia, which formed big tufts. On approaching it, one discovered a variety of all kinds of different plants among these tufts. I found about forty. Many of them were very handsome. The most prominent were the 16-in. tall labiate with large, yellow flowers (*Eremostachys speciosa*), the bulb-plant (*Allium*), with an umbel of bright red flowers, and a rhubarb (*Rheum tibeticum*) belonging to the same genus as our garden variety. In the spring, while there still was some moisture

in the upper layers of the soil, there were many annual plants. These died down later on. All the other plants remaining were those which thrived in dry conditions, having a well-developed root system, hairy, stiff and thorny. My hands were astonishingly like raw meat after a day of botanising on this slope, which I called the Artemisia Slope, and for the following week my regular evening task consisted of picking out small thorns which formed septic sores.

The mountainsides that were most exposed to the sun had a scattered vegetation. Here it was only the most hardy plants from the Artemisia Slope which survived, e.g. *Rheum*. On the more shady slopes higher up, where the snow remained longer or where the earth was more moist, the vegetation was often luscious. In such places one might almost believe one was in the Norwegian mountains; the species were different, but most of them belonged to the same genera. The only pity was that such lovely spots were so infrequent and small, often no more than a few yards square.

One of the best spots for mountain flora was round Camp II at about 14,000 ft. Towards the end of July the slope below the camp was a magnificent sight. Close carpets of purple primula (*Macrophylla*) and yellow potentillas of many different species, mountain sorrel (*Oxyria digyna*), a blue labiate (*Nepeta kokanica*) and a yellow and a red rose-root (*Sedum* sp.). Here and there grew a cluster of larkspur (*Delphinium brunonianum*) with large blue flowers of a strange, inflated shape. The white and pale pink *Androsace mucroni-folia* formed large cushions, as did a yellow *Draba*, a couple of inches high. Of the freaks, the dandelion (*Taraxacum*) had a peculiar shape, a low, creeping honeysuckle (*Lonicera Semenowii*) with large, pale yellow flowers, and the yellow *Saxifraga flagellaris* with long red runners. I did not have the experience of seeing the most dominating plant in the "snowbeds" in its full glory; this was a prostrate plant with shoots up to 1 yard long and with a profusion of pale mauve flowers, the shape and size of marguerites (*Allardia glabra*).

In other places the mountain flora would change character. In the "Slate Valley" there were some patches with several interest-

ing plants; an anemone with large white flowers (*Anemone rupicola*) and a small columbine (*Aquilegia*) with blue-and-white flowers. The curiosity was the member of the genus of the famous edelweiss (*Leontopodium*) and a melandrium which reminded me of the Norwegian *Melandrium apetalum*. This was also the highest spot for willows, about 14,000 ft.

On the shady mountainsides many places were quite covered with *Bergenia Stracheyi*, which the natives called by the amusing name of *bisa bur*. They used the root in a kind of sun-cream. The porter who told me this pointed to my red nose, and said I would have been spared that if I had used this cream.

The two plants which were found at the greatest height, 17,000 ft., were the earlier-mentioned *Primula macrophylla* and the yellow *Potentilla biflora*. They grew on the mountainside in the upper part of the ice-fall between Camps III and IV. The primula was well known by the porters, who called it *punar*. A white meal found on the stalks of the leaves was used as a cure for all eye complaints.

One could find plants in the most unlikely spots—for instance, in the middle of the glaciers. I noted eighteen different species in the gravel of a medial moraine.

Under such conditions one would have thought it would only be the small, insignificant plants that would be able to develop. But this was not the case. I found, among other things, a 1-ft. high myricaria bush, the large mauve *Hedysarum* from "Idyllen" and a willow-herb (*Epilobium latifolium*) which is also in Greenland, among other places.

The porters were very interested in my work and continually brought me flowers. They took a delight in flowers and had names for everything. My surprise was great when I heard their name for the wild rose, which was *torni*.<sup>1</sup> Whether this is a coincidence or not, I cannot say. But Khowar, their language, is of Indo-European root, and there are several words in which one can see the relationship with, for example, Norwegian. I made a long list of their plant names. To me it seemed that they dis-

<sup>1</sup> *Translator's note:* The Norwegian name is *torne-rose* or *nype torni*.

tinguished the plants for quite different qualities than we do. They examined the plant closely before they mentioned the name. They rubbed and smelt the leaf and stalk, bit the root or chewed the leaves.

Many of the flowers I have mentioned here would do honour to any rock garden. I had thought of collecting seeds towards the end, but, alas! we left earlier than expected. The seeds I did get with me would hardly be a joy to any gardeners in the future. They were chiefly dandelion seed, which I eagerly collected on the whole trip for specific studies.

My collection consists of about 250 different higher plants, as well as mosses, fungi and lichens. A whole group of coloured photographs of individual plants and plant communities completes the collection.

The cultivated plants in the highest villages, 9,000 ft., would make a chapter of their own. Of fruits, apricots, pears, walnuts, black and white mulberries were cultivated. In Chitral the mulberry tree was cultivated for the sake of the fruit only, and not as in the Mediterranean countries, where the leaves are used as food for silkworms. They looked more or less like black and white raspberries, and were excellent, as long as one did not eat too many. Apples, figs, plums, cherries and grapes grew further down the valley. Tall, slender poplars were profuse. There was some superstition attached to these: they were supposed to safeguard the water supply. There were some big leafy, maple-like trees called *cinar* in all the villages. As far as I could understand, these were grown for the sake of their shade. Of cereals, I saw wheat, barley, rice, and a kind of millet and rice; of vegetables, at any rate, onions and cucumbers. Other utility plants were flax and lucerne, and this latter was used for animal feeding. In some places there were fields of poppies, most probably for opium-production. Every village had a profusion of garden roses. The irrigation channels were the foundation of all their agriculture. Without these everything would have been bare gravel and stone. These mountain people were very backward in many ways, but they could certainly teach us a lot as far as artificial watering is concerned.

## MOUNTAINS, GLACIERS AND ROCKS

By FINN JÖRSTAD

*How Tirich Mir was formed—Conglomerate blocks—The glaciers—Moraine ridges.*

LOOKING north from Chitral through the valley, there are two things which especially strike one. First of all the immense, snowclad mountain furthest away: the mountain rising proudly above all its neighbours—Tirich Mir with its 25,263 ft., the highest peak in the 400 miles of the mountain range of Hindu Kush. Secondly, the large sand and gravel terraces, often rising hundreds of yards above the river.

These two things are an expression of the mutually conflicting powers in geology, the constructive and destructive ones. Far north Tirich Mir rises nearly five miles above sea-level—and as a matter of fact it actually rose from the sea in the dim and distant past. Round the peak itself, mountains exist which contain fossil remains of animals which once lived in the sea. This does not mean that the sea ever reached as high as this, but that sedimentary rocks up there were once deposited in the sea as clay and sand. The material was brought to the sea by brooks and river. Here it sank to the bottom, and skeletons or shells of sea animals were covered with clay and sand and preserved. Then followed periods of upheaval in the history of the earth. In places the ocean bed rose and in others the sea invaded the dry land. A vast interchange of land and sea, highland and lowland. High mountains were razed and the material carried down to the sea and new mountains appeared. But this process was carried on through the ages and there was not any sudden upheaval. Not even a Methuselah would have remarked any change. But as soon as land appears from the sea, the destructive forces are set

in motion; the higher the land, the stronger these forces. The ocean, the rivers and the glaciers demolish and undermine with the one object of driving the material as far down as possible, and the great sand and gravel terraces which occur on both sides of the Kunar River in Chitral illustrate one such stage. In the high mountains of the north the glaciers first break loose the material, grind it and carry it down, and then the rivers take over. The finest material is carried in suspension, colouring the rivers grey or brown. The coarser material rolls along the bottom until this too has become ground down. The rivers run so slowly that they cannot transport all the material, and deposits occur; and as soon as this balance is disturbed the rivers begin to dig again, demolishing and transporting what they had earlier deposited.

This is what we see occurring in Chitral in the formation of large sand and gravel terraces once deposited by the river. Now once again the river demolishes and transports the material further down. Strictly speaking, it is not the river alone which has been responsible for building up the terraces. Once upon a time there must have been a glacier as well, which had deposited a great deal of stone and rock. But in our times glaciers are only found in the highest mountains here. We shall have to go up there to see how they behave, and on our way up we might as well explore other interesting things.

Just before crossing the river at Parpish, some colossal boulders can be seen here and there along the road. They are too big for the river to have brought them there. Either they must have fallen from above or the earlier glacier must have carried them along. If we look more closely at the blocks, we discover that they are not ordinary "grey stone," but that they consist of an infinite variety, from tiny grains of sand to quite big stones. It is what the geologists call conglomerate. We have just referred to the sand and gravel the rivers bring with them, and how, when in spate, they can also carry stones; we have all of us seen smooth pebbles on the beach. The constituent part of these large conglomerate



blocks has at one time been either river stone or shore stone.

When we have crossed the river at Parpish and begun climbing the rather difficult Barum Gol, we discover that the greater part of the valley is covered with loose deposits with solid rock above on either side. These loose deposits have various origins. Along the mountainside it is obviously avalanche material which has been prised out of the mountain. Along the valley in the middle, the river has dug itself deep down into great masses of sand, gravel and stone, scattered topsy-turvy, which must have been deposited at one time by a glacier. But in places fine sand and gravel occur in layers, which the river must have sorted out.

Further up the valley lies the small village of Barum, where we spent the night. When we arrived the river was quite brown, and if we tried to drink the water our mouths were full of mud and sand. The next morning the water was almost clear, so it could not be far up to the glacier. During the day, while the sun is hot, the snow and ice thaw higher up, the brooks and the rivers become bigger, flow more quickly and can therefore bring down more mud and sand. Early in the morning before the thaw begins, the brooks and rivers are smaller and clearer. A short way above Barum lies Shabronz, the highest village in the valley. Just above this the path crosses to the east side of the river, which at this point flows in a deep, narrow cutting. When we went up here and looked up the valley, we saw a stripe running along both sides of the valley; at its lowest point the stripe swung down towards the river in an arc. This was large stone and gravel ridges, so-called lateral and terminal moraines, which indicate that, at one time, the glacier went as far down as this. This is material deposited in front and at the sides of the glacier. About 500 yards above this terminal moraine lies yet another. It is probably not so very long since the glacier went as far as this did, because the area further in is bare. Only close to the terminal moraine is there any vegetation to speak of.

From here it is only about 500 yards up to the front of the glacier. It is, however, rather difficult to see that it actually is a

glacier, because it is so discoloured and covered all over with stone and gravel, including blocks up to 5,000 cu. ft. in size. If there is a lot of gravel and stone in some places, the sun and the heat does not reach the ice. It is to some extent protected from thawing. It is another matter where the material is more spread out, for here the small, dark stones absorb the heat from the sun, become hot and melt into the ice. This applies only to the small stones. If they are so big that they cannot be heated through by the sun, they protect the ice underneath from thawing. The ice round about thaws. The large stones will therefore remain on top of columns of ice. These are the so-called glacier-tables. Soon the columns get too tall and the stones fall down.

A small experiment on the "Dead Glacier," one of the tributaries of the Barum Glacier, showed that a small, black stone sank  $\frac{3}{4}$  in. into the ice in the course of an hour, and on the main Barum Glacier small stones could sink 2 in. in a day. Considering that the surface also melts a good deal, one realises that the thaw is quite appreciable.

On the lower end of the glacier the snow that falls in the winter melts fairly quickly when the summer comes. During the summer the ice itself is eaten up. Measurements showed that the average thaw was about 3 in. per day on the surface of the glacier. On the assumption that this rate is maintained for three months, more than 22 ft. will melt away in the summer. If the supply of ice was discontinued, the glacier would soon disappear. But the glacier is long, the front lying at 10,000 ft. (main Barum Glacier), and South Barum Glacier stretching up to 18,000 ft. Here it gets supplies from glaciers and snowfields extending from 20,000 to 23,000 ft. At this height more snow always falls in the winter than melts in the summer. Hence the snow is compacted and turned into ice, and, because of the slope of the ground, moves down as a glacier. Because of this, the lower parts of the glacier also get constant supplies of ice. This movement of the ice can best be studied on the surface of the glacier. The movement is greatest just below the area where the snowfall in the

winter and the thaw in the summer are the same. Thereafter the rate decreases rapidly until at the front there is often no movement at all. I took several photos of the glacier from exactly the same spot, but at different times, and in the pictures one can see that large stones have been moved downwards with the glacier. A calculation of the speed just outside Camp II showed that it was almost 20 in. in twenty-four hours.

As mentioned, there is often not much movement in the glacier, near the front. This is certainly the case with the main Barum Glacier. Not very far from the front of the glacier there are small glacier pools lying in the hollows of the glacier, and from the junction of the main and South Barum glaciers a large medial moraine goes down the latter glacier. A large ridge of sand, gravel and stone lies on the top of the glacier. On this medial moraine there is vegetation, which certainly would not have been the case if there had been any appreciable movement in the glacier.

Glacier rivers flow in many places on the top of the glacier. They generally disappear into crevasses or deep holes which go straight down into the ice. Some of these crevasses or holes were measured. They were up to 90 ft. deep. There was often water at the bottom of the crevasses, and long, pointed icicles hung down at the edges. Consequently, it was no joke falling down a crevasse.

As we have seen, below the front of the main Barum Glacier there are moraine ridges, indicating a former extension of the glacier. Such moraine ridges are also to be found alongside the present glaciers. On the east side of the main glacier there was a large lateral moraine up to 130 ft. high. It was so pronounced that the natives had their own name for it: Shiaqo-mukh. Our main camp "the Idyll" lay between this and the mountainside. We had to cross this every time we wanted to get out on the glacier. But this was all right, as we had made a path. In some places it was impossible to get down to the glacier from the lateral moraine because of the steep sides, in which large blocks jutted out. If we attempted to go down here, slides started, and when these large

blocks began to move it was really rather terrifying. If it was windy, dust and fine sand whirled up and got into our eyes and ears and stuck to our sweaty faces.

We have seen above how the Hindu Kush Mountains were formed and that they consisted of material which was once deposited in the sea. It is, however, not only such material. At the same time as the deposit in the sea or the rising up of the mountains, there was also a supply of rock from the interior of the earth. This is crystalline and usually more resistant than the sedimentary rock. This is just precisely what one finds in Tirich Mir itself and the highest areas round about. Otherwise there is nothing but sedimentary material.

The mountains here, Tirich Mir, and actually the whole of Hindu Kush, are geologically young. That is why they are so tall. All the destructive forces have not as yet been able to do their work—namely, pulling down, carrying away and levelling out. But they are in full swing. Every tiny snowflake, the smallest brook, glaciers and rivers do their part. This is always happening in nature: some forces build up and others pull down. This is the cycle of geological processes.

