

THE
GEOGRAPHICAL
JOURNAL

VOLUME XCI
JANUARY TO JUNE
1938

PUBLISHED UNDER THE AUTHORITY OF THE COUNCIL
EDITED BY THE SECRETARY

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The
GEOGRAPHICAL JOURNAL

Vol XCI No 2



February 1938

A JOURNEY IN THE SALWEEN AND TSANGPO BASINS,
SOUTH-EASTERN TIBET

RONALD KAULBACK

Evening Meeting of the Society, 5 April 1937

THIS journey, on which I had the good fortune to be accompanied by Mr. N. J. F. Hanbury-Tracy, occupied twenty months from railhead to railhead, eighteen of which we spent in south-eastern Tibet. When we left England, our main objects were five in number, and of these the first four will be made clear by a glance at the map. They were as follows:

To explore as much as we could of the Salween-Tsangpo Divide, in order to determine whether this was one range, running roughly north-west-south-east; or whether the Salween, instead of flowing parallel to such a chain of mountains, cut perpendicularly across a series of ranges. In this latter event the river would flow in a succession of gorges; although the converse—that if the gorges existed, it must therefore be flowing at right-angles to the lines of the mountains—does not necessarily follow.

To explore the watershed lying between the Ngagong Chu, the headwaters of the Rongtö Chu, and the Chindru Chu; and the continuation of this range to the south-east, in order to satisfy ourselves whether or not it were part of a possible continuation of the great Himalaya range.

To survey the course of the Salween from Shopando to the source (or as near the source as might be), together with any of the main tributaries that could be undertaken in the time at our disposal.

To trace the course of the Ngagong Chu from its headwaters as far down as Shōwa, below which this work had been done by Captains Morshead and Bailey in 1913.

To collect insects, plants, reptiles, small birds, and mammals for the British Museum of Natural History.

In south-eastern Tibet the chief obstacle to travel is scarcity of transport, and because of this we kept our party down to a minimum, both in personnel and baggage. The three men we took with us are sufficiently well known to need very little description.

As sirdar we had Lewa, a Sherpa, who had been on most of the big

Himalayan peaks, including Everest, Kangchenjunga, and Nanga Parbat, and who climbed Kamet with Smythe. He is an ideal servant, with great strength of character, honest, and very faithful, and the fact that he has lost all ten of his toes through frost-bite does not prevent him from doing the work of three ordinary men, or from climbing amazingly fast. Nyima Töndrup, who was odd-job man, is a Tibetan, and, though not very intelligent, more than makes up for this lack of brainpower by his extreme loyalty. He has been Lewa's constant companion for some years, and is a most lovable personality. Finally, as cook we had another Sherpa called Nyima Dorje, who has been on Everest, Kamet, and Nanga Parbat; but he, though he started off well, is more fitted for a short than a long journey. After nine months he became irritable and dissatisfied, and he left us of his own accord in January of 1936. It was largely owing to the reliability and devotion of Lewa and Nyima Töndrup that we were able to carry out as much of our original plan as we did; and in this connection our deepest thanks are due to the Himalayan Club (and especially to Mrs. H. P. V. Townend, the Hon. Secretary of the Eastern Branch), who engaged them for us.

We went into Tibet through Upper Burma and over the Diphuk La by a route which has been described at least twice in recent years. At Myitkyina, the railhead, we were given a superb time for a week by Mr. J. K. Stanford, the Deputy Commissioner, and Mrs. Stanford; and then, on 11 April 1935, we left for the north on foot with sixty-five loads of baggage. On our way through Burma we had no work to do, apart from collecting, but the zoology of the country north of Fort Hertz has been very little touched by any one apart from Lord Cranbrook, so that any collection from that district, however small, was bound to be of value. In our case it was the reptiles which were of the greatest interest, for although we came across only one new species, a lizard (*Japalura kaulbacki*), most of the others were rare.

On May 20, forty days after leaving Myitkyina, we reached Lungphuk, the last camp on the Burma side of the frontier, and there we were held up for a little, owing to snow on the pass. The Diphuk La is only 14,280 feet high, but the snow lies on it until about the middle of June, and our coolies (who belonged to a Khanung clan called Talang) had few clothes and no footgear. We waited until May 26 to cross the pass, and even then there were still 4 feet of soft snow on the steep north slope; and although the porters were not actually frost-bitten, they all complained of very sore feet the next morning. The Talangs took us the seven stages from Meting, the last village in Burma, to Shikathang in south-east Tibet, and then hurried back to their jungles again without delay.

With its half-dozen ramshackle pinewood huts, Shikathang strikes one as being rather inadequate quarters for an important official and his retinue; but, being at the junction of the Rongtö and Zayul¹ rivers, it is an ideal

¹ The conventional English spelling of the Tibetan ལྗོ་ཕྱི་རྒྱུ་, or Dzayü, meaning the Country of the Dzaya (ལྗོ་ཕྱི་), the figured, speckled wood from which the most valuable drinking-bowls are turned. The Dzaya is the interior of a large wen, like a goitre, which grows out from the side of a tree, and which is caused by a disease of the wood. I have the spelling on the authority of the Governor of the district, and of the Abbot of the monastery of Sangachö Dzong.

centre for tax-collecting; and, apart from this, it is at less than 5000 feet, and so pleasantly warm during the winter and spring that the Governor of Zayul is generally there from January until June. An official deputation, headed by his A.D.C. (a fat, scantily-bearded monk), met us 2 miles outside the village with ponies and ceremonial scarves and escorted us in, with a great jingling of bells, to a little courtyard at the back of the Governor's house. There we pitched our tents, because accommodation in that village is never good, and when the Governor and his staff, his servants, tailor, bootmaker, silversmith, and camp-followers are all in residence, the wonder is not that there is no room for stray travellers, but that the few miserable houses can possibly contain the mass of humanity which somehow packs into them. The following day, and after the usual exchange of presents, we called on the Governor, who turned out to be an old friend of mine whom I had met in 1933, when I was with F. Kingdon Ward. He was most kind and helpful, and, largely on his account, we stayed in Shikathang for ten days before starting on the next stage of the programme.

We had begun survey work from the Diphuk La, as up till 1935 there was nothing better than a compass traverse between there and Shikathang; and we were now heading for Sangachö Dzong, *en route* for Shugden Gumpa. The easterly road, up the Zayul river, had been mapped by Captain (now Colonel) Bailey in 1911, and that up the Rongtö Chu and over the Ata Kang La by A—K in 1882, and by Kingdon Ward in 1933; so the only new way left to us was *via* Lepa, a route which enabled us wholly to change the general shape of this piece of country as shown in previously existing maps. This was no surprise to us, for when I had reached Lepa in 1933 I had found that the river on which it stands, instead of flowing north as conjectured in the maps, ran due south into the Zayul river a short way above Shikathang.

We left this place on June 10, but, before going, we had to have a new rope bridge built across the river, as the old one was now very decrepit. The bridge is 70 yards long—a single rope made entirely of twisted strips of bamboo—and, even though the whole neighbourhood would benefit from it far more than ourselves, we expected a fairly heavy bill. However our finances were able to stand the strain, for the total was only 15 *rod*.

Our route for the first five days lay up the Rongtö valley, where the going is very comfortable, mostly through tall pine forest, with frequent clearings and many small villages, in all of which rice is grown as well as barley and peas. After three days we reached Dri, and crossed to the left bank of the river by another rope bridge, making a very short march up to Traba.

The people here, we were told later, are notoriously obstructive, and the headman refused to provide coolies at less than double the rate which had been agreed upon in Shikathang. As that in itself was high, we felt that he was being unreasonable, and sent Lewa back to collect men and ponies from lower down the valley. The other villages on the left bank gave help willingly, but transport was scarce, and in the end we had to induce the headman of Traba to provide twenty-five men at the regular rate by threatening, if he failed, to take him with us to argue the matter out with the Governor, who was now on his way to Sangachö Dzong by the Zayul river road.

Immediately below Traba is the small village of Latsa, which is most

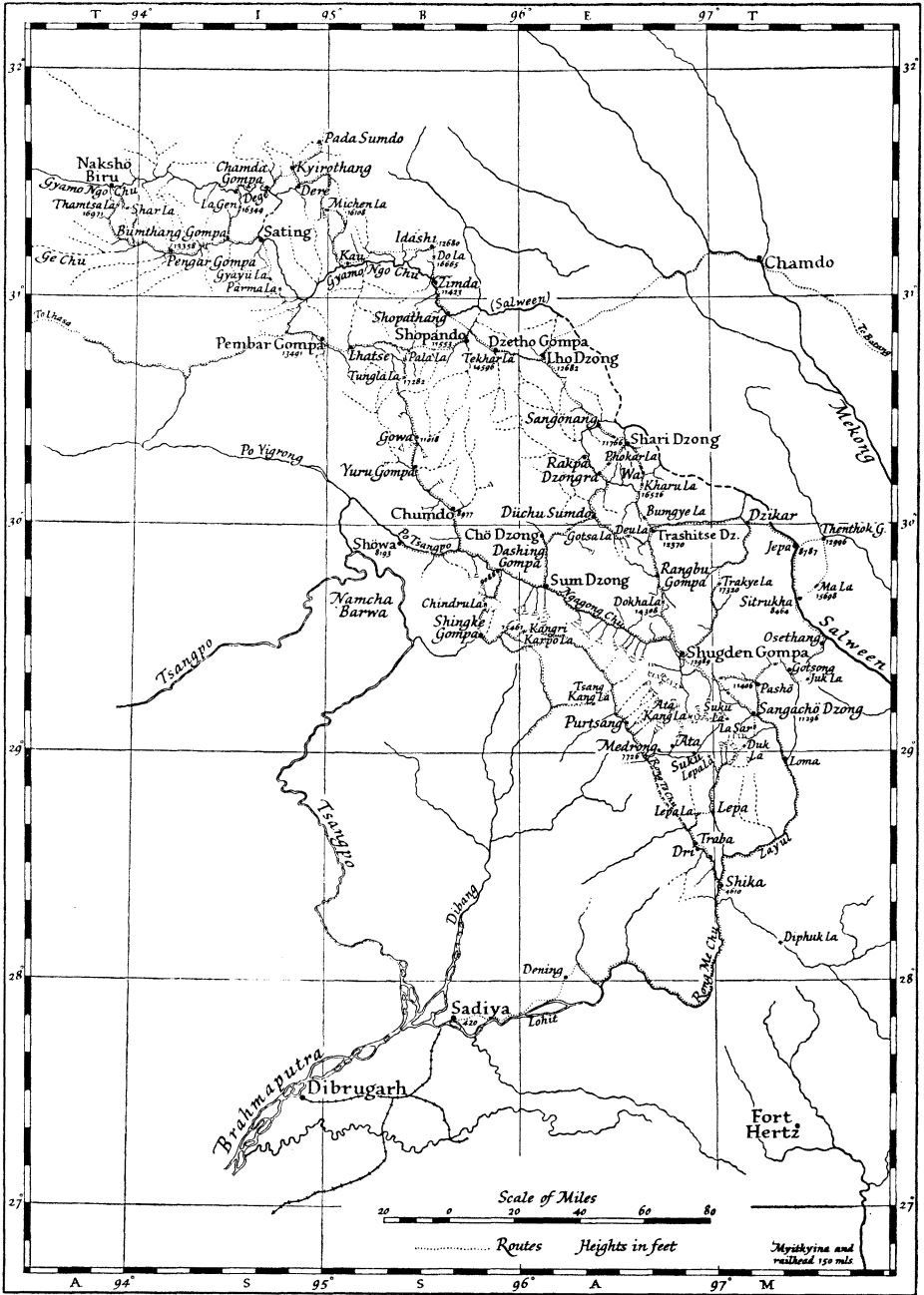
interesting in view of the fact that it is a Government grant to a private individual (a Khampa from the north of Chamdo), on account of the following state of affairs.

Except in the Sangachö Dzong district, where the people are still predominantly Khampa in type, the Zayulis, by frequent intermarriage with neighbours and slaves, have acquired a mixture of Khampa, Mishmi, Khanung, and Chinese blood, with probably some dwarf aboriginal too. Together with this deterioration in type there has been a falling off in religious matters due to continual close contact with the animism of the Mishmis and also, to some extent, with Hinduism (as seen for example by occasional cremation of the dead) from Sadiya. This problem has been in the minds of the Lhasa Government for the past sixty years at least; and so, at intervals since about 1870, well-bred and devout Khampas or Babas, who have served the authorities well in minor positions, have been given villages in the Rongtö valley *in perpetuo* and tax-free, not only in order to purify the religion, but also to import good new blood into the country. Besides the one at Latsa, there are such freeholders in Pangthang, Medrong, and Purtsang, the latter consisting entirely of free Babas who founded it in 1905 under orders from Lhasa.

On the second march above Traba we turned eastwards out of the Rongtö valley towards Lepa. The path now ran through forest in a steep, narrow valley with precipitous sides. Pouring rain made conditions difficult, and by the end of the second day, when we should have crossed the Dzogu La (13,750 feet) and camped a short way beyond it to the east, we were still some 1500 feet below it, with both coolies and ponies exhausted. It was a poor place to camp—in a rocky gully which caught the wind and which seemed to be the main drain for the melting snow from the pass—but there was no better to be had and, in any case, there were enough rhododendron bushes about to make good fires.

Owing to low clouds and the thickness of the forest, work had been difficult ever since we had left the Rongtö, but, when we crossed the Dzogu La on June 22, it became quite impossible. A heavy mist limited visibility to less than 200 yards, and there was nothing for it but to wait in Lepa, 4000 feet below the pass, until the weather cleared up enough for us to be able to go back and continue the map. We waited eleven days for this, and the one good thing about the halt was that it gave us a real opportunity to deal with some septic places Hanbury-Tracy and I still had on our feet from leech-bites in Burma.

Lepa is a village of ten houses, growing wheat and barley, and keeping many cattle and sheep. Owing to snow on the passes, it is cut off from the rest of Zayul for nearly six months in the year—from the Rongtö between the beginning of January and the middle of June, and from Sangachö Dzong between October and July. There is no path down the Lepa Chu, and few of the inhabitants ever leave their own valley, in which theirs is the only village. In the summer men come in from the Rongtö to exchange rice for butter, and from Sangachö Dzong with knives, jewellery, and salt to trade for butter and wheat, and these are almost the only contacts which are ever made with strangers, except when occasionally a girl from outside is brought in as a wife.



Sketch-map of the Salween and Tsangpo basins to show the routes followed by Kaulback and Hanbury-Tracy

We left Lepa on July 4 with our baggage on *dzos* (or half-bred yaks and ordinary cattle), and for the first three days were in pine forest with clumps of bamboos and, later, rhododendron scrub. We were climbing steadily however and our fourth march brought us above the tree-line (which is here in the neighbourhood of 13,000 feet) and to the foot of a large glacier, some 7½ miles long by 2000 yards in width, flowing from a line of snow-peaks to the west. This glacier was in rapid retreat, and the surface was very smooth and with few crevasses. For 1½ miles we scrambled along the lateral moraine of big limestone boulders before crossing the ice and climbing up to and over the Duk La (13,990 feet), but not even on the moraine did we have any difficulty in moving along. This was most unusual, and the coolies said that never before had the first caravan of the year been able to cross this stretch of moraine without spending at least one day in making a path. The whole of this district has been intensely glaciated and there are still several fair-sized hanging glaciers on both sides of the Duk La. Formerly the ice extended to about 5 miles below Lepa, but this having receded, there appears to have been a second and much more recent advance to some 6 miles above the village.

On July 7 we made camp in a small grazing ground almost within sight of the Zayul river, and the next morning, after a very steep climb of 3000 feet, we reached the top of the La Sar (14,930 feet). This pass is simply a cleft in a knife-edged ridge not 2 yards wide at the top, and equally abrupt on both sides. It was still blocked by a cornice of hard snow, which overhung for perhaps 20 feet, and without much hope we told the coolies to attack this with their knives. For more than an hour progress seemed to be negligible, and it looked as though we might be there for a week; but suddenly, and much to our surprise, the greater part of the snow fell away into the valley beyond, leaving just enough room for us to be able to lower the baggage and animals on to the path below. We reached Sangachö Dzong that evening.

Sangachö Dzong consists only of a monastery of a hundred and eight monks, and a small *dzong*, or fort, built on the crest of a ridge about 800 feet above the floor of the valley. There are six villages in the immediate neighbourhood, each of which takes it in turn to supply the monastery and fort with wood and water for three days at a time. We put up in the *dzong*, a fine new building of three storeys, built in 1927, with a magnificent view both up and down the valley. We were by no means the first Europeans to reach Sangachö Dzong, for Colonel Bailey had arrived there from the east in 1911, and Kingdon Ward from the west in 1933. We stopped there for ten days, chiefly in order to give the Governor time to turn up before we left; and during that time Hanbury-Tracy went up as far as the Sukhu La (or Podung La) on the difficult road to Sukhu, and we were fortunate in seeing the ceremony of Mönla Chenmo in the temple on July 16.

We had intended to leave for Shugden Gumpa three days after that, without realizing that the day would be the 18th of the fifth Tibetan month, and a most inauspicious date to start a journey. Every one else however had realized it only too well. First of all, word was sent from the monastery begging us not to leave then on any account, as it had been foreseen that, if we did, Hanbury-



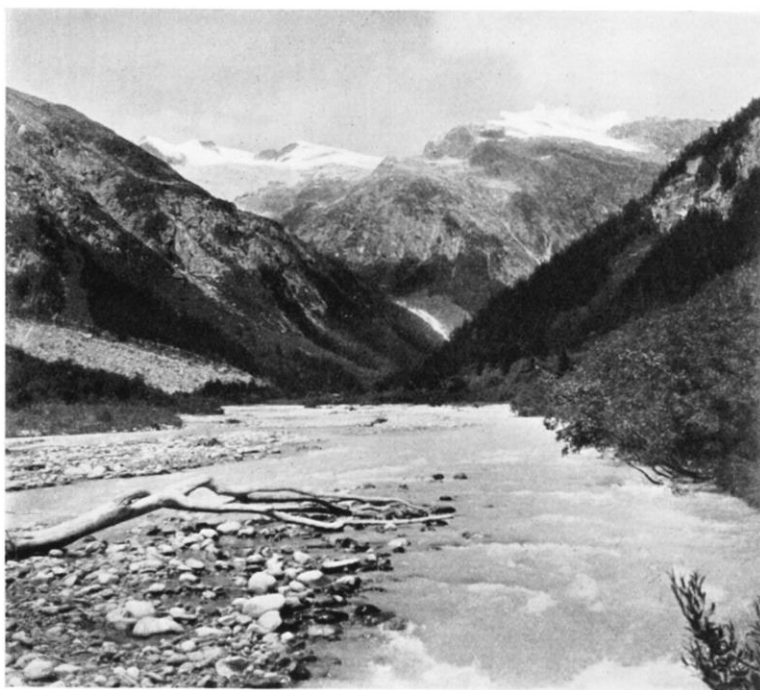
Dzos grazing in the Lepa Chu valley



Crossing a glacier south of the Duk La



Chortens at Shugden Gompa



Zayul Ngü Chu valley near the Kangri Karpo La

Tracy, I, and three others would be struck down with some disease on the way. We thanked the emissaries and had actually decided to put off our departure for a day when, to make quite certain, an invitation arrived from the Governor to say that he hoped it would be convenient for us to dine with him on the 19th, and that he had already had a *dzo* killed for the purpose; and the two headmen in charge of transport came in, with a ceremonial scarf, imploring us to forgive them because they would not be able to obtain enough baggage-animals in time, and would need one more day. Altogether we would not have stood very much chance of leaving on the original date even if we had still wanted to do so.

From Sangachö Dzong to Shugden Gompa we followed the route over the Dzo La (15,830 feet), which had been mapped by Colonel Bailey and by Kingdon Ward. It is two long marches to Shugden Gompa, 12,990 feet up, on the very deeply eroded south-west slope of the Salween-Tsangpo Divide. Shugden Gompa is in the district of Ngagong, which takes its name from the guardian spirit of a remarkable sugar-loaf limestone peak, called Ngagong. This towers above the south-west end of the lake, and is certainly visible from the Ata Kang La and the Dzo La, and, I am told, from the Dokha La as well. A group of five high peaks to the west of the lake, of which Ngagong is one, are together called Dorjetsenga, the Five-peak-thunderbolt, and are regarded with great veneration.

In order to carry out our second aim and explore the range south of the Ngagong Chu, we had to separate at Shugden Gompa. We decided that Hanbury-Tracy should take Nyima Töndrup and go down the Ngagong Chu itself as far as Dashing, doing as much work north of the river as he could manage in four or five weeks; while I was to go round *via* the Ata Kang La, Medrong, Purtsang, the Kangri Karpo La, Shingke Gompa, and the Chindru La to join him again at Dashing. By dividing forces like that we would gain a fair knowledge of both sides of the range and would cover two new routes of considerable geographical importance. We felt that there might be some difficulty in arranging for transport to cross the Kangri Karpo La, and so Hanbury-Tracy took the bulk of the baggage with him—very fortunately, as it turned out.

Hanbury-Tracy left Shugden Gompa on July 24, and three days later I started myself for the Ata Kang La with Lewa, Nyima Dorje, and a dog called Balu. The latter had adopted us of his own free will, and was a most faithful companion for the next three and a half months. He was then stolen by some dog-fancier in the Salween valley and passed out of our lives.

The Ata Kang La is a large glacier saddle at 15,110 feet, open from July till the end of October. The ice flows north from two high peaks on to the pass and there divides into three glaciers, the largest of which runs east into the Sukhu Valley, being joined on its way by several others from the north. The second (short but wide) flows for 2 $\frac{1}{4}$ miles towards Shugden Gompa; and the third (little more than a quarter of a mile in width) for 3 miles to the west. The path follows the latter. The ice north of the pass gave remarkably smooth, easy going, but near the Ata Kang La itself there was still between 1 and 2 feet of snow hiding several narrow crevasses, so that we had to walk

with care. We crossed the pass in bright sunshine, but hardly had we turned down the westernmost glacier than a thick mist swept up and blotted everything out for minutes at a time. The ice here was so much broken up that it was almost impossible to move except during those short periods when the mist lifted enough to let us see where we were, and it took us nearly an hour to cover about 400 yards. We were all heartily glad to reach solid rock again.

In 1933 we had camped for a fortnight at Chutung (a small shelf a little way below the Cheti La), but when we arrived there on July 28 we found that all available room had been taken up by a large band of pilgrims on their way to Shugden Gompa for Mönla Chenmo. (This ceremony takes place regularly once a year in each monastery, but not necessarily on the same day, or even in the same month in any two places.) The hut which Kingdon Ward had had built in 1933 was still in partial existence as a roof and four corner posts, but the rest of it had been used as firewood. Chutung being so crowded, we descended another 1500 feet to the bank of a small glacier torrent and made camp there. The next day we reached Ata, where we remained until August 1.

From Ata we went up past Sukhu (which I had visited two years before), to within sight of the Sukhu La, so as to finish the route which Hanbury-Tracy had surveyed as far as the pass from Sangachö Dzong; and we then turned west past Medrong and through the Ata Chu Gorge to the confluence of the Ata Chu with the Rongtö Chu. North of this confluence the Rongtö Chu is called the Zayul Ngü¹ Chu, and is composed very largely of glacier water. Kingdon Ward had gone up it for the first five marches above Purtsang in the autumn of 1933, but had then been forced to turn back on account of bad weather.

Purtsang, a village of twenty-one houses, is the last one in the Zayul Ngü Chu valley, and, as has been said, is a freehold settlement of Babas. The inhabitants, many of whom are comparatively wealthy traders, pay no taxes, but are responsible for the upkeep of Drowa Gompa, a small monastery 1 mile to the north, which was founded by monks from Drowa Gompa in the Zayul river valley. This monastery above Purtsang is still unfinished, and although the temple doorway and the wall paintings are most excellently done, the figures inside are still of plain clay.

From Purtsang there is a route into the Dri valley over the Tsang Kang La, a high snow-pass called Agua by the Bebejiya Mishmis. There is great hostility between the Tibetans and these Mishmis however, and for this reason the pass is not used now, except as a hunting boundary, although musk-hunters from both sides go up to it regularly every year. The large stream shown on the Survey of India sheet No. 91 as joining the Zayul Ngü Chu from the south-west in lat. 29° 11' N., long. 96° 31' E. does not exist as a single stream. In its place there are three moderate-sized streams in narrow valleys, all cascading into the river, which, from Purtsang up to 1 mile below Chilongke Camp, flows in a deep gorge-like channel, making visibility very limited unless one climbs high up the side of the valley.

¹ This particular form of Ngü means "sweat" and the implication, as it was explained to me, is that the river is sweated out of the glaciers, which perspire freely in the sun, like men.

When halting for a day or more in any place, we had been keeping records of the hourly barometric variation, which was a maximum between 8 a.m. and 4 p.m.—or, in other words, between the start and finish of an average march. The degree of variation naturally depended upon the district and the season, but by taking frequent observations we were able to obtain what were probably fair correction values for any stage of the journey.

The cumulative effect of not allowing for this hourly variation was very great. For example, assuming Purtsang in each case to be at 7385 feet, we worked out the height of the Kangri Karpo La both by corrected and by uncorrected readings of the barometer. By the former method the height came to 15,460 feet, while by the latter it appeared as nearly 17,800—a fantastic figure, in view of the facts that the barometer read 17.00 inches on the pass and that the tree-line was very little more than 2000 feet below it.

We waited eight days in Purtsang, owing to a shortage of men who were willing to make the difficult journey to Shingke Gompa; and in the end we had to send down the valley to recruit porters from Medrong and Rongyü to make up the twenty-two we needed. There is no regular path from Purtsang over the Kangri Karpo La, as this pass is seldom used by any but hunters or a few pilgrims; and as no one had crossed at all in 1934, when we left Purtsang on August 20 there was a lot of heavy work to be done in cutting a path through the undergrowth of brambles and 10-foot nettles. For the first six of the eleven marches to the Kangri Karpo La the forest was so dense that, with the limited time at our disposal, it was impossible to carry out any form of survey other than a compass traverse; but for the remainder the visibility at least was much better, although we were never able to cover more than 5 miles in a day, and on one occasion only 2½.

The Zayul Ngü Chu has its main source in a large glacier rising from several high peaks on the range south of the Ngagong Chu, one of which is over 20,000 feet. The glacier appears to be in rapid retreat and is very smooth, with its foot at a height of 11,750 feet.

The pass shown as the Kangri Karpo La at rather more than 18,000 feet on the Survey of India sheet No. 91 is in reality the Andzamkho La, very occasionally used by musk-hunters between the Jairu and Chindru valleys. The Kangri Karpo La itself is 15,460 feet high, on a small glacier saddle some miles to the north. It is not a high pass, but very exposed, and the ascent from the east is steep and difficult enough to cause it to be little used. We crossed it on 31 August 1935, and dropped into the Chindru valley, which is thickly forested throughout. At the last camp above Shingke Gompa we ran into great numbers of leeches which were fully as bad as those in Upper Burma, and which are said to be found all the way down the valley from that point on.

Shingke Gompa is an attractive little monastery of twenty-one "Red Hat" monks surrounded by a large scattered village of sixty-one wooden houses. There is a strong element of Khampas and Babas among the inhabitants, almost all of whom seem to have migrated there on account of misunderstandings in their own districts. It was particularly interesting to see that every household in Shingke used heavy steatite cooking-pots, the outside of which had been turned on lathes, while the inside had apparently been dug

out by hand. These pots are made either in the Mishmi or Abor Hills, and are brought over to be exchanged for wool and salt.

We remained in Shingke for four days and then turned north towards the Chindru La, which we crossed three days later on September 11. This pass, of 14,390 feet, has a fairly easy approach from the south, but a very difficult one from the north which becomes quite impassable after even a moderate fall of snow. On this account the Chindru La is only open from June till September, and as it is on the one mule-track between Pome (the district north of the pass) and Pemakö (to the south), this tends to isolate the latter very much.

On September 12 we reached Dashing Gomba to find that Hanbury-Tracy had been waiting there since August 24, after having done a valuable piece of work in exploring the course of the Ngagong Chu and much of the country to the north of it.

The following is Mr. Hanbury-Tracy's account of his journey down the Ngagong Chu to Dashing:

"The route down the Ngagong Chu forms one of the chief communications of the province of Pome with the outside world, but although the path on the whole is good, there are several stretches of wooden galleries built out from the cliff, with the result that the route is not practicable for animal transport over the whole distance.

For the first stage of three days to the nearest village in Pome coolies had to be obtained from the neighbourhood of Shugden Gomba. On July 24 I started from Shugden Gomba with Nyima Töndrup, and for the first two days we followed the route taken by Captain Kingdon Ward in 1933, when he explored the western branch of the Ngagong lake and penetrated a short distance down the Ngagong Chu. This western branch of the lake, protected on all sides from the bleak winds of the surrounding uplands, enjoys a markedly warmer climate than the main body of the lake, and this is evidenced by the abundant growth of pine and larch along the lakeside. A mile from the lake outfall the Ngagong Chu plunges into a great gorge, 500 feet deep and 200 yards wide at its commencement, but ever increasing in depth until some 20 miles downstream the cliffs rise sheer for 3000 feet. Up the side valleys to the south of the gorge I could see signs of glacial action and at the heads of the valleys an occasional glimpse of snow-peaks forming the high range between Pome and Zayul, which unfortunately I had no time to investigate further. It is evident that the upper levels of the Ngagong Chu valley are glacier-worn, while the gorge has more recently been carved out by water.

We met several parties of traders on their way up from Shöwa and Dashing, and returning to the Rongtö valley by way of the Ata Kang La. Trade between Zayul and Pome is, comparatively speaking, brisk, but it is evidently the Zayulis who take the initiative in the matter. On the third day's march we reached a prayer-gate and stone wall, the latter once used as a defence against the Chinese in the invasion of 1910, and soon afterwards came suddenly upon the mouth of a well-wooded side valley to the south, at the head of which could be seen a fine snow-peak called Kangkarlhamo (the White Snow-Goddess) reputed, in common with many other mountains of Tibet,

to be the haunt of evil spirits. Some 2 miles up this valley we came to Migtö (12,700 feet), the first Poba village, and from there our Ngagong coolies returned home.

I had thought there might be a pass up the glacier and over a col to the east of Kangkarlhamo, leading into Zayul, but the villagers said there was none, and though I attempted to scale the ice-cliff a mile above the glacier-snout it was impracticable for any but a well-equipped ice-climbing party. There is in fact only one pass, and that a mere hunters' trail, along the whole length of the range from the Ata Kang La to the Chindru La. There were quantities of wild gooseberries in the Migtö valley, but they were terribly sour and justly unappreciated by the inhabitants. In the woods I saw a monkey, a species of macaque, while the only birds in evidence were magpies, rock-pigeons, and larks.

The Pobas of Pome have a bad reputation in the neighbouring districts, but in the last few years the Lhasa Government has made strenuous efforts to maintain law and order in this outlying province, and as a result the country is now comparatively quiet. Certainly upon first acquaintance I found the Pobas a most agreeable if somewhat lazy and haphazard people, and subsequent experience did nothing to alter this impression. The Pobas are not noticeably different in appearance from other types in eastern Tibet, but they are if anything slightly shorter in stature, and average about 5 feet 5 inches in height. In contrast with the Khampas, who usually favour a pigtail, the Pobas wear their hair long to the shoulders, and those with wavy hair, which occurs not infrequently, present something of a cavalier appearance; sharply hooked noses, with almost semitic features, are not uncommon.

I was nearly faced with the prospect of remaining at Migtö for a month, for the swollen river had swept away the bridge over the Ngagong Chu and the village headman at first declared that nothing could be done until the summer floods had subsided. But later he formed a "committee" which after two days of earnest discussion agreed that there was a possible route along and down the face of the gorge by which the broken bridge could be circumvented: with the aid of forty men standing on ledges, who lowered the loads one to the other, the task was eventually accomplished, and we continued down the gorge.

The Pobas are more than usually prone to the exasperating custom, hallowed by tradition, of cutting up a day's march into several stages at each of which a lengthy wait for fresh coolies is entailed, and as a result our progress during the next few days was slow. One village actually held the portage rights over a length of only 500 yards of the highway.

On August 5 we reached Sum Dzong, a square-walled town with a guard-house at each corner. Within are the *dzong* and the *gompa* and dwellings for a hundred monks. The Chinese invasion had left bitter memories here, for Sum Dzong was then razed to the ground, and the aged abbot recalled with regret the once splendid *gompa* which was destroyed. Sum Dzong stands at the confluence of the Chö Dzong Chu with the main Ngagong Chu; and two days' march up the former valley, I was told, lay Chö Dzong, the headquarters of the *Dzongpön* of this part of Pome. From Chö Dzong a path was said to lead over the Gotsa La to Ngagong and Shugden Gompa.

To Chö Dzong I decided to proceed, and on August 8 we started from Sum Dzong, heading almost due north up a wide, level valley in which patches of woodland alternated with open grazing ground. Tributary glaciers from the mountains to the west once stretched far down to the valley of the Chö Dzong Chu, and in two places, at Traru and at Dorje Dzong, old lateral moraines run right across the valley. The route over the Gotsa La appears to be much favoured by traders journeying between Pemakö and the district of Pashö, or farther afield to Chamdo on the main China Road, and on our way up to Chö Dzong we passed several caravans bearing chilis and dyestuff from Pemakö, and others from Chamdo with tea. This route does in fact provide the only access to Pome from the east which is fit for animal transport.

At Chö Dzong the *Dzongpön* was carrying on a lonely and difficult task in governing the unruly Pobas. Four months previous to my visit he had been attacked in his house by a Poba rising, but had successfully defended himself single-handed. Subsequently a garrison was established at Chö Dzong.

I decided to cross the Gotsa La to Rangbu Gompa and so connect with Captain Kingdon Ward's route of 1933, when he travelled from Shugden Gompa to the Salween. The *Dzongpön* graciously provided every facility, and on August 11 we left Chö Dzong, marching east up the steep valley of the Jolo Chu. Two days later we crossed the Gotsa La at a height of 16,380 feet. I had thought we were about to cross only a rib of the main range, but it was immediately apparent that we were on the Tsangpo-Salween Divide itself, for from the farther side all streams led to the Salween. The change in the country was remarkable: to the south in Pome was a land seamed with glaciers and split by narrow wooded valleys, while to the north lay open pastureland and barren, regular hills. The divide is clearly a formidable barrier to the rains which approach from the south-west. Although the Gotsa La would seem an obvious boundary, yet for some way on the north side of the pass the people are still under the authority of Chö Dzong, for natural frontiers count for little with Tibetans.

We descended to the Dü Chu, which we crossed on the following day, and then turned south and south-east, past the mile-long Yarku Tso, which is formed by a natural dam of fallen rock at its northern end, and thence up the open valley of the Yarku Chu, an ideal grazing area for hundreds of yaks and *dzos*. On August 15 we crossed the Deu La at 16,780 feet, where outcrops of sandstone appeared in the limestone range and where *Mecanopsis Baileyi* and *Gentiana sino-ornata* flowered in profusion. Descending steeply to the valley of the Ling Chu, we arrived the next day at Rangbu Gompa, a large monastery housing a hundred monks, built on a low hill in the centre of the valley. Close by stands a small *dzong*, used as a rest-house by the magistrate from Trashitse Dzong when he goes on tour but not permanently inhabited by any official.

Returning into Pome by way of the Tsaphuk La, at the head of a side valley to the west of Rangbu Gompa, and the Yoni La, by which we recrossed the Tsangpo-Salween Divide, we reached Sum Dzong again on August 22. On the 24th we started down the main valley of the Ngagong Chu and 2 miles from Sum Dzong entered thick pine forest, the country being similar to that of the Rongtö valley in Zayul. The following day we crossed the river to

Dashing by a well-built cantilever bridge, a fine example of Poba craftsmanship, and were comfortably housed close to the monastery.

Three weeks later Kaulback arrived from Pemakö."

On 16 September 1935 I went down the Ngagong Chu three days' journey to Shöwa, in order to connect with Morshead and Bailey's work of 1913, and then returned by the same route to Dashing Gompa, to rejoin Hanbury-Tracy, who had remained there.

On my way from Purtsang to Shingke Gompa, and except in the immediate neighbourhood of the Kangri Karpo La, I had not been able to see any of the crest of the range forming the south side of the Ngagong Chu valley. Hanbury-Tracy however had been more fortunate, and could see that the range was permanent snow throughout its length from Shugden Gompa to Dashing Gompa, and apparently between 18,000 and 20,000 feet in height. Near the Chindru La and the Kangri Karpo La the rocks are of limestone and slate; round the Ata Kang La they are of granite; at Shugden Gompa limestone and slate; and the Salween-Brahmaputra watershed, which is connected with this range some miles south-east of the Trakge La, we later found to be mainly composed of limestone and slate also, with frequent outcrops of bright red sandstone. At no time did I feel justified in estimating either dip or strike, owing to the great variations in both which occurred even in comparatively small areas.

Between us Hanbury-Tracy and I had found that the Ngagong Chu runs almost in a straight line from the western end of the Ngan Tso (the lake at Shugden Gompa) to Shöwa—not cutting twice through a possible easterly extension of the Himalaya as Kingdon Ward had suggested¹—and that the range south of this river, though high, was very narrow, varying from about 25 miles in width between Shugden Gompa and Purtsang to a minimum of about 10 miles. In spite of this narrowness it is very tempting to assume that this narrow strip of mountains is a direct prolongation of the Himalaya, bent round the north-east promontory of Assam and continuing south as the Salween-Brahmaputra, or Salween-Irrawaddy, Divide. Following Burrard's argument that the Tibetan rivers cut through the Himalaya at the point of maximum elevation,² this assumption is perhaps supported by the fact that south of Shöwa and west of the Sü La the level of the range appears to rise to more than 20,000 feet, facing Namcha Barwa on the other side of the Tsangpo Gorge. If this is so—that the Himalaya trend east and south from Namcha Barwa—then it would seem that the Salween-Brahmaputra watershed west of the Trakge La might be a secondary fold pushed up at the same time as the Himalaya themselves.

We left Dashing Gompa on 1 October 1935 and reached Chumdo two days later after a delay of nearly a day a few miles south of this place, where the path had been carried away by a landslide. Up till 1931 Poyü (the province containing Pome, Potö, and Pemakö) had been more or less independent under its own ruler at Shöwa. In that year however it was finally taken under the

¹ *Geogr. J.* 84 (1934) 369-97.

² S. G. Burrard and H. H. Hayden, 'A sketch of the geography and geology of the Himalaya mountains and Tibet.'

direct administration of the Central Tibetan Government, after three months of severe fighting, and there was still a garrison of one hundred troops in Chumdo to keep order in the district. These soldiers were said to be the pick of the Tibetan Army, and they were certainly very smart in their full-dress uniforms of canary-yellow, with scarlet collars, cuffs, and shoulder-straps and black trousers with broad yellow stripes. A number of these men had pronounced beards, and they were all from the province of Ü. Chumdo had been a Poba *dzong* before 1931, and strongly fortified with a wall and guard-towers; but these were partly destroyed in the fighting and were still in ruins when we saw them. The Governor of the present district of Potö, of which Chumdo is the capital, was a young monk from Sera Gompa. He was most helpful to us and we parted from him with some regret after a stay of a week.

We continued north from Chumdo up the valley of the Potö Chu, which is very clearly glacial in origin. About 14 miles above Chumdo we passed several hundred of what appeared to be ancient burial mounds, built on the right bank of the river and on the flat bed of the glacier. They varied from 10 feet to 60 feet in height and were mostly dome-shaped, although there were one or two in the shape of crescents, perhaps 20 yards between the horns, and several long barrows about 40 yards long by 15 yards wide. On some of the circular ones there were large stones placed at the cardinal points half-way up the sides, and many of the mounds had clumps of prayer-flags. Unfortunately we had neither the time nor the implements for excavation, but if they are burial places (and I cannot imagine what else they could be) they must certainly be pre-Tibetan. There was a battle near here in 1911 between the Chinese and the Pobas, and I had thought that these mounds might be the graves where the Chinese had buried their dead, but the local villagers denied this: the mounds had always been there, and were just earth, as any one could see.

It is nominally five days' march from Chumdo to the Tungla La, but we had to stay three days in the village of Gowa on the way up, owing to the theft of Rs.2000/-. We were fortunately able to recover everything, mainly through the efficient detective work of Lewa, even before the Governor's agents arrived to inquire into the case.

For the first four days from Chumdo the valley had been lightly forested with grass and rhododendron scrub; but on the fifth march, up to the Tungla La, the path climbed steeply over barren screes of slate and limestone, past several small hanging glaciers, and up to the pass at 17,280 feet. We were now on the Salween-Brahmaputra watershed, and the contrast in the scenery on both sides was quite extraordinary. To the south there was line upon line of snowy peaks; deep, forested valleys; ravines, gorges, and torrents. To the north hardly a sign of snow, but a great expanse of gently rounded hills stretching into the distance—the whole country dry and brown, with only a few scrubby thorn bushes and an occasional stunted fir-tree to be seen. Two days after crossing this pass we reached the Gya Lam (the great road running from Lhasa to Batang, and so to Peiping) and turned eastwards along this to Shopando, where we arrived on October 21.

Shopando had been visited in 1882 by A—K. on his way back to Lhasa, and in 1923 by Pereira, so that it was already a well-known place by the time we



Chulikata Mishmi girl



Zayuli coolie



A Chulikata Mishmi



Yuru Gompa, in the Potö Chu valley



Towards the Salween from the Do La

reached it. A—K. had reported a hundred houses there, but there are now a hundred and twenty, not including quarters for the sixty-odd monks in the monastery. This however does not imply an increase of 20 per cent. in the population. The extra houses were built by the Chinese in 1910 as quarters for their troops, and the population of Shopando has apparently not changed noticeably one way or the other within the memory of any one now living. We put up in the caravanserai, a building of three storeys built round a large courtyard, and remained there for nine days. During this time we took a series of observations which showed that the position given to Shopando on the Survey of India sheet No. 82 was 13 miles too far to the east.

On October 31 we crossed the Chungke La, a low pass of 12,730 feet, into the Salween valley, and camped on the right bank of the river, 14 miles from Shopando. The Salween was here some 75 yards wide, flowing at 6 or 7 knots, and very deep. We crossed over to the left bank the next day by a primitive raft-ferry and followed up the valley to Zimda.

It was now our plan to continue westwards as far as the source of the Salween, keeping close to the river the whole way; and this worked fairly well on the whole, although twice we had to make lengthy detours for lack of any other path. The first of these was from Zimda itself, and as every one there assured us that there was no route at all along the Salween anywhere west of that place, we left for Idashi feeling rather depressed, even though on the face of it the story seemed fantastic. At Idashi however we were told exactly the reverse and were able to return to the river and travel up the valley as far as Kau over a good mule-track.

In this part of the Salween valley, and as far west as we were able to go, there are many monasteries of from fifty to three hundred monks or so, and as a result of this the ban on hunting is even more strictly enforced than in other parts of Tibet, so that game is plentiful and very tame. We saw numbers of *Ovis ammon humei* and musk deer, and the tracks of goral and snow-wolf; and, as regards birds, many hundreds of the big white pheasants (*Crossoptilon crossoptilon*) in coveys of from fifteen to sixty or seventy, blood pheasants (*Ithagenes geoffroyi*), partridges (*Perdix hodgsonii*, *Tetraophasis szechenyii*, and *Lerwa lerwa*); and, in early spring, many ducks, geese, and snipe, either nesting or on their way to the breeding grounds farther north. In this connection I was informed that there is a lake in the neighbourhood of Nakchu Dzong where many thousands of these ducks and geese breed every year.

It was now early November, and we were living at between 12,000 and 14,000 feet. At this height the crops do not ripen until late in October, and the villagers were all hard at work threshing, helped by many of the monks from the neighbouring monasteries. The straw was carefully stacked on racks in the fields out of reach of the yaks and ponies, for use as fodder between December and April when there is no grazing. Thus the prosperity of the community depends wholly on the corn crop. In 1934 for example the crops had largely failed owing to drought, and that winter, not only was there not enough grain for the people, but no fodder for the cattle, so that very many of the latter died before the grass came again in the spring. In 1935 however

the crops were excellent, which was fortunate not only for the natives but for us. Had they failed again we should probably have been credited with having blighted them by casting the evil eye.

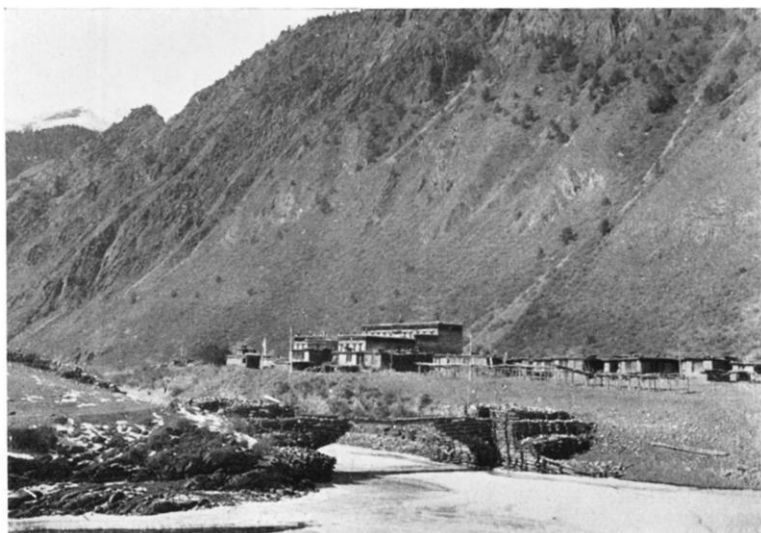
From Kau there were two possible paths, one of which ran straight up the Salween to Dege. This was said to be difficult and seldom used. The other, which leads north, away from the river, is the main route, joining the road from Chamdo to Sok Gompa at Pada Sumdo. This latter road had been explored by Bower, Rockhill, and Bonvallot, and we therefore decided to go up to Pada Sumdo to connect with their work before returning to the Salween at Dege and continuing up the river from there.

Accordingly, from November 18, we deserted the Salween for a while, and headed north up a narrow, grassy valley, used during the summer as a grazing ground for yaks. Effective daylight was now getting short, and we began to find that we were not able to do any open-air survey work before 8.30 in the morning, or after 3.30 in the afternoon; so that, until well on in the spring, unless the march was a particularly short one, we always had to spend two days over it, with consequent enormous waste of time.

Three days after leaving Kau, and after a long ride of 19 miles over a bitterly cold pass (Michen La, 16,110 feet), we came to Rukyithang, a small and entirely pastoral village at 13,500 feet. I mention Rukyithang for two reasons only. One, that we there saw the only raven of the whole journey—a great big fellow with an indescribable air of wary truculence; and the other that Hanbury-Tracy was severely poisoned by fumes from the yak-dung fire in our tiny room there. The symptoms were like acute asthma, with considerable pain in the chest. I escaped this, possibly because I had been eating garlic sandwiches for the last few days, and raw garlic is said to be a sure preventative of such poisoning.

Since we had left Shopando the rocks had all been of slate and limestone, but on the last day's march to Pada Sumdo, which we reached on November 29, there were several outcrops of strawberry-red sandstone, apparently identical with that which we found in the Salween valley between Chamda Gompa and Nakshö Biru, and in the Ling Chu valley below Trashitse Dzong.

Before the days of portable and efficient wireless sets travellers on east-west routes always had great difficulty over their longitudes. We had found that Shopando on the China Road had been placed too far to the east, and we were particularly interested in reaching Pada Sumdo to see whether its position also needed revision. We found that it had been estimated at 8 miles too far to the west, and were able to bring this Chamdo-Sok Gompa road into correct alignment with the Gya Lam. As soon as we had reached Pada Sumdo we turned south-west again to Dege, above the left bank of the Salween, where we arrived in a blinding snow-storm on December 2. The next day, although the snow had stopped falling, a high wind was whipping it off the ground in such quantities that visibility was practically nil, and we remained where we were until the 4th, for conditions to improve. The river was already frozen over in parts thickly enough to carry transport, and just above Dege we crossed over the ice and continued up the right bank for 14 miles to Chamda Gompa at 12,600 feet. This is a monastery of a hundred and twenty monks and a village of ninety houses surrounded by a wall, but it is a bleak spot and there



Bumthang Gompa



Pengar Gompa



The Ge Chu valley above Pengar Gompa



The big chorten, Nakshö Biru



Bridge over the Salween, Nakshö Biru

is little to recommend in it. From Shopando on we had constantly been informed that the Salween divided into two streams somewhere to the west. By making the Kau–Pada Sumdo–Dege detour we had missed the confluence of these two branches of the river, and so from Chamda Gompa we turned south, crossed the La Gen (16,200 feet), and went down to this big tributary (the Ge Chu) to make quite certain that it was not the main stream, and in any case to explore as much of its course as possible.

When we reached Bumthang Gompa (12,480 feet) we found that there was no doubt as to the Ge Chu being a tributary of the Salween and not the main stream, for it was not more than 12 yards wide by 6 or 7 feet deep, while at Chamda Gompa the Salween was some 50 yards across and very considerably deeper. Incidentally, we were able, before the end of the journey, to clear up a certain amount of controversy regarding the proper Tibetan name of the Salween, which has been spelt by Europeans in various ways for years. The real name is Gyamo Ngo Chu,¹ or the Blue River of China, and called so with some reason, for in the winter and before it freezes over it is a very dark, clear blue, almost black. At other times of the year, like the Blue Danube, it is a dull mud colour. There can be no doubt as to this being the correct spelling, because we obtained it independently from three District Governors, one abbot, and one nobleman from Lhasa.

From Bumthang Gompa we went 15 miles down the Ge Chu to Sating, a small *dzong* just below the Salween–Ge Chu confluence; and then, returning, headed west again up the valley for two days to Pengar Gompa, a monastery of two hundred monks on one of the main roads from Lhasa to Chamdo. A good deal of trade passes this way, and there is a large caravanserai, of which we occupied the entire upper floor. We arrived there on December 20, and were so comfortable that we decided to remain until after Christmas. We had been living wholly on the country for the past three months and were now on a steady diet of yak-meat (or mutton) and turnips, butter, *tsamba*, and tea. This, though monotonous, was most nourishing, and we and the servants all kept very fit indeed. For Christmas however we had saved our last bottle of rum, a tin of peas, and a plum pudding, and these, with roast mutton, made a meal we remembered for months afterwards.

Above Pengar Gompa the Ge Chu valley is very shallow and open, with only an occasional patch of stunted fir-trees, about 10 feet high, and a little grass and thorn scrub; and, both here and in the Salween valley, during the winter a bitter wind sweeps down from the west nearly all day long. As a result of this, at nearly every survey station (on an average there was one every 2 miles) we had to build a fire of yak-dung or brushwood to thaw our hands, and even so they became numb after a very few minutes' work. The rule was ten minutes of thaw to five of work, and this, with the shortage of daylight, made travel extremely slow. At the end of December we crossed back into the Salween valley by the Thamtsa La (16,970) and reached Nakshö Biru on 1 January 1936. This important place is the capital of an extensive district, and consists of a large monastery, said to be more than five hundred years old, and a very scattered village of about a hundred houses. We called on the

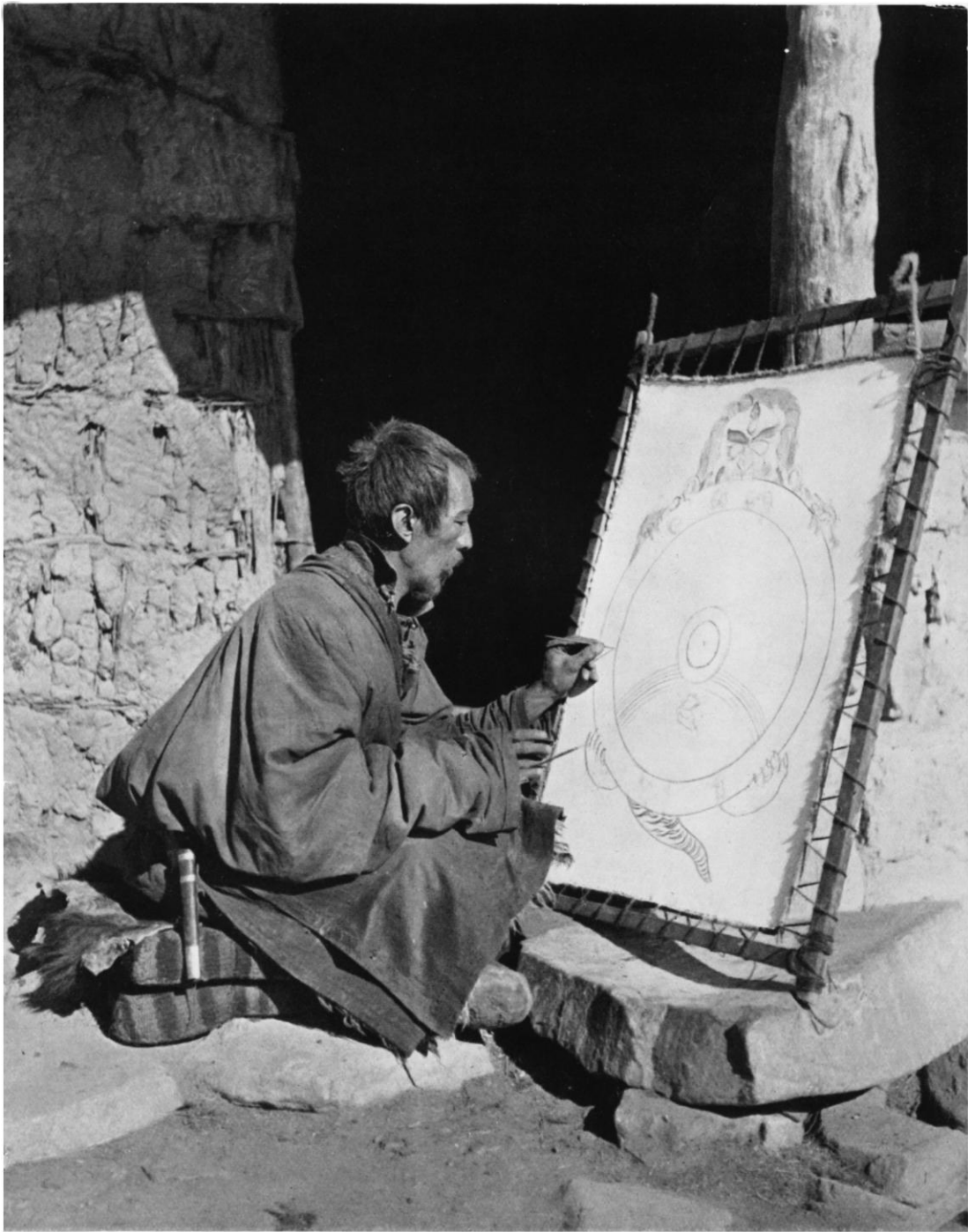
¹ གཡམོ་ངོ་ཅུ་

Governor the day after our arrival, informed him of our plans to continue up to the source of the Salween if possible, and a few days later returned down the river to Chamda Gomba, to fill in that stretch of it which we had had to leave undone while we were working in the Ge Chu valley. We arrived back in Nakshö Biru on January 22, to find that we were regarded with considerable suspicion.

Ever since leaving Burma, Hanbury-Tracy had been growing a beard, and this had apparently given rise to a rumour that we were not English but Russians, and therefore automatically spies. During our trip to Chamda Gomba and back the Governor had had time to think matters over, and he now asked us very politely if we would mind remaining in Nakshö Biru until he could receive confirmation of our respectability from Lhasa. We were not more than 300 miles from Lhasa at this time, but in this part of Tibet travel in winter is slow, and it was nearly three months before word came back that we were English and were to be given every assistance on our way. We had a house to ourselves during our long wait, and were quite comfortable, but we found it impossible to do any work. Nakshö Biru is at 13,200 feet and the air is so extremely dry that evaporation takes place very quickly. As a result of this, snow does not lie for more than a few days at a time, even in mid-winter; and, except when snow is actually on the ground, for four days out of five an intermittent dust-storm blows down the valley, driven by a high, gusty wind. We stretched a piece of cotton cloth over the window of our room to try to keep out the dust and still let in light, but so much came through that it was hopeless to bring out any maps or papers. They became quite black in a very short time. I am certain that this dust is the main (if not the only) cause of the ophthalmia which is so prevalent in this part of the Salween valley. We soon exhausted the possibilities for amusement in the immediate locality; then took up weaving, under the instruction of our landlord's wife; and were finally reduced to composing cross-word puzzles for each other to solve.

February 23 was the first day of the Fire Mouse Year, and we were invited to the monastery to watch the Devil Dance, which lasted for seven hours. Knowing hardly anything about the symbolism of the dresses or movements, we were left at the end with little more than a blurred impression of grotesquely masked figures in gorgeous robes whirling and posturing, to the constant booming of gongs and the great prayer-trumpets, the clashing of cymbals, and the squeals of clarinets. Had the performance been shorter, we might have retained a clearer memory of it after all was over.

On April 5, word came from Lhasa that we were to be allowed to leave Nakshö Biru, but by this time it had become clear that we must reserve the source of the Salween for another time. We did not make up our minds to this without some heart-burning, for it had been the main objective of the journey; but, now that spring was so far advanced, we had very little choice. We were probably a minimum of thirty marches from the source, with unknown conditions from the Amdo Tsonak on. It might easily have taken us a good deal longer. Once at the source we should have been forced either to retrace our steps for a month or more (a waste of time) or continue west and south across the plateau to Kashmir or Ladakh, as we had not sufficient



The Wheel of Life



The Gya Lam



Lho Dzong

funds left to make a detour to the north and east, and we had no permit to go in the direction of Lhasa. Unfortunately during the last few years the Changpas of the Great Plateau, who are nominally herdsmen, have taken up banditry with even more zeal than before, so that now merchants travelling north from Lhasa do so only in large, well-armed bands, of perhaps two hundred men. In the winter the Changpas are all in the north (in the lower ground) for the grazing, but in spring they start south again as the grass begins to sprout. In fact, they follow the grass as crabs do the tides. If we could only have been at the source a short time after the grass had begun to grow, we should have been across the plateau before the Changpas arrived as far down as our line of march; but as it was, with our late start, we should have met them half-way over. With only five men and no weapons we should have stood no chance, and the results of nearly two years' work would have been lost. We therefore decided to return east and concentrate on the Salween below where we had first reached it, and on the Salween-Brahmaputra watershed as far to the south as we could manage.

Accordingly, on 12 April 1936, we crossed the Salween at Nakshö Biru by a fine log bridge and returned to the Ge Chu valley. The Thamtsa La, by which we had come on our way up, was still blocked by snow, but we were able to cross the Shar La (16,380 feet), a few miles farther east, and so to go past Bumthang Gompa to Sating (12,550 feet). The Salween was now in semi-flood, and a deep milk-chocolate in colour, while the Ge Chu was running a beautiful clear green. The contrast at the confluence was very marked. From Sating we turned south, crossed three passes to the China Road, which we reached some 12 miles west of the Pembar Gompa, and continued eastwards along it to Lho Dzong. There were great numbers of professional beggars of both sexes on the road at this time. During the winter they do not travel much, but for the rest of the year they infest the main routes in Tibet. It is a religious principle with the Tibetans that beggars must be charitably treated, and though this is excellent in theory, in practice it means that there are now thousands of them who are brought up as such from birth, and who are a real burden on the community. They generally seem to be better fed, and certainly better clothed, than most of their hard-working fellows. We reached Lho Dzong (12,680) on May 8.

In the centre and west of Tibet, the word *dzong* indicates a fort built on a steep hill and overlooking a valley. In the east however *dzong* has lost this meaning and now implies only that the place is, or was, a district headquarters of some sort. Sangachö Dzong is an exception to this, although the fort there is scarcely worthy the name, and Lho Dzong is another. There the fort is a real *dzong*, strongly built on the top of a steep bluff, and only a short distance from the large walled monastery of two hundred and forty monks. We had to wait for six weeks in Lho Dzong, as the new Governor of the district was still on his way from Lhasa and his clerk, who was temporarily in charge, had no authority to provide transport for us or any one else. We took up our quarters in the village which is in the valley below the *dzong*, and spent much of our time in collecting entomological and botanical specimens from the neighbourhood.

It had been our intention to continue along the Gya Lam as far as Shabye Zampa, and then to turn south beyond the left bank, where there is an important road. As luck would have it, serious frontier skirmishing had recently broken out between the Tibetans and bodies of Chinese Communist bandits, and this fighting forced us to alter our plans. When the Governor arrived he was very pressing in asking us not to go that way, because, he said, with large numbers of troops wandering about the country we were as likely to be pillaged by them as by the Chinese, and in that case he would be severely blamed. We therefore left Lho Dzong on June 20, and turned south to Shari Dzong along the route A—K. had used in 1880 when on his way back to Lhasa. It was a delightful time to be travelling in this part of the country. Everywhere were masses of yellow kingcups and buttercups; white and dark-blue anemones; here and there patches of blue dwarf irises or big mauve primulas; white rhododendrons on 6-foot bushes, and purple ones not 15 inches high; dog-roses and sweet-smelling shrubs; butterflies; and, away to the south, the snowy mountains running down into Zayul.

Shari Dzong is only 6 miles by road from the Salween, and we had expected to have been able to go down the river from here. This too proved to be impossible, because the only path was on the opposite side of the river (here 100 yards wide and in high flood), and the rope bridge had just broken. The valley is almost bare of trees, but even if there had been enough wood to make a raft, we should not have been able to cross in that current. This was probably just as well, for it enabled us to make a fairly comprehensive survey not only of the country between Shari Dzong and the Salween—Brahmaputra watershed but also of that between Shari Dzong and Shugden Gompa, which latter we would not otherwise have done.

We left Shari Dzong therefore on July 2 and turned south-west for the Dü Chu, which we reached two days later, after crossing the difficult Phokar La, a very steep pass of 17,240 feet. The first 2000 feet down from this pass on the west side are over loose shale of slate and limestone. We left our baggage at Dzongra, on the right bank of the Dü Chu, and went down the river as far as the farthest point in its course we had been able to fix on our way to Shari Dzong. We then surveyed the upper portion of the river and the watershed to the west, and after a total of eleven days in the Dü Chu valley we crossed the Deu La (16,780 feet) and reached Trashitse Dzong (12,370) on July 15. A—K. and Kingdon Ward had both visited Trashitse Dzong on their way from Shugden Gompa, the one in 1882 and the other in 1933. We made this place our base for a time while we surveyed the route north to Shari Dzong and south to Shugden Gompa, in order to leave no avoidable blanks in our map; and finally, on August 8, we turned east down the Ling Chu valley towards the Salween again.

Kingdon Ward has called this river the Tsa Chu, but in this I think he was mistaken, and I feel that he must have inquired about it at Rangbu Gompa, for the large tributary which flows in there from the west is, in fact, called Tsa Chu. The main stream is however known as Ling Chu throughout its length. Near Rangbu Gompa there are still the remains of several lateral moraines, and the valley is clearly of glacial origin as far down as some 3 or 4



The Salween near Shari Dzong



The Ling Chu valley



The bridge at Thenthok Gompa



The Rongme Chu

miles below Trashitse Dzong. Below that it is difficult to say, but I think it is probable that glaciation extended to well below Nera Gönsar.

The Ling Chu valley is almost treeless and with little vegetation of any kind apart from thorn scrub, except immediately round the many villages. There, by intensive irrigation, the people produce good crops of wheat, barley, and peas, and there are apricot, mulberry, walnut, and pear trees. The valley seemed to be stiflingly hot, and yet the maximum shade temperature at midday nowhere exceeded 70° F. There were many lizards, a few specimens of a Chinese pit-viper, and, in the houses, great numbers of bed-bugs. From below Dzikar the Ling Chu runs in a deep narrow gorge to the Salween, and the path here runs at nearly 3000 feet above the river to Po (10,900), which is itself 2300 feet above the Salween. As far as this we had been following in Kingdon Ward's footsteps from Trashitse Dzong. When we returned from Po to Dzikar I left Hanbury-Tracy there for a few days (he had strained a muscle in his thigh) and once again took Kingdon Ward's route to the south as far as the Trakge La (17,320 feet), on the Salween-Brahmaputra watershed, which is here composed of granite. I found this journey very trying (and especially the last part of the climb to the pass) owing to a severe attack of colitis, which persisted for ten or twelve days afterwards.

On August 23 we left Dzikar by the main road to the Salween (that to Pö being little used), and reached Jepa after two days over a good path. The river was here about 120 yards wide, with a current of 10 knots, and the valley was very hot; and like that of the Ling Chu, except round the villages, it was almost completely barren, with very steep sides. Grapes and maize are grown in Jepa, besides other crops, and in the fruit-trees there were great numbers of emerald-green parakeets. We crossed the river here by a rope bridge of plaited yak-hide (fifty hides to the bridge), and went up to Thenthok Gompa, a monastery which had been visited both by King and by Sir Eric Teichmann. As the crow flies, Thenthok Gompa is only about 6 miles east of the Salween, but it is on the plateau which forms the watershed between this river and the Mekong; so that while the Salween here flows at about 8600 feet, the Tsayi Chu, on which Thenthok Gompa stands, though quite a large river, is at no less than 12,900 feet.

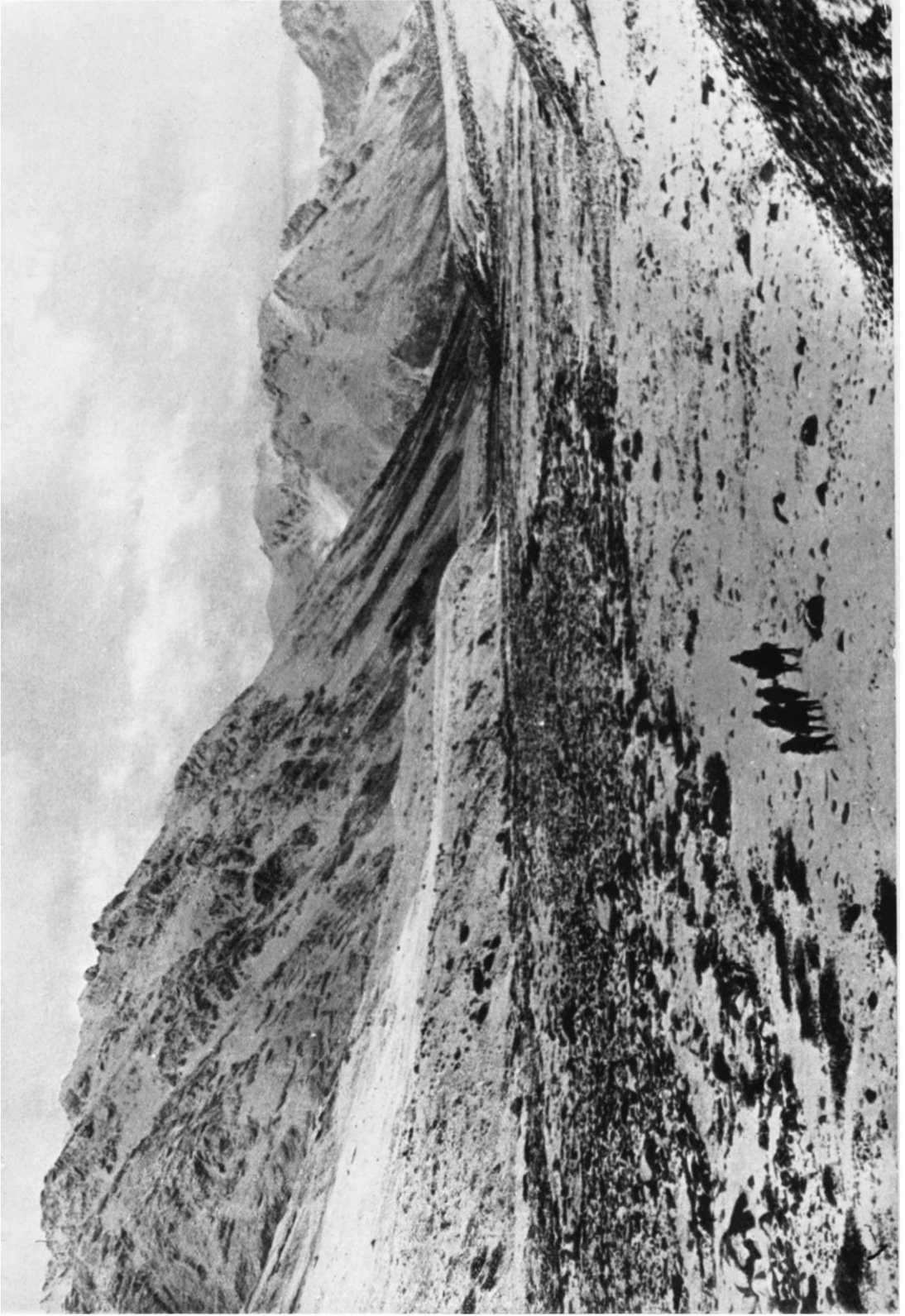
Our intention in going up to Thenthok Gompa had been to make a short journey northwards to fill in the Salween between Shari Dzong and Jepa, but this we were asked not to do by the Governor at Tsawa Dzogang, for the same reason that had prevailed at Lho Dzong. We therefore continued south along the main Chamdo-Sangachö Dzong road, reaching Situkha on September 11, three days from Thenthok Gompa. I remained here for ten days making up arrears of work, while Hanbury-Tracy explored both banks of the Salween as far up as Jepa. The roof of the house I lived in was infested with a species of colubrine snake (*Elaphe taeniura*), reaching 4½ feet in length, which lives on mice and small birds. I caught several, and others could often be seen peering out, or creeping about among the rafters.

On September 23 we crossed to the right bank of the Salween at Situkha by another leather rope bridge and turned south, keeping close to the river, which was now flowing in a much wider valley. As far as Wosithang we were

on King's route, but from there his path remained near the river, while we continued along the Sangachö Dzong road and climbed out of the Salween basin into that of the Brahmaputra, on September 28, by the Juk La, a low pass of only 15,400 feet. The rocks here were of limestone. We camped that night on the bank of the Chumnyö (meaning Crazy River, on account of its sudden floods) which flows into the Zayul river at Loma, and remained there for ten days on account of dense mist which hid the mountains and made survey work impossible. There was a lone cherry-tree near the camp (13,180) with brilliant red cherries growing singly and not in pairs. They were quite ripe but very bitter.

We had now, between us, crossed the Salween-Brahmaputra watershed six times (by the Gotsa La, the Yoni La, the Tunpla La, the Dokha La, the Trakge La, and Juk La), and we had been able to see further stretches of it in the distance on several occasions. We had found it to be composed mainly of slate and limestone; and apart from one of 21,680 feet, north of the Drindre La, we had seen no high peaks on this watershed, the crest of which appeared to maintain a remarkably uniform level of 18,000 or 19,000 feet throughout its length almost as far south as the Juk La. Handicapped by our lack of geological knowledge, we nevertheless had no doubt that it must be one range; possibly, if Wegener's theory is correct, one of a series of nearly parallel ranges pushed up at about the same period as the Himalaya themselves.

When the weather cleared up enough for us to move again, we crossed the Drindre La (15,610 feet) and on October 10 reached Pashö, a village of nineteen houses a day's march north of Sangachö Dzong. We then went up to Shugden Gompa *via* the Dama La (15,460), this being the winter route from Sangachö Dzong when the Dzo La is closed by snow. From Shugden Gompa we went up to the Trakge La to finish that route of which I had already explored the first half from Dzikar the preceding August. We had left most of our baggage at Pashö under the care of Nyima Töndrup, and were travelling as lightly as possible; and, now that the weather was getting cold again, we found it essential to have fires in camp, not only so as to have hot food, but simply to keep warm. For this reason, on our way up to the Trakge La we had to make our last camp some 14 miles south of the pass, at a height of 14,410 feet, because farther up the valley than that there was no fuel. This meant that on October 18 we had an unpleasantly long day of 28 miles, working up to the pass and then returning to camp. Luck was with us however. We finished work on the summit of the pass with the very last of the light, and it was not until then that a blizzard broke on us from the south, blowing straight up the valley with nothing to check it. We could hardly see a yard, and became so terribly cold that it took us almost eight hours to reach camp again. Shortly before we arrived (at 1.15 a.m.) we were met by two of our coolies who had come out to look for us. They lit a large fire of brushwood to unfreeze us and gave us a meal of *tsamba* before escorting us in. Lewa had gone back to Shugden Gompa two days before this on account of a bad closed abscess in the angle of his jaw, which was causing him a great deal of pain. My instruments were all at Pashö and I did not feel capable of opening it without them. When we reached Shugden Gompa again he met us with a beaming face,



*The path to the
Trakge La*



The Abbot of Sangachö Gompa



Khampa types from Jépa



Shödung Kharndempa: Governor of Zayul

completely restored to health. He said he had been driven to desperation by the agony and had finally taken a knife and operated on himself from inside his mouth. The results were magnificent.

We arrived back in Pashö on October 21, and left two days later for Shikathang. When we reached Gochen we found a messenger waiting for us who had been sent up from Minkhung Dzong by Kharndempa, the Governor of Zayul, with a present of 60 lb. of butter, 60 lb. of rice, and 60 lb. of excellent flour, and a letter authorizing us to take coolies through from Shikathang to Dening, in Assam. This was more than kind of him, and his letter was as welcome as his present. We had been afraid that possibly, in his absence, there might be some difficulty in procuring transport.

From Gochen, to vary the route back, we turned down the valley of the Zayul river (called indiscriminately Lhochü Ghu, Lhongpa Chu, or Chosen Chu), which had been explored by Colonel Bailey in 1911. This river flows in a deep, narrow valley with steep sides, well wooded for the most part, but the path is very good and we had no difficulties of any kind. Chikong appeared to mark a distinct climatic boundary. Above this village the forests were mainly of pine, with the houses built flush, or nearly so, with the ground; while below it there were many deciduous trees and the houses became of the true Zayuli type, raised on piles 8 or 10 feet in height with balconies in front on which the threshing is done, the ground being generally too damp for this. In this connection, and as is only to be expected, in the Zayul river, Rongtö, Chindru, and Ngagong valleys (*i.e.* where there are extensive forests) the houses are wholly of wood, with the exception of Sangachö Dzong and Gochen, where both forms are found; and elsewhere in the country we covered on this journey they are built of clay and stones, or occasionally of clay and wattle.

We reached Shikathang for the second time on 1 November 1936, and put up in the Governor's house, which was of course now empty. Colonel Bailey had only been able to make a compass traverse on his way down the Zayul river, and so we continued to work as far down as Shikathang in order to correct this with our more accurate instruments. But now work was finished and we had little to do during the eighteen days we had to wait while coolies were collected from the Rongtö valley. The one event which broke the monotony was when a certain woman, remarkable more for her greed than for her intelligence, went into a room between ours and the kitchen in an attempt to take the honey from a large swarm of wild bees which had made it their quarters. The bees, obviously annoyed, stung the thief severely, but, not content with that, they then turned on us. The attack began at 8 a.m., and although we fought a spirited action for nearly two hours with swats and smoke smudges, life became insupportable and we had to leave the premises in a body. Until 5.30 p.m. it was highly dangerous to venture near the house. Then, however, the bees retired for the night and we were able to return. On the next two days we repeated our flight into the wilderness, but after that the enemy had either forgiven or forgotten, and life became normal again.

From Shikathang to Dening, with heavy loads, it is seventeen marches over a bad footpath, and during the whole of that time it was impossible to buy

supplies, apart from an occasional fowl or a few eggs. Accordingly our forty coolies had, beside our baggage, to carry all their food for the journey. We did not realize it at the time, but when we reached Assam we found that their loads must have been considerably more than 100 lb. each. This is a huge weight in the type of country we were going through, and it says a great deal for their strength and endurance that only two of them gave up, both on account of accidents.

We left Shikathang on November 20 and crossed to the right bank of the Rongme Chu by the same bridge we had used on our way up to Lepa in 1935. We kept to the right bank of the river the whole way to Sadiya after this, and the first three days (to Walong) were especially interesting to me, because in 1933, when I was with Kingdon Ward, we had used the left bank on this stretch. From Shikathang down to Walong (below which is Mishmi country) we passed many small parties of Mishmis on their way north to spend the winter in the Rongtö valley. A number of these men could speak Assamese, and all seemed very surprised to see us. At Walong there is a big grove of orange-trees bearing a great quantity of large fruit. They were falling from the trees with ripeness, but were very sour. On November 27, after remaining one day in Walong because of heavy rain, we reached Minzong (Tibetan, Jiramarnong), a camping ground at the bend of the river where the Rongme Chu swings from south to north-west. A stream flows in here from the east, with a hunter's path running up it and over into the Hkamti Long. One of my coolies had made the round trip three years before from Shikathang, over the Diphuk La and back this way, in search of *takin*, which the Tibetans call *shimna*. Down to Minzong the path had run for most of the way through forest or tall reeds, but below this place, as far down as the Delei river, there are many villages, and large areas on the sides of the valley have been completely cleared, in many cases up to 1000 feet or more above the river. The crops are mountain rice, maize, buckwheat, and at least two kinds of millet, besides opium. Below the Delei forest predominates once more. From time to time we came upon bits of the mule-track which was made in 1911-12 almost as far up as Walong, but this is now largely overgrown by jungle, and in places has been destroyed by landslides, so that few stretches are in use.

On November 30 we reached Pangam, a large village of eleven huts, where we were greeted by Jaglum, the most influential Mishmi chief in the Miju country, which extends eastwards from the Delei river to Walong. I knew him well, for in 1933 he had gone with Kingdon Ward and myself from Pangam to Shikathang. He offered to come with us to Dening, but this was unnecessary as we neither expected nor met with any difficulty on our way. However, he accompanied us for the first 2 miles the next day, and sent a retainer with a ceremonial spear for the next three, so that due honour was done us.

We arrived at Theronliang on December 4, on the right bank of the Tidding river, which marks the limit of administered territory in the Lohit valley. From Walong on we had had scarcely a drop of rain and the whole of our trip through the Mishmi Hills had been a very real pleasure, and quite without leeches, when it might so easily have been the reverse. From the Tidding

to Dening there is an excellent mule-track, so that weather was no longer of importance to us, and, as though to emphasize its forbearance during the last fortnight, no sooner did we leave Theronliang than a heavy rain-storm broke on us, soaking us to the skin in a very few minutes.

On December 6 we reached Dening, where we were very kindly met by Mr. Walker, the Assistant Political Officer, and Captain Bond, the Assistant Commandant, who drove us the remaining 47 miles to Sadiya the following day.

APPENDIX: FAUNA OBTAINED DURING THE JOURNEY

Snakes and Amphibians.—These were mostly procured in Upper Burma, and showed, as was to be expected, a distinct overlapping of Chinese and Indian types. There was a large preponderance of pit-vipers, but apart from these no poisonous snakes were obtained on this occasion. The frogs were all previously known from India. One new species of lizard was found, which has since been named *Japalura kaulbacki*.

Mammals.—Owing to the religious prejudice against taking animal life in Tibet, we were unable to collect any mammals.

Insects.—We were fortunate in obtaining a large number of new species of beetles, grasshoppers, and crane-flies; one new species of saw-flies; several new varieties of butterflies; and two new species of ants.

Flowers.—The collection of flowers has not yet been thoroughly examined, but two, and possibly three, new primulas have already been determined, from the dry country in the neighbourhood of Lho Dzong.

Birds.—We collected no birds whatever.

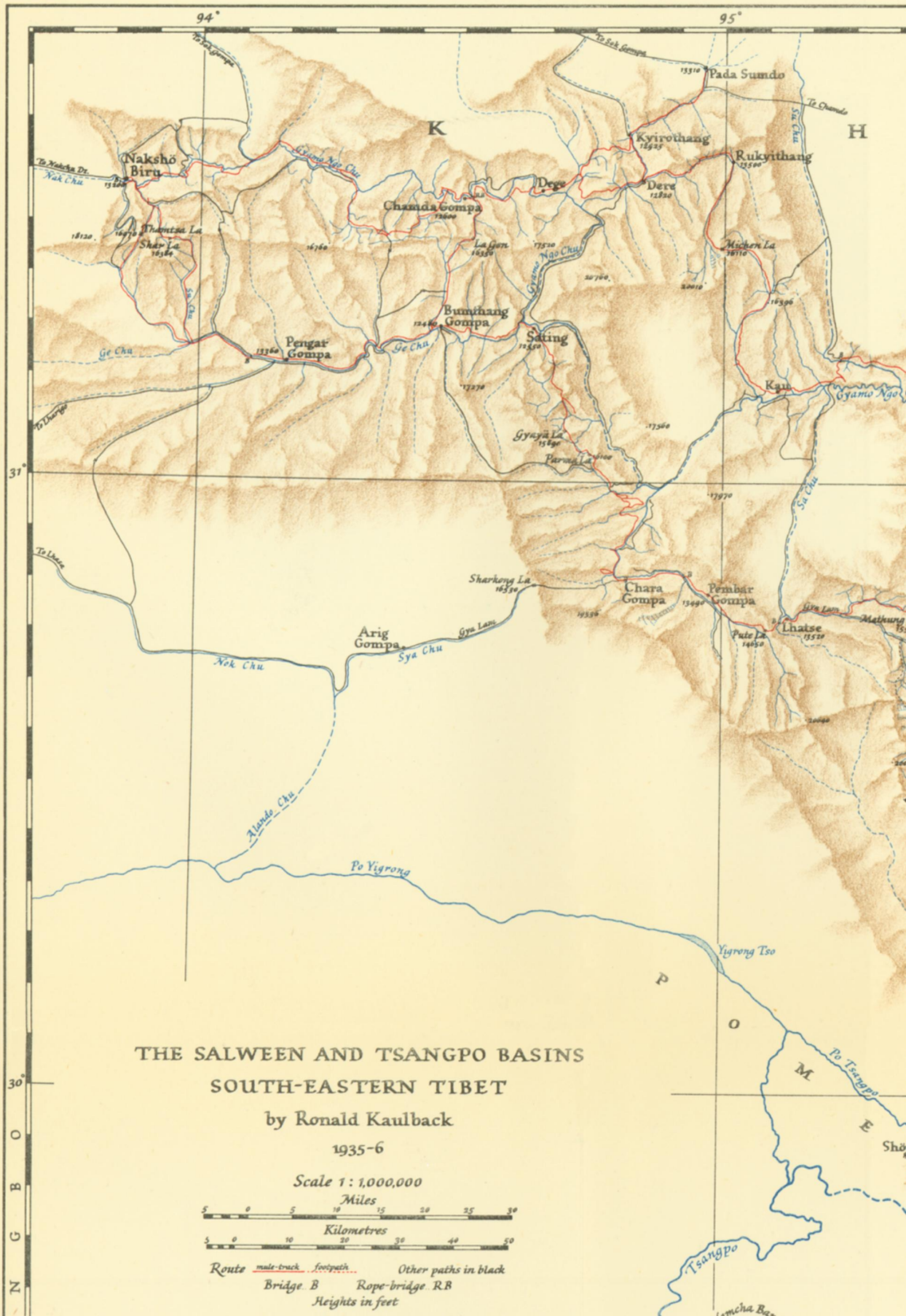
DISCUSSION

Before the paper the CHAIRMAN (Colonel Sir CHARLES CLOSE) said: As most of those here know, there is a region on the Earth's surface where seven of the greatest rivers in Asia are, as it were, bunched together. I will not repeat their names because I am sure you know them all. That particular region has been very largely explored by Mr. Kingdon Ward and for his explorations we had the pleasure of awarding him a gold medal. In 1933 Mr. Ronald Kaulback accompanied Mr. Kingdon Ward, and in 1935 he organized his own expedition and was accompanied by Mr. John Hanbury-Tracy. This time he did not go into the exceedingly tangled region where those seven rivers are almost united, but he went to an even more remote place. He went north and west into an area which no European had penetrated before. I think I may say that there are not many areas of about 50,000 square miles so very little known as that which Mr. Kaulback has explored. He went there living on the country, helped no doubt by his knowledge of Tibetan, and by the endurance and persistence that every explorer should have and which he has in a marked degree. I now ask him if he will kindly give us his lecture.

Mr. Kaulback then delivered a summary of the paper printed above, and a discussion followed.

The CHAIRMAN: We should all like to hear Mr. John Hanbury-Tracy.

Mr. JOHN HANBURY-TRACY gave a short account of his journey, from Shugden Gompa down the Ngagong Chu and north into the Salween basin, which has been incorporated in the paper printed above (pp. 106-09).



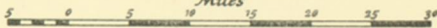
THE SALWEEN AND TSANGPO BASINS
SOUTH-EASTERN TIBET

by Ronald Kaulback

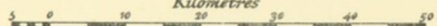
1935-6

Scale 1:1,000,000

Miles



Kilometres



Route *mule-track* *footpath* *Other paths in black*

Bridge B Rope-bridge R.R

Heights in feet

95°

96°



97°



M

Chamdo

Pashö

Shabye Zampa

31°

Dzong

Sangönang

Shari Dzong

Bomda Gumpa

Dzongra

Nera Gonsar

Dzikar

Thenthok Gumpa

Tsawa Dzogang

30°

Rangbu Gumpa

Yartak Gumpa

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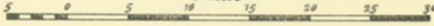
THE SALWEEN AND TSANGPO BASINS
SOUTH-EASTERN TIBET

by Ronald Kaulback

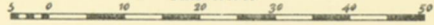
1935-6

Scale 1:1,000,000

Miles



Kilometres



Route *male-track* *footpath* Other paths in black
Bridge *B* Rope-bridge *RB*
Heights in feet

This map is from a compass and rangefinder traverse on the scale of 1 inch to 4 miles. Astronomical latitudes; longitudes from closed traverses based on Shikathang on sheet 91 S. of I. Heights of villages and passes by boiling-point thermometer, spot-heights by clinometer.

30°
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SOUTH-EASTERN TIBET
Kaulback

Mr. STANFORD: I have absolutely no claim to say anything to you to-night, but I did have the good fortune to be able to assist Ronald Kaulback and John Hanbury-Tracy in the very early stages of their journey. It has been perfectly marvellous to hear now what they did and how far they got. As you are all aware from what you have heard to-night, they are no ordinary men, and that became deeply impressed on me during the two visits which Ronald Kaulback paid me in Myitkyina. My wife and I both realized that Mr. Kaulback was quietly confident that he was going to do a big thing, and that he had a very big thing to do. I know nothing whatever about Tibet, as I have never been north of Fort Hertz, but I hope that everybody can appreciate the extraordinary difficulties in that journey which have been entirely glossed over: the leeches, the incessant rain and cold, the complete absence of roads, and the trouble with food and transport.

The Myitkyina district is the only area, I think, in the Indian Empire in which human sacrifice still survives, though great efforts have been made to put it down. This is in fact one of the least-known parts of the enormous semi-circle of mountains which starts with the Pat Koi Naga Hills, and goes on to the Mishmi Hills, Singpho Naga Hills, the Kumon Range, and round to the Sajyang Pass; in between the frontier is still undelimited. The difficulties even in getting through into Tibet are enormous. Mr. Kaulback has said very little about them, and I had better not say more on that point except that there are tremendous gaps of natural history to be filled in in that area. Though most of the survey work is done, the mammals and the birds are practically unknown. Botanists have worked parts of the area very thoroughly: Kingdon Ward and, farther east, George Forrest, as well as Reginald Farrer, who died in Burma near the Tibet border.

One interesting discovery, to me at least, which Mr. Kaulback made on his way up before he actually crossed the watershed was that of the ibis-bill breeding in the Seinghku Wang. It has never been found anywhere, I think, east of Garwhal, and it has not been found breeding in the mountains of North China, but Mr. Kaulback has proved conclusively that the bird must have been nesting in the area he visited. There are also musk-deer in the area, but no European has ever obtained them.

The CHAIRMAN: We have listened to an excellent account of a fine piece of exploration. Mr. Kaulback and his companion actually mapped an area of something like 25,000 square miles. If anybody here wishes to do the same it will take them all their time to map such an area in twenty-one months. I think you can all picture to yourselves what is entailed in exploring such difficult country, practically the size of Ireland. Mr. Kaulback and Mr. Hanbury-Tracy achieved that, and what they have done represents new and valuable work from a geographical point of view.

I was glad to see my old friend the river Salween on the screen again. Many years ago I knew the Salween a great deal farther to the south. I remember getting to a village on the bank of the Salween and asking the headman, "How deep is the river?" The headman being in rather a difficulty scratched himself, as they sometimes do in that part of the world when mentally stressed, and replied: "The river is as deep as the hills are high." The Salween which I knew is very much like the Salween about which we have heard to-night. It rushes down through narrow gorges and is a great and impressive river, well worth exploring. We hope that our lecturer will carry out his determination to go one day and find its ultimate source. In saying that I bring my remarks to a close and, in your name and the name of the Society, thank Mr. Kaulback for his admirable lecture.

KARAKORAM NOMENCLATURE

PROFESSOR KENNETH MASON

IN publishing the conclusions reached by the Karakoram Conference during the winter of 1936, it seems appropriate to place on record both the origin of that conference and the various stages of its work. It was during a study of the literature of the Karakoram more than twenty years ago that I noted the growing inconsistencies regarding range-names among travellers and writers on the region. At the end of my paper on the Shaksgam valley and Aghil range read before the Society on 24 January 1927, I called attention to these inconsistencies (*Geogr. J.* 69 (1927) 311), and in notes by Dr. T. G. Longstaff and myself, written after the discussion on that occasion and published with my paper, certain tentative proposals regarding the range names were put forward for examination. These proposals were at the same time submitted to the Surveyor-General of India (Sir Edward Tandy), who expressed the opinion that the whole question of Karakoram nomenclature should be discussed by geographers and travellers with special knowledge of the country. In a semi-official letter to me, a copy of which he addressed to the Society, he asked me to consult with the Royal Geographical Society, and intimated that he would be prepared to accept the decisions reached after such consultation.

In his preface to my official report on the Shaksgam Expedition of 1926, Sir Edward Tandy gave his personal views as follows:

I do not consider this department should decide questions which depend so much on international usage. We can only assist by publishing the suggestions of our best experts, and then hope that the Royal Geographical Society, which includes all the principal geographers and explorers interested, will find an early opportunity of discussing these suggestions and of arriving at decisions, in which case we shall be happy to accept them and to incorporate them on our future maps (*Records of the Survey of India*, vol. xxii, p. iv).

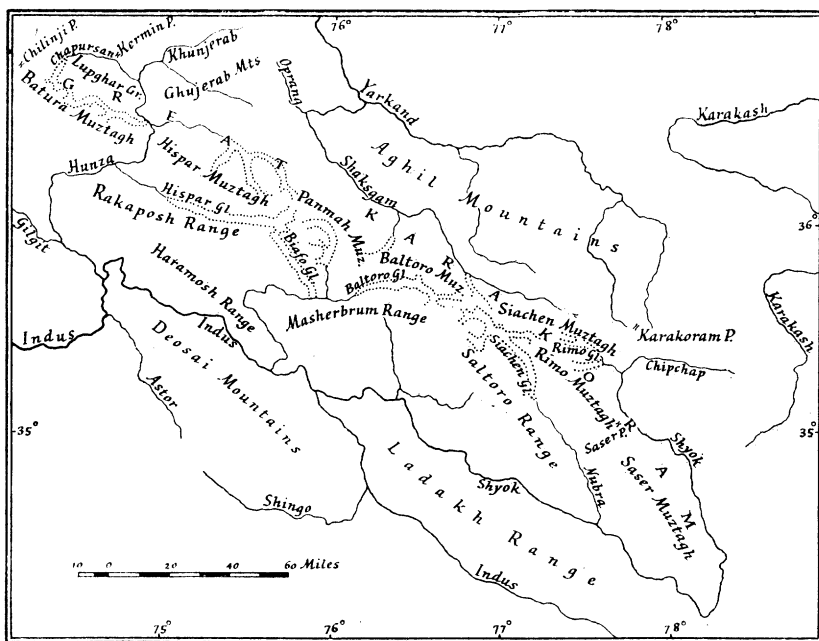
This was the origin of the special interest which the Society has taken in the matter during the last ten years.

While on leave in England in 1927, and in India subsequently, I devoted much time to collecting the references from published material, discussed them personally and by letter with various travellers and experts, and compiled a map of the whole region from Survey of India and other sources. In the *Journal* for September 1929 (p. 276), and January 1930 (pp. 35, 38, 44) appeared papers and letters on the subject; and at an afternoon meeting of the Society on 12 May 1930, I initiated a discussion with a paper that had previously been submitted to the Surveyor-General of India (Brigadier R. H. Thomas) and had received his general approval (*Geogr. J.* 76 (1930) 143-58). The resulting discussion however showed two apparently irreconcilable opinions, and it was felt that until a detailed modern map showing the relief of the whole area was available, it was impossible to reach a conclusion generally acceptable to all.

The work of preparing this map proceeded slowly, partly owing to the

difficulty of showing such great altitude differences by layer tints, partly because it was necessary to wait for the results of recent expeditions, and partly owing to pressure of work in the Society's drawing office. By the end of 1935 the map was sufficiently far advanced to approach the Surveyor-General (Brigadier H. J. Couchman) to ascertain his views and wishes. In March 1936 the Director of the Geodetic Branch of the Survey of India intimated, on behalf of the Surveyor-General, that a settlement was most desirable, that he would like to be represented at any further conference that might take place, that he would cordially accept an invitation to such a conference, and that the winter of 1936-37 would be most suitable from his point of view.

The Council of the Society had some years before appointed a small Com-



The Karakoram

mittee, with Sir Charles Close as chairman, to deal with the preparation of the map; and from this Committee they chose three members to be their representatives at the conference. Invitations to the conference were sent both to the Surveyor-General and to the Director of the Geological Survey of India, and a collection of cuttings giving the views of various authorities was sent by the Society to them and others interested. During the summer of 1936 a provisional edition of the Society's map was brought out and also sent to these people.

Meanwhile in India the whole policy of naming features in uninhabited and little-visited parts of the Himalaya was under consideration, the result of which was the issue of a letter from the Surveyor-General to various bodies interested, among which were the Royal Geographical Society and the

Himalayan Club. This letter, dated September 1, laid down the principles which would underlie the policy of the Survey of India regarding the naming of peaks and other features in the Himalaya and neighbouring mountain ranges. Sir Harold Couchman's letter is as follows:

As you are perhaps aware the question of the entry of names invented by explorers and others for peaks and other features of the mountain systems to the north of India on maps published by the Survey of India is one on which there has been occasional controversy.

The practice of the Survey of India in the past has been that no names should be entered on its maps, of areas for which it considers itself responsible, unless they have been found to be of local or at least indigenous origin. It has admittedly departed from this practice in the case of Mount Everest, but it will be generally agreed that the highest mountain in the world is entitled to special treatment, especially when the result was so euphonious. In the absence of a local or indigenous name, the old practice was to allot a symbol, usually a letter and a number. This practice has however been abandoned on our maps for many years except in the case of K² which, as probably the second highest mountain, is perhaps also entitled to special treatment.

This practice has had two results, one favourable, the other unfavourable. The favourable result is that there has been no temptation to give personal names to peaks, the embarrassment of selection of the person to be so honoured has been avoided, and the situation, not unknown, of the name of a peak being changed because the reputation of its owner had lessened has not occurred.

The Survey of India will always be grateful to its predecessors for this result.

The unfavourable result is that owing to absence of local or indigenous names in these sparsely inhabited areas our maps are undoubtedly deficient in names. With the increasing growth of Himalayan travel this defect is becoming of increasing prominence.

The position has therefore been examined and it has been decided that the embargo on invented, other than personal, names should be removed.

Invented names will be accepted by the Survey of India for its maps taking into consideration the following points:

- (i) Lack of local names in the vicinity.
- (ii) Suitability of the names.
- (iii) When applicable, the degree of currency among climbers and explorers that they have already obtained.
- (iv) Personal names will not be accepted.

Suitability is difficult to define, but entirely fanciful or humorous names will not be acceptable. Well-known English names of peaks, such as those in the Karakoram and the Sikkim Himalaya, will be considered for adoption at once.

You will no doubt agree that this change in policy should be brought to the notice of travellers and I would request your assistance in doing so either by the publication of this letter or by a reference to its contents.

The Survey of India will be grateful to past, present, and future explorers for any suggestions they may care to make. As regards the language of the names we would prefer that English names be confined to the more popular climbing centres. In the lesser-known regions explorers are requested to suggest names freely after consultation with their local guides or coolies. Nalas, cols, glaciers and peaks may be named after some local pasturage or other existing name, or may be invented with reference, say, to shape, colour, or some other

distinctive feature. Such names should normally be given in the local vernacular and should be pointed out to the local people so that they may the more rapidly gain currency. English names should be given sparingly in areas which are likely to be unimportant from a mountaineering point of view.

Explorers are requested to report their proposed names with sketches or annotated copies of Survey of India maps to me either direct or through you. In sending in reports full details should be given of the reasons for the proposed names, with meanings in English, and the local language adopted.

On receipt of this letter it seemed to us that during the winter conference we might usefully discuss, not only the broader questions of regional and range names, but also the detailed grouping of massifs in the Karakoram, their names, and those of their chief individual summits. I had collected a large number of notes and references relating to this subject during the last fifteen years, and had already arranged many of the known peaks and massifs into groups. It had already appeared to me certain that if we were to obtain a settlement of the main problem which would be acceptable to all and which would avoid the barren controversies of the past, we must abandon the old proposals which I had put forward and pressed in 1927 and 1930, in spite of the fact that they had gained a considerable amount of support and acceptance. We had to find some other classification of the mountains which embodied the points of agreement and met the criticisms of those who objected most strongly to the earlier proposals. During the last three months of the year I therefore drew up a detailed draft memorandum for discussion by the conference, and placed the major groups tentatively on our provisional map.

Colonel C. G. Lewis, then Director of the Geodetic Branch of the Survey of India, who had held charge of the recent modern surveys in the Chitral and Gilgit Agencies, and who had considerable experience of the difficulties of the problem, was appointed by the Surveyor-General to represent the Survey of India. He arrived in November 1936, bringing with him the maps and blue prints of the still later surveys.

The draft memorandum was then exhaustively examined point by point at no less than nine informal meetings of the conference. As soon as the first general principles were agreed upon, the general approval of the Surveyor-General was asked and obtained. As work progressed, Colonel Lewis explained the proposals to Sir Sidney Burrard, who had taken so active an interest in the matter since it became acute ten years ago. Typed copies were sent to India for examination and criticism. By the time the conference met officially on March 23, the revised memorandum, which had been circulated for a last scrutiny, was practically in its final form. With a few minor amendments it was then set up in type and copies were circulated to those geographers and travellers known to be particularly interested.

It was most gratifying to learn that the proposals met with general approval, Sir Sidney Burrard's support being particularly generous. In a letter dated 23 April 1937, he wrote as follows:

Lewis has shown me the outlines of your solution of the Karakoram problem. This problem has confronted the Survey for fifty years. Colonel Strahan used to mention it as unsolved. I must send you my congratulations on your success in finding a solution that is both scientific and artistic. Your Committee's

solution will meet with the approval of British India and of Central Asian explorers. I regard your success as remarkable.

When a long outstanding problem is solved, it is generally easy to say that the solution is obvious. But the fact remains that the problem of Karakoram nomenclature has been a real difficulty facing the Survey of India for half a century. The solution has only been attained by much thought and work; and I can only do justice to my own feelings by sending you my warm congratulations.

I should like to place on record my own personal appreciation of this generous tribute to the Committee's work.

The conclusions of the conference were reported to the Council on 5 April 1937, and the detailed recommendations were submitted to the Surveyor-General of India for sanction. In a letter dated 30 August 1937, he gave his approval to the proposals without qualification of any kind. I should like to take this opportunity of thanking Sir Harold Couchman and Brigadier Lewis, who has since succeeded him in the Surveyor-Generalship, for their courtesy and close co-operation throughout.

A few remarks regarding the decisions may perhaps not be out of place. The general principles underlying the scheme have been to define and name the topographical features as they exist to-day and to avoid theorizing on their structure and origin. Much of the confusion that has arisen in recent years has been due to the introduction of conflicting theories of structure based on insufficient data. Once we had a comprehensive map showing not only the relief and topography clearly from the most recent surveys, but also such details as the ice and permanent snow, it became a problem of dividing the whole region into suitable geographical blocks, of sub-dividing these blocks into suitable groups and massifs, and then of searching for and agreeing upon the most suitable names. This meant a detailed study of the writings and maps of a large number of explorers and cartographers, and the settlement of a number of conflicting statements. The names of the larger divisions were first agreed upon. The name "Karakoram," which had originally been extended from the pass of that name to the mountains by European geographers, was further extended to include the whole region to which subsequent travellers have applied it, while the term "The Great Karakoram" was accepted for the great alinement of ice massifs that extends from one end of the region to the other. It was felt that the locally preferred name "Muztagh," which also had considerable historical significance, could be suitably applied to the major divisions of the Great Karakoram. The muztaghs lent themselves to subdivision into groups, and the groups into massifs and individual peaks. It was felt that the term *muztagh* was inappropriate either linguistically or descriptively for the subdivisions of the lesser Karakoram, and, for want of a better term, they were called "ranges." The muztaghs have been named in every instance but one from the great glaciers which drain them; the ranges of the Lesser Karakoram from the most conspicuous mountain on their alignment.

The groups have been named from the best known locally named feature, often a glacier, whenever possible from the most accessible side; there are a

few exceptions, where it has been deemed advisable to retain some name that has long been associated with the group in existing literature, as, for instance, the Kanjut Group. A few of the more important unnamed peaks have been named, either from their group-names, or from an accessible locality, with a suitable affix such as *Sar*, or *Kangri*, according to the language of the region, and according to local practice. A few of the recognized English names for the best known and most prominent peaks have been retained, but only a very few. The names so retained from long usage are K², the Muztagh Tower, and Broad Peak. The "Hidden Peak" of Conway has long been known in the records of the Survey of India as Gasherbrum I, and this official name is retained. The conspicuous unclimbed summit north-east of K², inappropriately called "Staircase" on unofficial maps of the past, has been named "Skyang Kangri," from the glacier on its north. A number of other unofficial English names for peaks have been rejected; some of these peaks have been renamed, while the renaming of others has been left to subsequent travellers. All personal names have been discarded. Notes are given in the appendices explaining the different questions involved. Regions which are or were inadequately mapped at the time of the conference have been left in outline for subsequent treatment.

It is not to be expected that all the decisions reached will meet with the approval of every student of Karakoram literature and geography. It is true that controversy is keenest where facts are fewest. In these distant and sparsely inhabited lands some conventionalism is essential to the needs of ordered geography, and it is to be hoped that travellers and geographers will in future accept the nomenclature that has been agreed upon and authorized. In some instances it may be necessary to allude in papers to old and unofficial nomenclature for the purposes of identification, but it is hoped that travellers will co-operate to bring into use the authorized names as early as possible, so that the literature of the Karakoram may be freed from the ambiguities and inconsistencies of the past.

KARAKORAM CONFERENCE REPORT

The recommendations of the Karakoram Conference as accepted by the Council of the Royal Geographical Society and approved by the Surveyor-General of India are printed below.

I. The term *Karakoram*. We recommend that the term "The Karakoram" be used to denote the mountain region whose boundaries are defined thus:

On the south: by the Shyok river from its bend at about long. $78^{\circ} 15'$ (map sheets 52 J, F, B, A, 43 M) to its junction with the Indus, about long. $75^{\circ} 55'$; then by the Indus to its junction with the Gilgit river about long. $74^{\circ} 40'$ (43 I); and by the Gilgit river (43 I, 42 L, H) to the confluence of the Ishkoman river about long. $73^{\circ} 45'$.

On the west: by the Ishkoman and Karumbar rivers (42 H, L) to the Chilinji pass.

On the north: from the Chilinji pass, down the Chapursan river, over the Kermin pass to Rich, and down the Kilik river to its junction with the Khunjerab (42 L); then up the Khunjerab river to the Khunjerab pass, across the head of the Oprang Pamir to the Oprang pass, and down the Oprang river to its junction with the Shaksgam (42 P); then up the Shaksgam river to its source at Wood's Pass "G" (for which we propose the name *Shaksgam pass*) (42 P, 51 D, 52, A, E); then to the snout of the Rimo-Yarkand river source, and by the left bank of the Rimo glacier to the junction of the Rimo river and the Chip-chap (52 E).

On the east: by the upper Shyok from the Rimo-Chip-chap junction to the great bend in the river about long. $78^{\circ} 15'$ (52 E, F, J).

Note: The use of the term "the Karakoram" for a region is in accordance with the general usage among geographers for many years past, but up till now the boundaries have not been defined. The proposed boundaries exclude the Aghil mountains, all mountains east of the upper Shyok and on the Tibetan plateau, the mountains between the Shyok and the Indus rivers ("the Ladakh range"), but they include the mountains of Hunza west of the Hunza river, as far as the Karumbar-Ishkoman river.

Though not directly in the terms of reference of the conference, we suggest that "the Aghil mountains" be defined by the Shaksgam on the south and west as far as the Oprang confluence, on the north by the Shaksgam and Raskam (Yarkand) rivers, and on the east by the Yarkand river tributary draining from the Karakoram pass.

We also suggest that the "Ladakh range" be restricted to the definite range in Ladakh, between the Indus and Shyok rivers; that the term "Zaskar mountains" be restricted to the mountains of Zaskar, or at least not extended east of the upper Suttlej; and that the term "Deosai mountains" be applied to the mountain region defined on the north by the Indus from long. $76^{\circ} 15'$ to long. $74^{\circ} 45'$, and on the south by the Astor, the Das Kirin, and the Shingo rivers, to the junction of the latter with the Suru river, and then by the Suru river to its confluence with the Indus.

II. *The Great Karakoram*. We recommend that the term "The Great Karakoram" be given to the main crest zone of the Karakoram, from the

mountain Koz Sar ($36^{\circ} 43' 10''$, $74^{\circ} 05' 19''$, Map 42 L) in the west along the crest zone south of the Batura glacier, north of the Hispar, Panmah, Baltoro, and Siachen glaciers, and along the watershed between the Nubra and upper Shyok rivers.

III. *Divisions of the Great Karakoram.* We consider it desirable to divide the Great Karakoram into sections, and to apply the descriptive term *Muztagh*¹ to each section. The sections proposed are as follows:

- (A) *The Batura Muztagh:* From Koz Sar, south of the Batura glacier, to the gorge of the Hunza river (42 L).
- (B) *The Hispar Muztagh:* From the gorge of the Hunza river, north of the Hispar glacier, to the head basin of the Biafo glacier (42 P).
- (C) *The Panmah Muztagh:* The groups drained by the Panmah glacier and its main tributaries from the head of the Biafo glacier to the West Muztagh pass (42 P, 51 D, 52 A).
- (D) *The Baltoro Muztagh:* From the West Muztagh pass, north and east throughout the length of the Baltoro glacier, to its head south-east of the Gasherbrum group (52 A).
- (E) *The Siachen Muztagh:* From the above head of the Baltoro glacier along the northern mountains of the Siachen glacier and south of the Shaksgam valley, as far as the pass between the Teram Shehr and Rimo glaciers, thence north of the Central Rimo glacier to its snout (52 A, E).
- (F) *The Rimo Muztagh:* From the pass between the Teram Shehr and Rimo glaciers along the mountain groups between the Siachen and the upper Shyok, as far as the Saser pass (52 E).
- (G) *The Saser Muztagh:* From the Saser pass to the south-eastern extremity of the Great Karakoram in the bend between the upper Shyok and the Shyok rivers (52 E, F, J).

IV. *Mountain groups of the Great Karakoram.* On small-scale maps it is neither feasible nor desirable to enter any but the most important peak names; but it is possible now to classify the peaks in groups, and we considered that it would be convenient if group names were to be inserted on small-scale maps; peak names, excepting those of the most important, being reserved for maps on the scale of 1 : 250,000 and larger. An attempt to group the peaks of the Great Karakoram *muztaghs* has been made in Appendix I of this report.

V. *Mountain divisions of the lesser Karakoram.*—So far we have only dealt with divisions and subdivisions of the Great Karakoram. The mountains of the lesser Karakoram are not so easy to deal with, for they do not lie on a single long alinement of groups. The most important of them however fall on a series of shorter alinements, which might be called "ranges," though the term is not very satisfactory. They correspond to the "Muztaghs" of the Great Karakoram, but we consider this Turki word to be unsuitable for them.

¹ *Muz* = ice; *Tagh* = mountain. Muztagh, not Mustagh, is correct.

(A) North of the Great Karakoram, in Hunza territory, there are two systems of mountains, one on each side of the Hunza river, which may be called the *Lupghar group* and the *Ghujerab mountains* respectively.

The remainder of any importance all lie to the south of the Great Karakoram, and may be conveniently listed on the following alinements ¹:

(B) *The Rakaposhi range*, from the Hunza river west of the peak Rakaposhi, following the snowy crest zone between the Hispar and Chogo Lungma glaciers as far east as long. $75^{\circ} 30'$. Two subsidiary groups at the eastern end may be considered independent of Rakaposhi. These are the *Ganchen group* and the *Meru group*.

(C) *The Haramosh range*, from where it joins the Rakaposhi range about long. $74^{\circ} 50'$, along the crest zone between the Chogo Lungma glacier, Basha and Shigar rivers on the north and the Indus on the south.

(D) *The Masherbrum range*, from the junction of the Braldu and Basha rivers, west of Mango Gusor, along the crest zone south of the Braldu river and Baltoro glacier, as far east as the Kondus glacier and valley. Two independent groups, at present unnamed, extend south from the Masherbrum range.

(E) *The Saltoro range*, lies between the Kondus on the west, the Siachen and the Nubra on the east, and the Shyok valley on the south. It is crossed by the Saltoro or Bilafond pass.

An attempt has been made to group the various massifs of these "ranges" in Appendix II.

APPENDIX I: MOUNTAIN GROUPS OF THE GREAT KARAKORAM

In the following lists an attempt has been made to collect the mountains of the Great Karakoram into groups, and to name these groups from some geographical feature, generally the most important glacier draining from them. Some groups are, of course, better known than others, and it has been easier in these instances to define the group boundaries with greater precision.

Occasionally comments have been made on peak names, while a few additional names have been suggested.

Where possible, the latitudes, longitudes, and heights have been given from the Survey of India triangulation pamphlets, unless stated otherwise for definite reasons, and where other values of peak co-ordinates have been obtained by other observers comment has been made.

Figures in italics are only approximate, and are measured from topographical maps; they are only given for the purposes of identification. Where co-ordinates are given only to the nearest minute, thus $36^{\circ} 35'$, $74^{\circ} 19'$, the map from which they are taken is not directly adjustable to existing Survey of India maps. Heights shown in brackets, thus (21,250), are derived approximately from an examination of the contours.

Where names for individual peaks have been suggested, the principle has been to name them from the most accessible valley or glacier draining them. Suggested new names for peaks are shown in italics; old names that we recommend should be dropped are in brackets.

¹ The new survey of 1931 in Sheet 42 L is not available in England; consequently we have not attempted to group the mountains between the Gilgit and Hunza rivers south of the Batura Muztagh.

MOUNTAIN GROUPS OF THE GREAT KARAKORAM.

(A) *Batura Muztagh*: Map 42 L.(a) *Koz group*, at the head of the Koz Yaz (glacier).

Name	Height	Lat.	Long.	Peak No. and map
Koz Sar	21,907	36° 43' 10"	74° 05' 19"	Pk. 2/42 L
—	21,250	36 43 24	74 06 55	Pk. 1/42 L
—	20,345	36 43	74 11	42 L

(b) *Yashkuk group*, at the head of the Yashkuk glacier.

—	21,548	36° 40'	74° 13'	42 L
—	21,915	36 39	74 14	42 L
—	20,060	36 38	74 16	42 L

(c) *Kampire Dior group*, at the watershed between the Batura and Yashkuk glaciers. *Kampire Dior*, "the house of the old woman," is derived from a well-known legend of the Chapursan valley, the best version of which is given by Lorimer in *Geogr. J.* 71 (1928) 535.

Kampire Dior	23,434	36° 37' 32"	74° 19' 10"	Pk. 24/42 L
—	22,740	36 38 24	74 21 33	Pk. 23/42 L

(d) *Kuk group*, at the head of the Kuk-i-jerab valley. *Kuk Sar* signifies "the summit of Kuk."

<i>Kuk Sar</i>	22,751	36° 40' 08"	74° 25' 18"	Pk. 21/42 L
—	22,050	36 39 06	74 25 23	Pk. 22/42 L

(e) *Batura group*, the enclosing south wall of the head of the Batura glacier.

—	22,547	36° 35'	74° 19'	42 L
—	22,590	36 34 08	74 22 51	Pk. 25/42 L
—	22,409	36 33 20	74 25 50	Pk. 48/42 L
—	25,294	36 31 54	74 30 01	Pk. 31/42 L
—	25,540	36 30 39	74 31 26	Pk. 32/42 L

Peaks 32 and 31 are known in the Survey of India records as Hunza-Kunji I and Hunza-Kunji II. 'Kunji' really means nothing and is probably a triangulator's error for 'Kanjut,' another name for Hunza. There is no sense in the compound name, but it is difficult to suggest a better name until the southern slopes of the massif are surveyed. (For Burrard's views, see his 'Sketch, etc.,' 2nd Edn., vol. 1, pp. 51, 52.)

(f) *Pasu group*, at the head of the Pasu glacier.

—	23,897	36° 28' 51"	74° 36' 53"	Pk. 55/42 L
—	24,970	36 26 30	74 40 52	Pk. 33/42 L

The triangulator's designation for Peak 33, Hunza Kunji III, should be dropped.

(g) *Atabad group*, the eastern group of the great ridge, extending to Atabad hill-station of the Indo-Russian triangulation, above the village of Atabad.

<i>Boiohaghur Duanasir</i>	24,044	36° 24' 10"	74° 41' 43"	Pk. 34/42 L
—	—	36 23 32	74 42 57	Pk. 35/42 L

Boiohaghur Duanasir, "where only the horse of the devil can go," is the name given to Conway and Bruce for this peak by the people of Baltit in 1892. Its name in Survey records is Hunza-Kunji IV. According to Burrard ('Sketch, Geol. Geog. Him. and Tib.,' 2nd edn., p. 49), Colonel Lorimer sees in this word three Burushaski words: *Boyo*, a divine animal; *Haghur*, a horse; and

Donas, one who opens. Possibly a more correct form than that given to Bruce would be *Boyohaghur Donas Sar*, but since the Burushaski language presents difficulty and is little known, it seems advisable to retain the form *Boiohaghur Duanasir*.

From the survey made of the Batura and this region on the Vissers' Expedition of 1925, it would appear that the height of Peak 35 is about 24,500 feet. Its old name is Hunja-Kunji V. It would, we think, be a mistake to retain these "Hunza-Kunji" names at intervals along this Batura Muztagh.

(B) *Hispar Muztagh*: Map 42 P.

(a) *Momhil group*, at the head of the Momhil glacier.

Name	Height	Lat.	Long.	Peak No. and map
—	23,500	36° 20' 56"	75° 00' 51"	Pk. 3/42 P
Momhil Sar	24,090	36 19 03	75 02 10	Pk. 7/42 P
—	22,500	36 22 43	75 02 47	Pk. 2/42 P
—	24,860	36 17 19	75 04 48	Pk. 8/42 P

Momhil, "the grazing-ground of the old woman," *i.e.* no one but an old fool would think of grazing there. Momhil Sar, the "summit of Momhil," the chief peak at the head of the Momhil glacier. (For Momhil, see Schomberg, 'Unknown Karakoram,' p. 233.) The old triangulators' name 'Kunjut No. 3' is meaningless.

(b) *Disteghil group*, at the head of the Malangutti Yaz glacier, in which lies Diste Ghil, "the sheepfold in the hill." Schomberg's spelling is to be preferred to Visser's, *Dasto Ghil*, which is at present on the map. We think that the peak should have the addition *Sar*, but it is a small point. Visser's spelling of the Malangutti Yaz is to be preferred to Cockerill's and Bridge's corruption *Malungidiaz*.

<i>Disteghil Sar</i> (Dasto Ghil)	25,868	36° 19' 35"	75° 11' 20"	Pk. 20/42 P
—	25,250	36 19 09	75 13 10	Pk. 5/42 P
—	23,050	36 22	75 09	42 P and Visser
—	24,030	36 18	75 14	42 P
—	24,800	36 17	75 13	42 P

(c) *Yazghil group*, at the head of the Yazghil glacier. *Yazghil* means either "the sheepfold in the snow," or perhaps, according to Schomberg, "the curving ice." *Yaz* is either *ice* or *snow*, and is the common word for a glacier, while *ghil* is descriptive of anything circular or round, and is generally applied to a circular sheepfold. Only one important peak has been fixed in this group as yet, and this is probably more conspicuous from the Hispar side, at the head of the Pumarikish glacier. We therefore suggest the name *Pumarikish* for it, instead of its old triangulators' name 'Kunjut No. 2.'

<i>Pumarikish</i>	24,580	36° 12' 45"	75° 15' 12"	Pk. 11/42 P
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(d) *Kanjut group*, at the head of the large Jutmaru glacier tributary of the Hispar. A name for one of the summits is forthcoming from its chief glacier. The old name for *Kanjut Sar* was 'Kunjut No. 1.'

<i>Yukshin Sar</i>	20,570	36° 14' 00 "	75° 23' 00 "	42 P
<i>Kanjut Sar</i>	25,460	36 12 21	75 25 03	Pk. 12/42 P

(e) *Khurdopin group*, a cluster of summits at the head of the Khurdopin glacier, none of which is as yet well fixed. There was a discrepancy here between Khan Sahib Afraz Gul's plane-table and the work of both Conway

and the Workmans. Individual names should certainly not be given in the present state of our knowledge, but there is undoubtedly a well-marked group which might well be named the "Khurdopin group." On the map they are shown approximately as follows:

Name	Height	Lat.	Long.	Peak No. and map
—	24,100	36° 08'	75° 27'	} 42 P (from Visser, 1925)
—	23,000	36 07	75 34	
—	21,780	36 15	75 36	
—	21,250	36 17	75 36	
—	20,460	36 08	75 38	

(f) *Virjerab group*, a group of mountains at the head of the Virjerab glacier and between that glacier and the Khurdopin. The limits of this group should at present be undefined, as it has not been triangulated and is little known.

—	21,180	36° 11'	75° 39'	} 42 P (from Visser, 1925)
—	21,510	36 09	75 43	
—	20,720	36 11	75 43	

(C) *Panmah Muztagh*: Maps 42 P, 51 D, 52 A.

(a) *Nobande Sobande group*, at the head and left of the Nobande Sobande glacier, as far as about long. 75° 57'. This group is only roughly known, first from Godwin Austen's surveys (1861) and latterly from those of the Spoleto expedition of 1929. One peak only has been named and its height is not yet known with any accuracy. The spelling, *Nobande Sobande*, used on Spoleto's map is probably more correct than Nobundi Sobundi of Godwin Austen. *Panmah* is similarly more correct than Punmah.

<i>Bobisghir</i>	—	36° 02'	75° 48'	42 P (from Spoleto, 1929)
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(b) *Drenmang group*, the mountains of the main watershed from about longitude 75° 57' (Spoleto's map) eastwards, including those at the head of the Drenmang glacier as far south as latitude 35° 59'. Skamri is an important massif of this group, but its height and topography are not yet known in any detail.

(c) *Chiring group*, at the head of the Chiring glacier, south of the Drenmang group as far as the West Muztagh pass.

No peaks have been defined accurately for height in these three groups of the Panmah Muztagh, and no names except Bobisghir and Skamri have been given.

(d) *Choktoi group*, between the Choktoi glacier and the Nobande Sobande glacier. At present we know very little of the group and no peaks have been fixed by triangulation.

(e) *Latok group*, between the Biafo glacier and the Choktoi and Panmah glaciers. There is undoubtedly a high group here at the head of the Latok tributary glacier of the Biafo. Three summits have been triangulated and are listed below. For a discussion on them and their relation to surrounding topography, see *Himalayan Journal*, vol. vi, 1934, p. 71.

—	23,900	35° 56' 54"	75° 45' 11"	Pk. 18/43 M
—	23,440	35 55 43	75 49 24	Pk. 19/43 M
—	22,790	35 55 14	75 50 21	Pk. 20/43 M

Conway named the first "the Ogre"; Mrs. Bullock Workman considered the illustration given by Conway as "the Ogre" was of a smaller mountain nearer to the Biafo, and named the 23,900-foot summit "Kailasa," showing it with a

height 23,914 feet. Auden agreed with the Workmans that "the Ogre" of Conway was not the high peak, and stated that this faulty identification of Conway had thrown out the position of the Biafo glacier on his map. It appears to us too early to assign names to individual peaks of this group, but we recommend that neither "the Ogre" nor "Kailasa" should be adopted.

(D) *Baltoro Muztagh*: Map 52 A.

(a) *Paiju group*, at the extreme western end of the Baltoro Muztagh, includes the mountains west of the main trunk of the Trango glacier tributary of the Baltoro. It includes the mountains enclosing the Surgus, Börum, and Choricho glacier tributaries of the Panmah, as well as the remarkable Paiju Peak (21,650 feet), with its strata set vertically, which gives it an "organ-pipe" appearance (for illustrations see De Filippi's 'Karakoram and Western Himalaya,' particularly Panorama B, which shows the whole of the Baltoro Muztagh from Paiju Peak to Gasherbrum; see also *Himalayan Journal*, vol. ix). The coordinates of Paiju Peak are approximately $35^{\circ} 43' 00''$, $76^{\circ} 07' 00''$, 21,650 feet.

(b) *Trango group*, east of the Paiju group, includes the mountains east of the main trunk of the Trango glacier and those west of the Dunge glacier (longitude $76^{\circ} 13'$). The heights of various conspicuous summits are given on Spoleto's map between the Trango and Dunge glaciers, but we do not know the height of the most conspicuous summit, the Trango Tower. The spelling Trango is probably better than Spoleto's Tramgo, or the older Survey spelling Trahonge.

(c) *Lobsang group*, at the head of the Muztagh glacier and its tributaries.

The glaciers here are shown incorrectly on Conway's map. Ferber's map, in *Geogr. J.* 30 (December 1907), shows the glaciers better, but they are shown best on Spoleto's map of 1929. Abruzzi (1909) did not survey them. We suggest the name *Lobsang group* from the ancient camping ground of Lobsang Brangsa in the trough of the Muztagh glacier. This name "Muztagh glacier" was apparently given by Ferber as leading to Younghusband's East Muztagh pass, and has been adopted since by Abruzzi and Spoleto, though it is not the local name. Three summits are conspicuous; their heights are known with fair accuracy, and they have been named.

Name	Height	Lat.	Long.	Peak No. and map
Biale (6729 m.)	22,080	$35^{\circ} 49'$	$76^{\circ} 15'$	Spoleto
Lobsang (6225 m.)	20,420	$35 48$	$76 18$	Spoleto
Muztagh Tower (7273 m.)	23,860	$35 50$	$76 22$	Spoleto

Biale is spelt Piale on Conway's and Ferber's maps, when used for the glacier name. Guillardard gave Biale and De Filippi followed suit. Spoleto's map gives Biale for both peak and glacier, as well as the height; and as his party spent some time in the region, his spelling should, we think, be accepted.

"Seven Pagodas" was given as a descriptive name by Ferber, who shows an illustration in *Geogr. J.* 30 (December 1907). Lobsang Brangsa, "Lobsang camping-ground," is at the foot of the peak, and we suggest the name *Lobsang* instead of "Seven Pagodas" for the peak. The height is from Spoleto's map.

The Muztagh Tower is one of the most striking peaks in the whole Karakoram, and has been commented upon by almost every traveller to those parts from Conway onwards. Conway named it; there are some striking photographs of it in De Filippi's 'Karakoram and Western Himalaya.' It is now so well known in Karakoram literature and is so suitable for this great rock tower that it would be right, in our opinion, to retain it. Its height has been determined

by photographic survey as 7273 metres (23,860 feet). It is far more conspicuous than the lower "Black Tooth," which rises to the south-east to a height of 6719 m., and is part of the same massif. (We think that "Black Tooth" was named by Ferber, and are not absolutely certain of its position on Spoleto's map.)

Spoleto's map shows another great peak with a height of 6974 m. (22,550 feet) at the head of "the Younghusband glacier." Nothing is as yet known of this summit, and we suggest that it be at present excluded from any group. We also suggest provisionally re-naming the "Younghusband glacier" the *Biange glacier*, from the camping-ground used by Abruzzi at its mouth, or possibly leaving the glacier unnamed.

(d) *K² group*, at the head of the "Godwin Austen glacier."

The name "Godwin Austen glacier" was given by Conway. Being a personal name, it is unsuitable, as are the other personal names in this region, such as the Savoia pass, the Savoia glacier, De Filippi glacier, Sella pass, which all first appeared on Abruzzi's map after his 1909 expedition.

Name	Height	Lat.	Long.	Peak No. and map
—	23,520	35° 50' 30"	76° 26'	(7170 m. Spoleto)
—	23,830	35 52	76 27	(7263 m. Spoleto)
—	22,330	35 51	76 29 30"	(6805 m. Spoleto) (22,490 feet Abruzzi)
K ²	28,250	35 52 55	76 30 51	Pk. 13/52 A
—	25,354	35 52 40	76 31 45	Pk. 14/52 A (Abruzzi)
<i>Skyang Kangri</i> ("Staircase")	24,750	35 54 40	76 33 35	Pk. 12/52 A
—	23,020	35 56	76 34	(Mason)

Only the more important summits have been included in the above list, from the Survey of India triangulation pamphlet 52 A, from Spoleto's map, and from the Shaksgam survey, 1926.

Peak 22,330 is the highest summit on the south ridge of K². Peak 25,354 is not a true peak, but merely a shoulder or flattening of the steep east ridge of K². Abruzzi's height for "Staircase peak" (24,078 feet) is much too low. Two photographic heights from the 1926 results, based on the height of K² (28,250) gave closely agreeing heights with a mean of 24,750 feet. Spoleto's map follows Abruzzi and gives 7339 m.=24,078 feet. Professor Mason is convinced this is wrong.

The surveyor's name *Skiyang Lungpa* would be better spelt *Skyang Lungpa*. *Skyang* or *Kyang* means "wild ass." The initial "s" before consonants "g," "k," and "p," which is silent in some parts of Tibet, is generally pronounced in the Ladakhi dialect, e.g. Spiti, *Skyangpo-che* (see *Rec. Surv. of India*, xxii, pp. 172-3).

This name "Skyang Lungpa glacier" is much more suitable for the glacier draining eastwards from "Staircase Peak" than the "Windy Gap glacier" (*Ghiacciaio della Sella dei Venti*), which was given by Spoleto; and if it is accepted, we suggest that "Staircase Peak" be re-named *Skyang Kangri* ("the ice-mountain of the wild ass") from the glacier.

(e) "*Broad*" group, bounding the "Godwin Austen" glacier on the east.

The name "Broad Peak" was given by Conway in 1892. There are no Survey

of India triangulated points in this group, and Conway did not determine the height of the highest point. On Abruzzi's map the height of Broad Peak is given as 27,132 feet, but no peak of that altitude was found by Mason in the region in 1926. Mason's photographic height for the highest peak, in almost exactly the same position as Abruzzi's Broad Peak, was 26,400 feet (see *Geogr. J.* (October 1927) 349, and stereographic survey map accompanying that paper). The other peaks given below are from Spoleto's map, on which he has shown a height of 8051 metres (26,414 feet) for the highest peak, and approximately the same heights as Abruzzi for the others, except point 25,330, for which Abruzzi gives 26,188, which seems also too high. Spoleto's metric heights have been included below.

Name	Height	Lat.	Long.	Peak No. and map
—	.. (7930) 26,017	35° 50' 25"	76° 33' 40"	Pk. 15/52 A
—	.. (7862) 25,925	35 49	76 33 40	52 A
Broad Peak	.. (8051) 26,414	35 48 35	76 34 25	Pk. 16/52 A
—	.. (7721) 25,330	35 48 20	76 34 40	1 Pk. 17/52 A
—	.. (7470) 24,510	35 47 50	76 35 30	Pk. 18/52 A

(f) *Gasherbrum group*, the conspicuous group at the head of the main trunk of the Baltoro glacier, comprising two main massifs.

On Conway's map Gasherbrum I is named "Hidden Peak," and the name Gasherbrum is reserved for the massif containing peaks II, III, and IV, which rise from a long east-to-west ridge. Gasherbrum I is hidden from the main Baltoro glacier by peak 24,019 (pk. 22/52 A) which rises from the southern ridge of Gasherbrum IV. It is by far the most conspicuous of the group from the south and east. We prefer to retain Gasherbrum I, and to drop "Hidden Peak."

The Survey of India triangulated positions were all checked by photographic survey in 1926. Mason's positions and heights of Gasherbrum I and II agreed almost exactly with the Survey of India values, but his heights for Gasherbrum III and IV were 26,000 and 26,180 instead of 26,090 and 26,000, making IV slightly higher than III. We prefer however the Survey heights, as only the tips were seen by Mason; the Survey heights are given below. These were accepted on Spoleto's map.

Of the other peaks included, 24,500 is a prominent summit on the eastern arête of Gasherbrum II (the height 7772 m. or 25,500 feet shown on Spoleto's map is not correct, the ridge east of Gasherbrum II falling much more steeply than is shown). Points 24,019 and 22,980 are conspicuous summits on the south ridge of Gasherbrum IV, the heights being taken from Spoleto's map in preference to Abruzzi's, which gives 24,019 and 23,589 respectively.

Gasherbrum IV	.. 26,000	35° 45' 38"	76° 37' 02"	Pk. 19/52 A
Gasherbrum III	.. 26,090	35 45 36	76 38 33	Pk. 20/52 A
Gasherbrum II ..	.. 26,360	35 45 31	76 39 15	Pk. 21/52 A
—	.. 24,500	35 45	76 39	(Mason) ²
—	.. 24,019	35 43 50	76 36 50	Pk. 22/52 A
—	.. 22,980	35 42 30	76 38	(Spoleto)
Gasherbrum I (Hidden Peak)	.. .. 26,470	35 43 30	76 41 48	Pk. 23/52 A

¹ It is uncertain whether this point, 25,330, is exactly the same as Abruzzi's 26,188 (35° 48' 15", 76° 35' 10"); but Mason does not believe that this shoulder on the south-east ridge of the Broad peak is over 26,000 feet, and we consider it better to accept the heights from Spoleto's map.

² For position see *Geogr. J.*, October 1927, map accompanying "Stereographic survey of the Shaksgam."

(E) *Siachen Muztagh*: Map 52 A, 52 E.

(a) *Sia group*, at the extreme head of the Siachen glacier. It was named by Mrs. Bullock Workman, after her 1912 expedition, "King George V group," a name which has never been accepted by the Survey of India. Siachen means "great rose," the Siachen glacier being so named because of the wild rose bushes near its snout. We suggest the name *Sia group*, partly because of the name Siachen, and partly because of the connection of the rose with British royalty, thus giving some recognition to the wishes of the explorer.

Name	Height	Lat.	Long.	Peak No. and map
<i>Sia Kangri</i>	24,350	35° 39' 51"	76° 45' 43"	Pk. 41/52 A
—	23,270	35 37 59	76 47 29	Pk. 42/52 A
—	21,440	35 36 36	76 50 08	Pk. 43/52 A

Mrs. Bullock Workman's map of the Siachen glacier, which shows this group, is published in *Geogr. J.* 43 (1914) 232. The three peaks are those numbered 17, 16, and 15 in the list of her triangulator, Grant Peterkin, and have been accepted in the Survey of India triangulation pamphlet 52 A. The first two were named by her "Queen Mary" and "Mt. Hardinge," names which were not accepted by the Survey of India. We suggest the name *Sia Kangri*, "the ice-mountain of the rose," for the highest. (Photographs by the Workmans in 'Two summers in the ice-wilds of the Eastern Karakoram,' pp. 192, 194.)

Dyhrenfurth's expedition to the upper Baltoro in 1934 maintained that the highest point in the *Sia* massif ("Queen Mary peak") was over 25,000 feet. It does not seem likely that the Survey of India triangulators, including Collins in 1911, and Mason in 1926, who were definitely on the look-out for high peaks, would have missed one of that altitude. (For a discussion on this point see *Himalayan Journal*, vol. 7, 1935, pp. 145-7.)

(b) *Staghar group*, the mountains on both sides of the Staghar glacier, bounded on the west by the Urdok glacier and on the south by the Siachen glacier. The highest peak fixed prior to Visser's expedition in 1934 was the following, which was obtained by stereo-photogrammetry in 1936 (Mason), which may be verified from Khan Sahib Afraz Gul's plane-tables on the Visser expedition.

—	21,300	35° 47' 00 "	76° 46' 00 "	—
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(c) *Singhi group*, at the head of the large left-bank tributaries of the Singhi glacier. The Singhi glacier was first seen by Mason in 1926, and was crossed by members of the Spoleto expedition in 1929, who named it. It was crossed again by Visser with two surveyors, and surveyed by them.

On the blue print of 52 A, showing Afraz Gul's work compiled with the older surveys, the word is spelt *Singi*. Unless there is any special reason for the change, the older spelling of those who gave it, *Singhi*, should be retained.

The group was well fixed by Peterkin on the Bullock Workman expedition to the Siachen glacier in 1912, the highest, 23,630 feet, being named Mount Rose, but for which a better name, in our opinion, would be *Singhi Kangri*. The three peaks are Nos. 20, 21, and 22 of Grant Peterkin's lists (Map, *Geogr. J.* 43 (1914) 232), and have been accepted in the Survey of India pamphlets as Peaks 45, 44, and 49, 52 A.

—	22,360	35° 35' 47"	76° 57' 32"	Pk. 45/52 A
<i>Singhi Kangri</i> (Mt. Rose)	23,630	35 35 56	76 59 05	Pk. 44/52 A
—	20,300	35 32 36	76 59 23	Pk. 49/52 A

(d) *Teram Kangri group*, a group first seen by Dr. T. G. Longstaff in 1909,

after crossing the Saltoro pass or Bilafond La on to the Siachen glacier. It was first triangulated by V. D. B. Collins, Survey of India, in 1911, but without a very good connection to India triangulation. It was next surveyed in more detail by Grant Peterkin, of the Bullock Workman expedition in 1912 (*Geogr. J.* 43 (1914) 232). The name *Teram Kangri* was given in Dehra Dun by Dr. Longstaff, with the approval of Sir Sidney Burrard, Surveyor-General, from the only locality place-name *Teram*, in the region. The alteration of the spelling to *Tarim* by the Workmans for the glacier tributary of the Siachen is incorrect.

The group was resurveyed from the north by Mason in 1926 by stereo-photogrammetry, based on resection from well-fixed Survey of India triangulated points. Remarkable agreement was obtained with Peterkin's results. The summits below have been given their values from Mason's survey, as these have been used by both Spoleto and Visser for their subsequent surveys in 1929 and 1934. They will be found in the stereographic map of the Kyagar glacier in *Geogr. J.*, October 1927. Collins' and Grant Peterkin's values are given in brackets for comparison.

<i>Name</i>	<i>Height</i>	<i>Lat.</i>	<i>Long.</i>	<i>Peak No. and map</i>
Teram Kangri III	.. 24,218*	35° 35' 50"	77° 03' 11"	Mason
(Pk. 14/52 E)	(24,218*	35 35 50	77 03 11	Collins)
(Siachen No. 23)	(24,240	35 36 02	77 03 00	Peterkin)
Teram Kangri I.	.. 24,489*	35 34 38	77 05 04	Mason
(Pk. 15/52 E)	(24,489*	35 34 38	77 05 04	Collins)
(Siachen No. 24)	(24,510	35 34 43	77 04 54	Peterkin)
(Pk. 163/52 E)	(24,430	35 34 46	77 05 04	De Filippi)
Teram Kangri II	.. 24,300	35 34 05	77 05 30	Mason
(Siachen No. 25)	(24,300	35 34 11	77 05 25	Peterkin)
(Unnamed)	.. .. 22,920	35 33 18	77 07 40	Mason
	(22,890 ¹	35 33 22	77 07 45	Peterkin)
(Unnamed)	.. .. 22,530	35 33 02	77 08 15	Mason
(Siachen No. 26)	(22,530	35 33 08	77 08 16	Peterkin)
<i>Apsarasas I</i>	.. .. 23,770	35 32 23	77 09 03	Mason
(Siachen No. 27)	(23,770	35 32 22	77 09 01	Peterkin)
<i>Apsarasas II</i>	.. .. 23,750	35 32 04	77 10 18	Mason
<i>Apsarasas III</i>	.. .. 23,740	35 31 05	77 12 30	Mason

* The position and height drums were adjusted on Teram Kangri I to Collins' triangulated height for this summit, and checked on Teram Kangri III. All the other positions and heights are quite independent of both Collins' and Peterkin's results. We have only given the three highest summits of the Apsarasas ridge, but Mason found three other summits over 23,000 feet near the last, namely:

—	23,580	35° 31' 12"	77° 11' 30"	—
—	23,710	35 31 12	77 12 47	—
—	23,570	35 31 15	77 13 11	—

Grant Peterkin's Peak No. 28 (23,350, 35° 31' 57", 77° 08' 40") is not on the main ridge, but on the south-west arête of Apsarasas I, while his Peak No. 29

¹ Clinometer height.

(23,010, 33° 31' 05", 77° 11' 21") seems to be a summit on the south-west arete of the first of the three summits, 23,580, listed above. These two peaks of Peterkin were hidden from the north.

Wood's Pk. 16¹/₅₂ E (23,720, 35° 31' 09", 77° 12' 46") is almost certainly the same as Mason's 23,710, 35° 31' 12", 77° 12' 47", shown above. Mason was unable to identify his Pk. 16²/₅₂ E (23,680, 35° 31' 08", 77° 12' 40"), probably a minor point on the Apsarasas III ridge, which extends westwards to 23,580 and eastwards to 23,570.

The Apsarasas ridge was named by Grant Peterkin. We recommend the adoption of the names Apsarasas I, II, and III.

(e) *Kyagar group*, a high group between the Singhi and Kyagar glaciers, surveyed by Mason in 1926. The summits listed below are from the detailed stereographic survey map of the Shaksgam glacier in *Geogr. J.*, October 1927.

The group extends further northwards with several summits above 20,000 feet. It was not surveyed on the Spoleto expedition of 1929, but the western side of it was probably surveyed during the Visser expedition in 1934.

Name	Height	Lat.	Long.	Peak No. and map
<i>Kyagar I</i>	21,770	35° 34' 43"	77° 08' 48"	
<i>Kyagar II</i>	21,340	35 35 47	77 07 45	
—	21,110	35 36 25	77 07 20	
—	21,170	35 36 50	77 06 51	

(f) *Teram Shehr group*, at the head of the Teram Shehr glacier, east of the main trunk of the Kyagar glacier and north of the Central Rimo glacier. It comprises a rather miscellaneous collection of mountains, which have been mainly triangulated by Wood and Alessio on De Filippi's expedition of 1914.

—	22,480	35° 29' 48"	77° 14' 39"	(Peterkin 30)
("Highest pt. of snow ridge")	22,380	35 28 52	77 16 36	Pk. 34/52 E, Wood
("S.W. end of southern of two flat-topped hills")	21,410	35 36 37	77 25 59	Pk. 30/52 E, Wood
—	21,650	35 31 38	77 20 31	20r/52 E, Alessio
—	21,865	35 29 30	77 22 00	De Filippi map
("Rock pinnacle on peak. Cliffs on south side") ..	21,910	35 28 18	77 23 46	Pk. 35/52 E, Wood

Peak 22,480, which was first triangulated by Grant Peterkin during the Workman Expedition of 1912, is also shown on De Filippi's map, though it has not been entered in the Survey of India's triangulation pamphlets. Peak 34/52 E, 22,380, triangulated by Wood on De Filippi's expedition, 1914, is shown on De Filippi's map as 22,410; while Wood's Pk. 36/52 E (22,090, 35° 28' 17", 77° 18' 22"), entered by Wood as a "rock pinnacle" in his lists, is not shown on De Filippi's map, its place being taken by a much lower summit, 20,745. No rock pinnacle appears here in photographs.

(F) *Rimo Muztagh*: Map 52 E.

(a) *Rimo group*, a complex group along the watershed between the Rimo glacier and the head of the Teram Shehr, and throwing out a long ridge between the two main Rimo glaciers eastwards.

De Filippi's map, published with the English edition of his book ('Himalaya,

Karakoram and Eastern Turkestan'), shows a large number of heights. In the lists below only the most important are given, from an examination of the topography. Where possible, the triangulated positions and heights have been given, and where these differ from those shown on De Filippi's map a note has been made to that effect. A few points have also been derived from Collins' triangulation of 1911, and from Visser's map made during his 1929-30 expedition.

The group extends eastwards of Peak 48 between the Central and South Rimo glaciers, and south-eastwards of Peak 53 between the South Rimo and Shelkar Chorten glaciers.

<i>Name</i>	<i>Height</i>	<i>Lat.</i>	<i>Long.</i>	<i>Peak No. and map</i>
—	22,512	35° 23' 58"	77° 19' 01"	Pk. 46/52 E (Collins) Shown on De Filippi's map as 22,515
—	22,569	35 23 26	77 16 25	Visser, 1929-30
("sharp cone at S. end")	23,730	35 22 32	77 21 38	Pk. 49/52 E (Wood). De Filippi and Visser both show Wood's height
—	24,188	35 21 24	77 22 15	¹ Pk. 50/52 E (Collins)
("southern of twin peaks")	24,230	35 21 22	77 22 09	¹ Pk. 51/52 E (Wood)
("centre of triple peak")	23,520	35 22 38	77 23 04	Pk. 48/52 E (Wood) (shown cor- rectly on De Filippi)
("rounded")	.. 22,460	35 23 09	77 23 15	Pk. 47/52 E (Wood) (shown cor- rectly on De Filippi)
("cone-shaped")	.. 22,560	35 23 38	77 23 19	(Pk. 173/52 E (Wood) (shown on De Filippi's map as 22,580)
("southern and highest point")	.. 22,240	35 24 52	77 22 45	² Pk. 45/52 E (Wood)
("northern end")	.. 22,180	35 24 57	77 23 03	² Pk. 44/52 E (Wood)

¹ There is a difficulty with these two peaks. From the above two sets of data it would appear that Peak 50 is N.E. of Peak 51, and Visser's map shows them as correctly identified. On the other hand, De Filippi shows twin peaks, roughly in the same position, of which one, with a height of 24,250, is N.W. of the other, 24,240. We have preferred the evidence of Wood, Collins, and Visser.

² These two points appear to be at the extremities of a north-south ridge. On De Filippi's map the southern is marked 22,240, the northern 22,150.

Name	Height	Lat.	Long.	Peak No. and map
("S.W. summit of double peak")	21,840	35° 19' 46"	77° 23' 00"	Pk. 52/52 E (Wood) (shown on De Filippi's map as 21,810)
("snow peak")	22,300	35 18 48	77 22 07	¹ Pk. 53/52 E (Wood)

(b) *North Terong group*, between the main trunk of the Siachen glacier, the Teram Shehr, and the North Terong glacier.

(Siachen No. 32)	21,860	35° 27' 29"	77° 07' 55"	Peterkin, 1912
(,, ,, 31)	22,910	35 27 36	77 10 49	Peterkin Pk. 17/52 E
("round-topped cone")	22,570	35 27 46	77 10 29	Wood, 1914, Pk. 164/52 E
(Siachen No. 33)	21,580	35 24 39	77 11 30	Peterkin, 1912
—	21,636	35 18 30	77 17 30	Visser 1929-30
—	21,178	35 17 30	77 15 30	,, ,,
—	21,245	35 16 30	77 18 00	,, ,,

It seems likely that Peaks 17 and 164 are points on the same massif, and possibly the same peaks, the first being observed by Peterkin from the west in 1912, the second by Wood from the east in 1914. The Workmans named Peak 17 "Mt. Lakshmi," which we consider unsuitable.

(c) *South Terong group*, between the Nubra valley, the South Terong glacier, and the Mamostong glacier. No peaks have been triangulated and the three noted below are from the Visser expedition of 1929-30.

—	20,119	35° 12' 00"	77° 19' 30"	—
—	20,600	35 10 30	77 20 00	—
—	22,224	35 09 00	77 23 30	—

(d) *Shelkar group*, a group between the right bank of the Shelkar Chorten glacier and the South Rimo glacier. The existing map 52 E is inaccurate on the west side of the watershed, the detail being best shown on the map of the Visser Expedition 1929-30.

("rocky peak at W. end of ridge")	21,120	35° 14' 40"	77° 30' 26"	Pk. 185/52 E (Wood)
("cone at E. end of ridge")	21,180	35 14 33	77 30 57	Pk. 186/52 E (Wood)
("rounded top of cone")	21,420	35 17 12	77 32 26	Pk. 107/52 E (Wood) (shown on De Filippi's map as 21,395)

(e) *Kumdan group*, an extensive group comprising the mountains on the right bank of the Upper Shyok as far south as the Saser pass, and east of the main trunk of the Mamostong glacier; the group is drained eastwards by the Chong Kumdan, Kichik Kumdan, and Aktash glaciers.

¹ De Filippi's and Visser's maps both give 22,300. The Survey of India map 52 E incorrectly shows 22,230.

Name	Height	Lat.	Long.	Peak No. and map
("black rock on top of snow peak")	22,980	35° 11' 57"	77° 32' 30"	Pk. 110/52 E (Wood)
("snow peak")	23,200	35 11 41	77 35 14	Pk. 111/52 E (Wood)
—	21,360	35 15 15	77 37 45	—
("highest point of snow ridge")	21,730	35 14 45	77 38 13	Pk. 109/52 E (Wood)
—	21,035	35 14 35	77 38 25	—
—	21,170	35 13 20	77 40 00	—
("snow peak")	22,040	35 09 19	77 33 47	Pk. 112/52 E (Wood)
<i>Mamostong Kangri</i>	24,690	35 08 54	77 34 41	Pk. 12/52 E (before 1860)
("black rock on summit")	24,660	35 08 34	77 34 45	Pk. 113/52 E (Wood)
("summit snow peak")	22,520	35 08 51	77 37 26	Pk. 187/52 E (Wood)
("rounded snow peak")	21,820	35 07 51	77 38 37	Pk. 188/52 E (Wood)
—	23,020	35 04 43	77 38 20	Pk. 114/52 E (Collins)
—	22,133	35 03 23	77 39 22	Pk. 115/52 E (Collins)
("snow peak")	22,110	35 05 19	77 40 45	Pk. 189/52 E (Wood)

The first two listed above are not shown on De Filippi's map, but are shown on Visser's. The extreme south of De Filippi's map is not very accurate, and the topographical points should be treated with some doubt; it was only sketched from a distance. The mountains at the head of the Mamostong glacier were first explored at close range by Dr. A. Neve.

The spelling *Mamostong*, which means "the thousand demons," is, we believe, more correct than the old spelling *Murghistang*. The name "Mamostong" recalls a legend in which a number of raiders from Central Asia were destroyed by an avalanche (*Rec. Surv. of India*, vol. 22, p. 172). The chief peak, whose height was determined by Johnson during the early Kashmir survey prior to 1860 as 24,690, was refixed by Wood on De Filippi's expedition (24,660). It was likened by Dr. A. Neve to "a crouching lion." We suggest the name *Mamostong Kangri* for it.

The mountains at the head of the Aktash glaciers north of the Saser pass are not yet well enough known to be given names. Peaks 114 and 115, fixed by Collins, were not refixed by Wood in 1914, but are shown on the map illustrating his work. On De Filippi's map however they are given the heights 22,200 and 22,130, instead of 23,020 and 22,133. Neither De Filippi's nor Wood's maps are reliable in this region, the Aktash glaciers being omitted.

(G) *Saser Mustagh*: Maps 52 F, 52 J.

(a) *Saser group*, a great group south of the Saser pass, some of the peaks of which were triangulated before 1860. The group was not surveyed in detail during the early surveys of Kashmir by Mr. E. C. Ryall, and it was not till

Dr. Arthur Neve visited the Sa-kang and Phukpo-che glaciers that any details were known (Popoche, Neve, "Thirty Years in Kashmir," pp. 227-35). It was subsequently surveyed in detail by the Vissers in 1929, and the peaks whose coordinates are shown in italics are from that survey.

<i>Name</i>	<i>Height</i>	<i>Lat.</i>	<i>Long.</i>	<i>Peak No. and map</i>
—	21,795	34° 54' 38"	77° 41' 55"	—
—	24,330	34 52 25	77 44 15	Pk. 48/52 F (Wood)
<i>Saser Kangri</i> ¹	25,170	34 52 02	77 45 13	Pk. 29/52 F (before 1860)
—	(25,280)	34 52 00	77 45 13	Wood
—	24,590	34 50 31	77 47 16	Pk. 30/52 F (before 1860)
—	(21,000) ²	34 50 35	77 45 08	—
—	21,285	34 54 10	77 46 40	—
—	21,855	34 54 00	77 48 00	—
<i>Tughmo Zargo</i> ³	21,648	34 51 55	77 49 13	—
—	?	34 51 07	77 50 40	—
—	22,155	34 50 15	77 52 05	—
—	24,650	34 48 14	77 48 22	Pk. 31/52 F (before 1860)
—	22,777	34 48 09	77 46 25	—

(b) *Chhushku group*, at the head of the Sultan Chhushku and other lesser glaciers draining into the upper Shyok above Kataklik. With one exception, all the peaks are given data derived from measurement from Visser's map, while some of the heights (shown in brackets) are from an examination of the contours. They are only given for the purposes of identification, and should not be accepted.

—	?(22,250)	34° 52' 35"	77° 52' 50"	—
—	?(21,250)	34 52 50	77 55 02	—
—	?(21,750)	34 52 30	77 55 40	—
—	?(21,750)	34 51 55	77 56 20	—
—	?(22,000)	34 51 30	77 57 02	—
—	?(21,250)	34 52 28	77 57 20	—
—	21,920	34 54 34	77 56 05	Pk. 28/52 F (before 1860)

(c) *Shukpa Kunchang group*, a high group between the two Shukpa Kunchang glaciers. The heights of all the summits are doubtful, and the positions from Visser's map by measurement.

—	?(22,000)	34° 46' 52"	77° 51' 40"	—
—	?(22,000)	34 45 33	77 50 21	Pk. 32/52 F (before 1860, but no height)
—	?(22,250)	34 44 58	77 52 42	—
—	?(22,000)	34 44 32	77 53 37	—

¹ Saser means "yellow ground." From Saser Brangsa the name has gone to the Saser pass, and then to the peak. Sasir is incorrect. We suggest *Saser Kangri* as preferable to Sasir Peak.

² This point, about 21,000 feet, was climbed by Dr. Neve and named "Panamik Peak," not very suitably.

³ We suggest this name from the glacier draining it.

(d) *Arganglas group*, provisionally named from a grazing ground at the junction of the two glaciers draining it.

Name	Height	Lat.	Long.	Peak No. and map
—	?21,932	34° 36' 52"	77° 50' 55"	—
—	22,272	34 35 07	77 54 19	Pk. 47/52 F (Collins)

(e) *Kunzang group*, provisionally so named from the Kunzang Lungpa draining eastwards into the upper Shyok. No details are available for us to work out this group. It was surveyed by Visser in 1934.

(f) *Shyok group*, the last group of the Great Karakoram, in the bend of the Shyok river and opposite the village of Shyok. The peaks listed are all from the Changchenmo triangulation done by Johnson and Clarke in 1862. The heights of only two peaks were determined, but those of the others should be available from Visser's survey of 1934, the details of which are not yet available to us.

—	—	34° 20' 03"	78° 10' 08"	Pk. 3/52 J
—	—	34 18 56	78 09 26	Pk. 4/52 J
—	21,070	34 18 20	78 13 07	Pk. 5/52 J
—	21,100	34 17 55	78 11 37	Pk. 6/52 J
—	—	34 17 25	78 10 15	Pk. 7/52 J
—	—	34 15 54	78 12 33	Pk. 8/52 J
—	—	34 15 23	78 11 30	Pk. 9/52 J

APPENDIX II: MOUNTAIN GROUPS OF THE LESSER KARAKORAM

GROUPS NORTH OF THE GREAT KARAKORAM IN HUNZA

- A (i) *Lupghar group* (42 L). This group lies between the Batura glacier, the Chapursan, and the Hunza river. It is believed that no mountains in the group rise above 20,000 feet, but there are several snow-clad summits over 19,000 feet.
- A (ii) *The Ghujerab mountains* (42 P). Two groups may be recognized in the mountains of Ghujerab, viz. the Chapchinal group and the Karun Kuh group.

(a) *The Chapchinal group* lies between the Kuksel and Chapchinal tributaries of the Khunjerab and Ghujerab rivers respectively, and on both sides of the Chapchinal pass. No peaks have been triangulated, but the following three are shown on the Survey of India map 42 P. They are from K. S. Afraz Gul's survey with the Visser expedition, 1925. We suggest the name *Chapchinal Sar* for the highest.

<i>Chapchinal Sar</i>	.. 21,210	36° 45' 36"	37° 18' 05"	—
—	20,730	36 43 05	37 23 55	—
—	20,070	36 42 50	37 28 55	—

(b) *The Karun Kuh group* lies between the lower Ghujerab and the lower Shimshal valleys, of which the culminating summit is the mountain known as Karun Kun, about 6 miles north-east of the Karun Pir (pass), which has been fixed by triangulation, during the Indo-Russian work, 1912-13.

Purzin-wa-dasht	.. 20,786	36° 39' 10"	75° 06' 30"	—
Karun Kuh	.. 22,891	36 36 47	75 04 48	Pk. 19/42 P
—	20,147	36 34 30	75 11 30	

GROUPS SOUTH OF THE GREAT KARAKORAM

(B) The Rakaposhi range may be divided into five groups, of which something is known at present, though it cannot be said that we have anything more than rough maps, except in the Bagrot and Haramosh valleys, which the Survey of India mapped in 1931. In 1892 Conway made a plane-table sketch of the Hispar glacier, but the side valleys were extremely roughly sketched, and it is uncertain whether he correctly identified the few triangulated summits of the Survey of India. The Workmans made two expeditions, one to the Chogo Lungma glacier in 1902, and the other to the Hispar in 1909, and with each record of their journeys they published large-scale maps. Unfortunately, here again they seem to have had great difficulty in recognizing fixed points, owing to faulty initial azimuths and base measurement; it is extremely difficult to fit their work in with the work of others, and their heights must remain in doubt. Where possible the names given by these travellers have been entered for the purposes of identification and their approximate positions on the Survey of India map given in order to place them in relation to the general topography of the sheet.

The five groups are the Rakaposhi group, the Bagrot group, the Phuparash group, the Chogo Lungma group, and the Hispar Wall.

(a) The *Rakaposhi group*, on the extreme western end of range, rising steeply from the Hunza gorge at Chaichar Parri. Only one summit of the Rakaposhi massif has been triangulated, and the heights of subsidiary summits are not known.

For a note on the name "Rakaposhi," see Burrard, 2nd Ed., vol. 1, p. 50. The name Rakaposhi should most certainly be retained, with the Hunza name, Dumani, as well. The peak was triangulated during the Kashmir triangulation of 1855-60, and is well fixed.

<i>Name</i>	<i>Height</i>	<i>Lat.</i>	<i>Long.</i>	<i>Peak No. and map</i>
Rakaposhi, or Dumani . .	25,550	36° 08' 39"	74° 29' 22"	Pk. 27/42 L

(b) The *Bagrot group*. This group lies at the head of the two main tributary glaciers of the Bagrot valley, the Hinarche and Burche (called the Bagrot and Gargo glaciers on Conway's map). Conway only gives the height of one (the "Dome of Dirran"), but the "Crown of Dirran" is probably higher. The four given below are certainly over 21,000 feet.

("Crown of Dirran") . .	—	36° 07' 14"	74° 39' 44"	Pk. 37/42 L (Kashmir tri- angulation 1855-60. No height)
("Dome of Dirran") . .	23,550	36° 06' 50"	74° 38' 45"	Conway, 1892
("Burchi Peak") . .	—	36 06 50	74 40 30	Conway, 1892
("Lower Burchi Peak") . .	—	36 06 00	74 41 00	Conway, 1892

Perhaps it is yet too early to consider names for these, though we would suggest Diran I and Diran II for the first two, and Burche I and Burche II for the two last. Burche is probably a better spelling than Burchi. Reference should however be made to the Survey of India work of 1931, which is not available to us.

(c) The *Phuparash group*.¹ An important group at the head of the Phuparash

¹ The work of the Survey of India of 1931 in sheet 42 L is not available in England, and the suitability of this group name requires confirmation after consulting that survey.

valley, four peaks of which were fixed by the triangulators in 1855-60. Conway calls the first and westernmost "Emerald Peak," and saw it from the Bagrot valley; the second and third he does not name and may not have seen, though they are marked on his map. The last, which he names "Saddle Peak," he saw from the glacier he calls the Shallihuru. The topography at the head of this glacier and its neighbour to the east is entirely different from that shown at the head of the Chogo Lungma glacier by the Workmans. In compiling map 42 L the best fit possible has been made, but it is very probably inaccurate. On that map Conway's Shallihuru is given as Miar (Shalhubu) glacier, probably from K. S. Afraz Gul's plane-table with the Vissers in 1925.

Name	Height	Lat.	Long.	Peak No. and map
("Emerald Peak")	.. 22,390	36° 03' 29"	74° 45' 57"	Pk. 42/42 L
—	22,260	36 03 03	74 46 15	Pk. 43/42 L
—	21,570	36 02 52	74 49 31	Pk. 44/42 L
("Saddle Peak")..	.. 21,570	36 02 42	74 47 26	Pk. 45/42 L

The Haramosh range branches south-eastwards from the Rakaposhi range about 2 miles east of "Saddle peak."

(d) *The Chogo Lungma group*. This group lies mainly at the head of the Chogo Lungma glacier and at the head of the Yengutz Har glacier. The Chogo Lungma was ascended by the Workmans and described by them in 'Ice-bound heights of the Mustagh.' On the north the Yengutz Har glacier was surveyed by K. S. Afraz Gul with the Vissers in 1925. It is extremely difficult to reconcile the topography as shown by the Workmans with either that of K. S. Afraz Gul on the north or with that of the Survey of India in Sheet 43 I on the west, and the three summits listed below from the Workmans' work should be treated with considerable reserve. It is unlikely that a peak as high as 24,500 feet exists here, while from the illustrations in their book, the two summits which they named "Mount Chogo" and "Mount Lungma," and which they climbed, are little more than snow knolls on the south-east ridge of "Pyramid Peak."

Chogo Lungma, which is applied to the glacier and valley to the south-east, merely means "the large valley." To call two summits towards the head of the valley "Mt. Chogo" and "Mt. Lungma," *i.e.* "Mount Large" and "Mount Valley," seems to us particularly unsuitable, and we suggest that the names be dropped and the summits left unnamed until the regular survey or next explorer finds or suggests more suitable names.

The peak at the head of the Yengutz Har glacier, for which we suggest the name *Yengutz Har*, seems to fall roughly in the position of the ridge shown on Conway's map as "the Golden Parri" (*i.e.* Golden Cliff, or "Ghenish Chish"), but Conway's topography here is unrecognizable on the modern survey. The name for this glacier was first obtained by Sir Henry Hayden when examining glaciers in the neighbourhood about 1906; it was then spelt *Yengutsa*. Gilgit officials who later visited it stated that the correct spelling should be *Yengutz Har*, and this name is now in general use in glacier literature.

("Pyramid Peak")	.. 24,500 ?	36° 03' 15"	74° 54' 30"	—
("Mt. Lungma")	.. 22,568 ?	36 02 20	74 55 00	—
("Mt. Chogo") ..	.. 21,500 ?	36 02 03	74 55 30	—
<i>Yengutz Har</i> ..	.. 23,056	36 03 28	74 58 00	Pk. 68/42 L

(e) *The Hispar Wall*. All along the southern side of the Hispar glacier there is a mountain wall, from which, on the west, a series of short glaciers descends to the Hispar. The wall was crossed at one place by Bruce in 1892, the pass being known by the name "Nushik La" (36° 01' 30", 75° 14' 25").

No summits have been triangulated along this wall, and the points noted below are either from K. S. Afraz Gul's plane-table on the Visser Expedition of 1925 or from the Workmans' map in 'The call of the snowy Hispar.' In view of the fact that the Workmans failed to recognize the Survey of India triangulated points, the positions and heights of the points from their map should be treated with reserve.

The names for the first three summits are from the glaciers draining northwards from them, and are from K. S. Afraz Gul's work. Makorum is presumably the same as the point marked 23,635 on the Workmans' map.

Name	Height	Lat.	Long.	Peak No. and map
<i>Gurpaltig</i>	20,700	36° 05' 28"	75° 01' 02"	(Afrac Gul)
<i>Chandershish</i>	22,300	36 03 06	75 04 45	(Afrac Gul)
<i>Makorum</i>	23,750	36 03 25	75 07 04	(Afrac Gul)
—	22,508	36 01 35	75 24 35	(Workman)
—	22,710	36 01 26	75 31 05	(Workman)
—	21,358	36 01 04	75 34 27	(Workman)
—	22,060	36 00 52	75 36 02	(Workman)

Subsidiary groups associated with the Rakaposhi range

(f) *The Ganchen group*, between the Hoh Lumba and the Basha river. Very little is known about this region and it has not been surveyed in detail. One summit only, Ganchen, 21,200 feet, has been fixed by triangulation. In 'Ice-bound heights of the Mustagh,' pp. 54, 58, the Workmans show photographs of some of the peaks of the group further north, one of which, which they call *Hikmul*, may be as high as Ganchen. They explored a small glacier west of Ganchen.

Ganchen	21,200	35° 48' 36"	75° 29' 11"	Pk. 9/43 M, 1855-60
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(g) *The Meru group*, between the Hoh Lumba and the Biafo glacier. There is undoubtedly a high group here, but nothing is known of it. During the old survey no peaks were triangulated in the group, and Conway fixed none. The Workmans named a high peak *Meru*, and assigned an approximate height of 22,000 feet to it; this is probably too high. An illustration of part of Meru appears in *Himalayan Journal*, vol. vi, 1934, p. 71.

(C) *The Haramosh Range*. Little is known about the detailed topography of this range. A few of the higher summits towards the north of it have been fixed by triangulation, but it is too early yet to attempt a classification of groups. It seems to us probable that the Workmans never properly identified Haramosh when they explored the head of the Chogo Lungma glacier, and therefore their representation of the topography in that region is very probably at fault. Certainly it is impossible to fit it in with the modern Survey of India work west of that mountain. No details are known of the heights of the range south-east of Pk. 1/43 M, and it seems likely that none rises above 21,000 feet. The peaks above 20,000 feet in the range which have been triangulated are given below.

The height of Peak 59 was not fixed during the triangulation. It has subsequently been found to be approximately 20,190 feet. Pk. 60/43 I (35° 46' 02", 74° 58' 02") falls in the same category, but as its height was found subsequently to be approximately 19,850 feet, it is not listed. The Workmans add another peak with a height of 21,930, but it would be unsafe to assume it to be correct.

Name	Height	Lat.	Long.	Peak No. and map
—	24,470	36° 00' 14"	74° 52' 34"	Pk. 46/42 L
—	22,810	35 57 26	74 57 47	Pk. 56/43 I
—	21,930	35 51 40	74 57 54	Pk. 57/43 I
Haramosh	24,270	35 50 29	74 53 52	Pk. 58/43 I
—	20,190	35 47 45	74 57 12	Pk. 59/43 I
—	20,740	35 52 00	75 03 28	Pk. 1/43 M

} 1855-60

(D) *The Masherbrum Range.* The range extends from the junction of the Basha and Braldu rivers, south of the Baltoro glacier, as far east as the Chogolisa Saddle, east of Chogolisa or "Bride Peak." It is not known in detail throughout its length, but certain well-marked groups can be distinguished.

(a) *The Koser Gunge group*, on the extreme west as far as the Skoro La.¹ The height of only one summit is known with any degree of accuracy, and this has not been triangulated.

Koser Gunge 21,000 35° 37' 10" 75° 39' 00" —

(b) *The Mango Gusor group*, lying immediately east of the Skoro La. Its eastern boundary cannot yet be determined.

Mango Gusor 20,630 35° 34' 41" 75° 55' 14" Pk. 21/43 M,
1855-60

No topographical details are known of the range east of Mango Gusor until the Masherbrum group is reached.

(c) *The Masherbrum group.* Little is known of the Masherbrum group. Every expedition up the Baltoro seems to have passed it by. In the Survey of India Records there are two summits triangulated, both over 25,000 feet, from the south. The early survey carried out from the south was very sketchy in the higher valleys of the Hushe valley. Mr. J. A. Sillem in 1903 explored the Hushe valley from the south, but left no account of his work, and died soon afterwards (*H. J.*, vii, 1935, p. 66). The Workmans in 1911 made some minor corrections to the topography and reached the watershed both east and west of Masherbrum, but added little to our knowledge of the massif. A number of illustrations showing Masherbrum from the north have been published by various travellers, which make its outline well known from that direction (*e.g. H. J.*, vii, 1935, p. 142). Other aspects of the mountain appear in the Workmans' book, 'Two summers in the ice-wilds of the Eastern Karakoram,' pp. 84, 98.

Masherbrum E. . . . 25,660 35° 38' 36" 76° 18' 31" Pk. 7/52 A

Masherbrum W. . . . 25,610 35 38 29 76 18 23 Pk. 8/52 A

(d) *The Chogolisa group.* No further details of the topography of the range are known until the head of the Kondus valley is reached. We then come upon a group which has been explored in considerable detail by the expedition of the Duke of the Abruzzi in 1909. To this the name "Chogolisa group" has been suggested by the Workmans on the south, and this name seems suitable.

("Mitre Peak")	} 20,462	35° 42' 50"	76° 29' 50"	Abruzzi }
		35 43 30	76 30 15	Spoletto }
—	21,896	35 39 10	76 33 10	Abruzzi and Spoletto
—	22,477	35 38 10	76 32 30	Abruzzi and Spoletto

¹ For a brief history of the Skoro La and a discussion on its height, see *Himalayan Journal*, vol. i, 1929, p. 89. For an illustration of it, see *ibid.*, vol. vi, 1934, p. 70.

Name	Height	Lat.	Long.	Peak No. and map
<i>Chogolisa II</i>	24,783	35° 36' 45"	76° 34' 00"	Pk. 24/52 A, Abruzzi
<i>Chogolisa I</i> ("Bride Peak")	25,110	35 36 44	76 34 23	Pk. 25/52 A, 1855-60 Sur- vey of India Abruzzi
—	21,653	35 36 20	76 38 50	Abruzzi
<i>Baltoro Kangri</i> ("Golden Throne")	23,990	35 38 50	76 40 00	Abruzzi

The positions of "Mitre Peak" as given by Abruzzi and Spoleto do not agree with each other; both positions have been given in the table above. "Mitre Peak" is a very striking rock peak named first by Conway, and separated from the rest of the Chogolisa group by the "Vigne glacier."

The height of "Golden Throne" is in doubt. Conway and Abruzzi gave no height for it; Spoleto's height is given above; on the Survey of India map it is shown as 23,600 feet, but I do not know the source, since the peak has not been triangulated nor surveyed by the Survey of India. Dyhrenfurth accepted 23,990 feet, and basing his calculations on this, claimed that "Queen Mary" was over 25,000 feet, whereas its triangulated height is 24,350 feet. It seems therefore possible that the height 23,990 feet for "Golden Throne" is too high. The summit is of snow and not sharply defined (see *Himalayan Journal*, vol. vii, 1935, pp. 144-8).

The best illustrations so far published of the group are Panoramas C, D, and O, in De Filippi's 'Karakoram and Western Himalaya,' the account of Abruzzi's 1909 expedition.

We recommend that the names "Mitre Peak," "Golden Throne," and "Bride Peak," which were given by Conway and never accepted officially, be dropped; that until the position of the first is known with greater accuracy it be left unnamed on Survey of India maps; that the name *Baltoro Kangri* for the "Golden Throne" at the head of the Baltoro glacier be adopted; and that Chogolisa be retained for "Bride Peak."

Subsidiary groups associated with the Masherbrum range

Little is known of the detailed topography of the two groups lying between the Thalle and Hushe valleys and between the Hushe and Kondus valleys, which may be given group names at a later stage. The Survey of India has not surveyed the groups in detail, and no explorer that we know of has produced any useful topographical work. Survey of India maps therefore only show a very few isolated triangulated peaks, which are given below. All three were triangulated from the Kashmir series between the years 1855 and 1860.

(e) *Group east of Thalle valley.*

—	21,190	35° 26' 40"	76° 12' 53"	Pk. 1/52 A, 1855-60
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(f) *Group east of Hushe valley.*

—	22,750	35° 27' 45"	76° 34' 44"	Pk. 26/52 A
—	23,890	35 25 08	76 33 12	Pk. 27/52 A

(E) *The Saltoro Range*

A certain amount of detail is known about the various groups of the Saltoro, owing to the interest taken by explorers of the Siachen. Longstaff crossed the Saltoro pass, or Bilafond La, on to the Siachen glacier in 1909. He also carried

out some plane-tabling among the mountains south of that pass. His account, with a small-scale map from his material, appeared in *Geogr. J.* 35 (1910) 622-657, map p. 744. The Workmans followed in 1912, and their surveyor, Grant Peterkin, carried out additional triangulation and plane-table survey. The Workmans themselves crossed from the head of the Siachen to the Kondus by the Sia La. In 1935 John Hunt and James Waller made an attempt to climb the peak shown below as "Saltoro Kangri I" (*Himalayan Journal*, vol. viii, 1936, pp. 14-24). The Workmans' maps are published in *Geogr. J.* 43 (1914) 232, and in their book 'Two summers in the ice-wilds of the Eastern Karakoram.'

(a) *The Kondus group*, from the Sia La to the saddle between the Kondus glacier and the glacier called by the Workmans the "Peak 36 glacier."

All the summits listed below were triangulated by Grant Peterkin on the Workmans' 1912 expedition.

Name	Height	Lat.	Long.	Peak No. and map
("Lower Silver Throne") (Peterkin, Siachen No. 14)	20,230	35° 34' 55"	76° 46' 38"	Pk. 46/52 A
("Silver Throne") (Peterkin, Siachen No. 13) ..	—	35 33 47	76 45 36	Pk. 47/52 A
("The Hawk") (Peterkin, Siachen No. 10) ..	22,160	35 32 58	76 52 10	Pk. 48/52 A
("Mt. Ghent II") (Peterkin, Siachen No. 9) ..	24,090	35 31 44	76 48 33	Pk. 50 ¹ /52 A
("Mt. Ghent I") (Peterkin, Siachen No. 8) ..	24,280	35 31 06	76 48 07	Pk. 50 ² /52 A
(Peterkin, Siachen No. 7)	21,610	35 29 41	76 52 59	Pk. 51/52 A

The above names, given by the Workmans, have not come into general use. It is therefore not too late to give them more suitable names when the next traveller goes there. We recommend that the Workmans' names should not be adopted.

(b) *The Saltoro group*, from the above group southwards as far as the Saltoro pass, including the Bilafond Wall. There seems to be some slight discrepancy between the positions found for the two high peaks of this group by the earlier triangulation and by Collins' triangulation in 1911. There is no doubt that the summit shown in the Survey of India triangulation pamphlets as Pk. 53/52 A is the same as Pk. 35/52 A, and that Pk. 54/52 A is the same as Pk. 36/52 A. It seems essential that names should be given to these peaks, as confusion is already occurring, through some authors calling the peaks K³⁶ and K³⁵, while others call them Peak 36 and Peak 35.

Photographs of various aspects of the Saltoro Kangri are published in the Workmans' 'Two summers in the ice-wilds of the Eastern Himalaya,' p. 174; in *Himalayan Journal*, vols. iv, 1932, p. 46; viii, 1936, pp. 16, 17, 20.

<i>Sherpi Kangri</i>	23,960	35° 27' 54"	76° 47' 07"	Pk. 33/52 A, 1855-60
<i>Saltoro Kangri II</i> ..	25,280	35 24 24	76 50 50	Pk. 35/52 A, 1855-60
—	25,136	35 24 30	76 50 51	Pk. 53/52 A, Collins
<i>Saltoro Kangri I</i> ..	25,400	35 24 01	76 50 55	Pk. 36/52 A, 1855-60
—	25,321	35 24 05	76 50 57	Pk. 54/52 A, Collins

Sherpi-gang means literally "the ice of Sherpi," *gang* being the form used instead of *Kang* in western Ladakhi dialect. It might be more consistent to use the form Sherpikang for the glacier, and Sherpi Kangri for the mountain at its head.

(c) *The Chumik group*, from the Saltoro pass to the Rgyong La. Little is known of the group in detail, though Longstaff carried out a rapid reconnaissance of it from the west in 1909. Peaks 8/52 E (1855-60) and 18/52 E (Collins) may be the same, and it is probable that Collins' value is the better, for Longstaff remarks: ". . . K¹², an elusive peak which I was never able to identify to my entire satisfaction." K¹² is the old designation of Pk. 8/52 E.

Grant Peterkin observed two peaks of the group nearer to the Siachen in 1912, and it is possible that the Vissers may have added to our knowledge of this group in 1934.

The last two peaks, unlike the rest of Peterkin's work, have not been included in the Survey of India pamphlets.

<i>Name</i>	<i>Height</i>	<i>Lat.</i>	<i>Long.</i>	<i>Peak No. and map</i>
("K ¹² ")	24,370	35° 17' 46"	77° 01' 23"	Pk. 8/52 E, 1855-60
---	24,503	35 18 13	77 00 55	Pk. 18/52 E, Collins
---	22,158	35 12 40	76 59 33	Pk. 55/52 A, Collins
—	20,460	35 22 04	77 04 47	Peterkin, 1912
—	20,180	35 20 33	77 08 14	Peterkin, 1912

(d) *The Dansam group*, a group about which very little is known between the Kondus and the Gyari valleys. One peak only has been triangulated, for which the name Dansam is suggested. It is the old K¹³.

<i>Dansam</i> (K ¹³)	21,870	35° 12' 12"	76° 45' 41"	Pk. 38/52 A, 1855-60
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(e) *The Chulung group*, from the Rgyong La to the end of the range. It is a high group between the Nubra and the Lower Shyok, and it is possible that the Vissers have added to our knowledge of the topography, though we have no details. It is possible that this group should be divided into two parts, the first four being included in a northern group and the last three in a southern group.

(K ¹⁹) Gharkun	21,720	35° 05' 05"	76° 58' 09"	Pk. 39/52 A, 1855-60
—	20,960	35 01 30	77 00 29	Pk. 10/52 E, 1855-60
(D ²²)	22,400	35 01 33	77 08 58	Pk. 9/52 E, 1855-60
---	21,601	34 59 42	77 17 31	Pk. 42/52 F, Collins, 1911
---	21,334	34 55 04	77 17 23	Pk. 43/52 F, Collins, 1911
---	20,213	34 46 07	77 25 16	Pk. 44/52 F, Collins, 1911
(K ²⁵)	21,400	34 54 37	77 08 43	Pk. 1/52 F, 1855-60

A certain number of other points were triangulated during the earlier survey and hill-staffs erected on them; their heights however do not seem to have been observed, and they therefore have not been included in the lists.

The GEOGRAPHICAL JOURNAL

Vol XCI No 3



March 1938

THROUGH THE UNEXPLORED MOUNTAINS OF THE ASSAM-BURMA BORDER

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Evening Meeting of the Society, 24 January 1938

THE mountain tracts on the borders of Assam and Burma remain as one of the few unsurveyed areas of India. Here a country of densely wooded hills extends from the Brahmaputra to the Chindwin, reaching in the peaks of the Patkoi range heights of more than 12,000 feet. The north-west of this area is inhabited by the Naga tribes and consequently known as the Naga Hills. Other Naga tribes live also on the Burma side of the Patkoi but little is known of them.

Politically the Naga Hills are divided into three parts: the Naga Hills District, which is fully and directly administered; the Control Area, over which the Deputy Commissioner of the Naga Hills exerts his political influence in cases of village feuds; and the unadministered territory, which is in part even geographically unknown.

While I carried out anthropological field-work among the Konyak Nagas, a tribe under British administration, the Government of Assam kindly granted me permission to join an expedition into the unmapped country on the north-western slopes of the Patkoi range. The expedition was led by Mr. J. P. Mills, then Deputy Commissioner of the Naga Hills. We passed through villages never before visited by Europeans and throughout the expedition we were in touch with tribes which had, until then, almost entirely escaped the curiosity of anthropologists.

The long seclusion of the Naga Hills has been due to two reasons. The inhospitability of the country offers nothing to the peoples inhabiting the fertile plains of the Assam valley and has therefore never tempted them to expand in that direction; and the warlike character of the Naga tribes allowed no stranger to penetrate their land. Head-hunting and frequent wars made intercourse between villages extremely difficult and cut off the people on the hills in the interior from all contact with the outside world, for travelling alone or even in small groups in the unadministered parts of the

country is, for Nagas as for Europeans, a venture little short of suicide. "Cheap" heads of defenceless wanderers are only too welcome in every Naga village.

Thus the Naga tribes have lived for thousands of years undisturbed by the influence of higher civilizations. Neither Hinduism nor Buddhism ever found its way into these hills, where ancient and primitive cultural types have survived until to-day. It is for this reason that the Naga tribes are of supreme interest to the anthropologist. Forms of social organization, economic systems, customs and religious beliefs, long ago perished in other parts of Asia, are still alive and in full practice among them; and their material culture, though by no means poor, is of a remarkably primitive character.

Naturally the seclusion of the Naga tribes has not been as complete as that of an island people. Foreign goods, such as cowrie-shells, and metal implements must have been bartered from village to village for hundreds of years, but their influence on Naga culture as a whole has not been considerable. It would be wrong however to suppose that Naga culture is homogeneous or that migrations have never taken place in these hills.

The Naga tribes can clearly be divided into several main groups. One of them consists of the Angamis, Rengmas, Lhotas, and Semas, who according to their own tradition all come from the south, entering the Naga Hills through the gap of Mao. It is fortunate for anthropology that two eminent scientists, Prof. J. H. Hutton and Mr. J. P. Mills, worked among these tribes as District Officers and consequently described them in four separate monographs.

While the Ao Nagas, adjoining the Lhotas to the north, also form the subject of a book by J. P. Mills, information on the tribes to the east and north-east has, until recently, been completely lacking, for the Konyaks, the neighbours of the Aos to the north, though partly administered since 1911, are too far away from the centres of administration to be studied by officials; and the Changs, Sangtams, and Yimsungr, who border on the Aos and Semas in the east, have been visited only occasionally by punitive expeditions and survey parties. Complete mystery has however veiled the Kalyo Kengyus, of whom little more was known than their existence and the fact that they live in houses with slate roofs. I decided therefore when I went to the Naga Hills in June 1936, to work among the Konyaks and to grasp every opportunity of penetrating into the unknown area east of the administered territory.

The Konyaks, like all Nagas, build their villages on the top of ridges or spurs, generally in heights between 2500 and 5000 feet. From these villages one overlooks a wide mountain country, where dense forest alternates with cultivated land and large patches of young secondary jungle. This patchwork is resultant from the Konyak's system of shifting his fields every two years and then allowing the land to revert to jungle.

The hot valleys, cutting deeply into the mountains, are clothed in tropical forest, untouched by fire or axe. They are uninhabited and it is there that one finds tiger, sambur, barking deer, large herds of elephants, and multitudes of monkeys and birds. The Konyak avoids the valleys whenever possible. It is only for hunting and fishing that he climbs down, and all his fields lie on the higher mountain slopes.

The cultivation of water-rice on irrigated terraces, so typical of the Angami

Nagas, is unknown to the Konyak. His method of rice cultivation is less elaborate. Every year a suitable piece of land, uncultivated for about ten to fourteen years and therefore covered by dense jungle, is chosen, and the jungle cut down and burnt. A few trees are however left standing so that the jungle may quickly regenerate when the period of cultivation is over. Owing to the complete lack of manuring the soil is exhausted after it has been cultivated for two seasons, and many years of fallen and rotten leaves are necessary to restore its strength. Hence a community must own at least ten times more land than it can cultivate every year. Should a village be short of land, the rotation in which the fields are cultivated has to be quickened, and bad crops and famines are consequent. Ultimately over-cultivation results in a decrease of the jungle and the drying up of the land. As some Konyak villages have more than a thousand inhabitants, the pressure on the land is very noticeable, and there is no doubt that the country could not, under the present economic system, support a larger population.

While rice is the staple crop of most of the other Naga tribes, it is not so in all Konyak villages. There taro is as important a part of the diet as rice, and some Konyak villages grow no rice but live exclusively on taro and a small amount of millet. The choice of these crops is by no means climatically or geographically determined, but clearly represents a cultural preference. I am inclined to believe that taro was the main crop of an older population, which to a large extent still survives among the Konyaks, but hardly among the other Naga tribes, where later immigrants seem to be much more predominant. In a part of the world where all people, regardless of race and civilization, live mainly on rice, it is surprising to find a tribe cultivating taro, a crop as rare in India as it is common in the South Sea Islands. No doubt this fact supports the theory that the Konyaks represent one of the most ancient civilizations of south-eastern Asia.

The cultivation of taro is only one of the points on which the Konyaks differ from the south-western group of the Naga tribes. There are other elements peculiar to them: the men's elaborate face-tattoo and their habit of letting the hair grow, the blackening of their teeth, the wearing of tight belts of cane and bark as their only piece of dress, as well as the very scanty dress of the women. The enormous bachelors' halls of the Konyaks are unrivalled by those of any other Naga tribe, and the naturalistic carvings adorning them have little in common with the conventionalized art of the Angamis, Lhotas, and Semas. And the sacred autocratic Konyak chiefs, belonging to one endogamous clan, are without parallel in the Naga Hills.

After I had worked for four months in the Konyak country, the long-hoped-for chance of a tour into the unadministered area was offered to me by Mr. Mills, who was then preparing an expedition to the east beyond his district and very kindly invited me to accompany him. The tribes of the so-called Control Area, which borders on the Naga Hills District, are generally left to manage their own affairs undisturbed, the Deputy Commissioner merely arbitrating in quarrels when asked by the parties. In a country where defence has so greatly outstripped attack that a village is rarely entered except by treachery, the petty raids lead to little loss of life and call for no

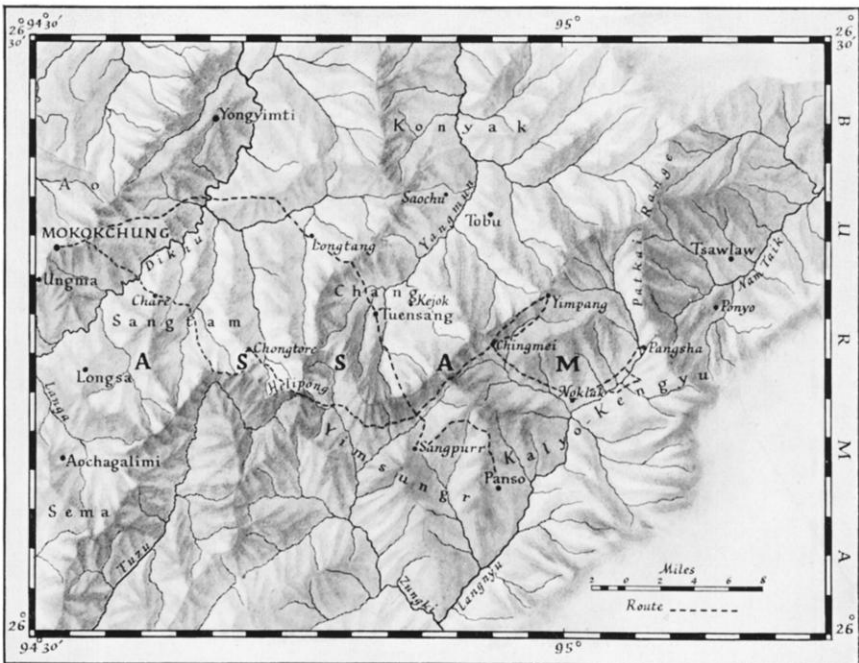
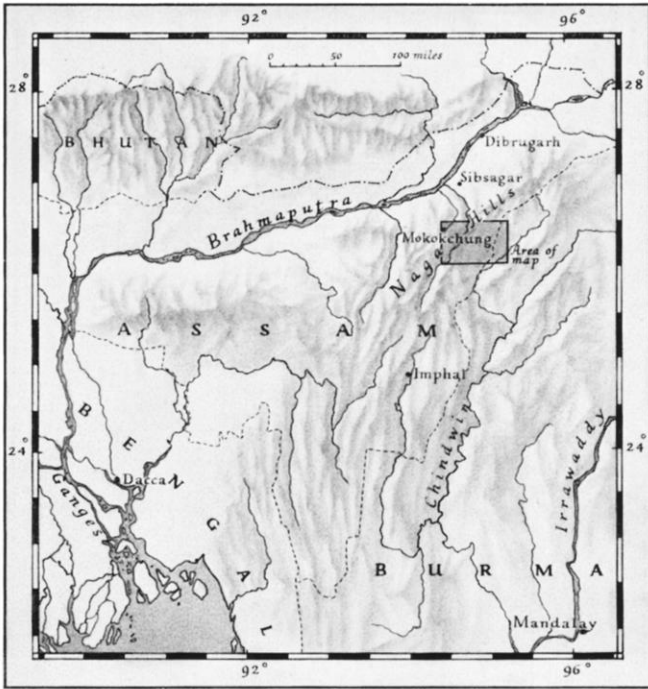
action. But in the summer of 1936 such grave news had come from the most eastern part of the Control Area that active intervention was unavoidable. Two small villages, Saochu of the southern Konyaks and Kejok, a small Chang settlement, both about six days' march from British territory, had been treacherously and completely wiped out by Kalyo Kengyu Nagas from the western slopes of the Patkoi. The raiders had taken one hundred and fifty heads and carried off several of the inhabitants, mainly children.

To stop the continual raids of the Kalyo Kengyus into the Control Area, and, if possible, to liberate the recently captured prisoners, was the official aim of Mr. Mills' expedition. As the chance of convincing the raiders, by mere persuasion, of the wickedness of attacking peaceful neighbours was very remote, a strong escort had to accompany us. Two and a half platoons of the Assam Rifles under the command of Major Williams gave to the expedition the necessary weight and security. To carry rations and kit there accompanied us 360 coolies under G. W. J. Smith, Subdivisional Officer at Mokokchung. The coolies were all Nagas from administered territory who, after years of enforced peace, readily volunteered for so exciting an adventure. They carried spears, shields and *daos*, the indispensable axe, weapon and universal instrument of the Naga.

Travelling in the Naga Hills during the rains, which last from April to the end of September, is most unpleasant and can become extremely difficult when one leaves administered territory, for the rainfall of 30 inches a month swells the mountain streams and by removing the frail bamboo bridges hostile tribes can easily prevent an entrance into their country. Thus it was considered inadvisable that the expedition should start until the beginning of the dry season and it was early in November before we left Mokokchung, one of the administrative centres of the Naga Hills. The first night we camped at Chare, a Sangtam village recently taken under administration. The next day we crossed the Chimei river, which forms the frontier of British India. The country of the northern Sangtams, through which we moved for several days, was perfectly peaceful. Even here, so near to administered territory, we came upon villages, Holongba for instance, never previously visited.

Compared with most other Naga villages, those of the Sangtams make a poor and rather miserable impression. Some of them outwardly resemble Ao villages, while others show a type of house with high protruding gables. The material culture of the Sangtams seems to contain little which is peculiar to them. One of the few interesting features are the wooden Y-posts, which are erected in the course of mithan sacrifices. We were struck by the general lethargy of the inhabitants and the high percentage of imbeciles, while in some villages almost every second person suffered from goitre.

Chongtore was the last Sangtam village at which we camped. From there our way led up to Mount Helipong, 7280 feet above sea-level, one of the landmarks of that part of the country. Its higher slopes are covered with virgin forest, quite different in character from the woods in the lower regions. Wild bananas and ordinary bamboos do not grow in these heights, but only a certain thin thorny bamboo which stands the cold. Enormous trees, stretching their gnarled branches against the sky, and an impenetrable undergrowth show that these slopes have never been cultivated. Yet on the top of the



The Naga Hills



The Konyak Naga village of Wanching



Bachelors' hall (morung) of the Konyak Nagas

mountain, open to all storms, the houses of a small village cling to bare rocks. The inhabitants belong to the powerful tribe of the Chang Nagas and the village was built as an outpost against the Sangtams. No other reason could have induced people to live in such a cold, inhospitable spot. Strangely enough they have not adapted their dress to the climate in which they live and while we shivered in our warm clothes, the villagers walked about, apparently quite comfortable in the icy wind, with little more than loin cloths round their hips. Their fields, on which only millet and the hardy Job's tears can be grown, are on the lower slopes deep down below the forest, and all the grain has to be carried up on their backs.

Though rendered more or less safe from raids by their splendid strategical position, the men of Helipong are too weak to attack. They are glad therefore if their more powerful tribesmen of lower and more fertile ridges occasionally send them a share of their spoils of war. Chentang, another Chang village, had recently killed an enemy while repulsing an attack of the Yimsungr village of Sangpurr. Cutting off one hand, they sent it to Helipong as a complimentary gift, where we found it hanging from a tall bamboo pole.

The view from Mount Helipong, over an immense mountain country, was magnificent. We overlooked the land of the Lhotas and Aos as far as the distant hills of the Konyaks. The country of the Changs and Sangtams lay at our feet and in the east we saw the mountains, the slopes of which we later found to be inhabited by Kalyo Kengyus. From here the Patkoi range with Mount Saramati (12,622 feet) was clearly visible. Helipong is on the watershed between the Brahmaputra and the Chindwin. The rivers to the east belong to the basin of the Irrawaddy; following them one would, should one not lose one's head *en route*, come to Burma. During the following days we continued to march eastward, at almost right angles to the numerous mountain ranges running parallel with the Patkoi range. Since all Naga villages are built on top of ridges or spurs, and since it is more convenient to camp near a village, our daily routine consisted in dropping into the deep valley and climbing up again several thousand feet on the other side.

After several days' march we at last approached the scene of those events which had led to our expedition. We built a base camp at the village Chingmei on the border of the Chang country and the Kalyo Kengyus, fortifying it with a strong palisade of sharp pointed stakes and bamboos. The intelligent and energetic chief, Chingmak, welcomed us enthusiastically and was in the future of the greatest help. He acted as intermediary when Mr. Mills negotiated with the neighbouring villages, and when we finally marched against Pangsha his men acted as our scouts and guides.

The Chang warriors of Chingmei are the finest looking Nagas I have seen; none are of better physique or are more picturesque. High hornbill feathers quiver on their red, conical cane head-dress, which is covered with bear's skin and large boar's tusks. A blue cotton cloth embroidered with cowrie shells is wound round their body and their broad belts are decorated with small white seed beads. In a wooden sheath on their back, forming part of the belt, they wear the long sword-like dao. A small apron, often also decorated with cowries, hangs down from the belt. Apart from the dao the warriors

carry long spears, the shafts of which are tufted with red goat's hair; a heavy shield of buffalo hide completes the war-dress. The dress of the women is much simpler and consists only of a dark blue skirt and a cloth, sometimes embroidered with red dog's hair. White shells are the most common ornaments.

Chingmei is a large village, heavily fortified and built in typical Chang style. The steeply sloping house-roofs rise from just above the ground at the back to about 30 feet in front, and protrude so much that it is often necessary for posts to support the long gables. In narrow streets the roofs of opposite houses very often dovetail and the space before the houses is completely overshadowed. Particularly high are the roofs of the men's houses containing the huge log-drums. Large collections of skulls which hung on strings at the main posts of these men's houses showed that Chingmei has not always been as peaceful as it seemed during our visit. Mithan and buffalo horns were attached to many of the skulls; the underlying idea of this custom is not quite clear, though it is a frequent combination in the Naga Hills. A possible explanation might be found in the character of buffalo horns as fertility symbols; as such they seem appropriate ornaments of head-hunting trophies, which are believed to promote in a magical way the fertility of the crops. In one men's house we were shown with pride the skull of a Kalyo Kengyu of Panso village, who had personally taken fifty heads.

In the centre of the village we saw a strange funeral monument: a huge crescent of plaited bamboo, representing a rainbow, was erected on poles. Along the monument stood wooden posts, some of them Y-posts, as tallies of the mithan and buffalo sacrifices the deceased had performed.

We heard from the Chingmei people that Pangsha, a powerful Kalyo Kengyu village, the exact position of which they did not know, was responsible for the burning of Saochu and Kejok and the massacre of their inhabitants. As news travels fast in the Naga Hills the men of Pangsha were well aware of our coming. Through neutral villages they sent us challenges to come and fight them, saying that they would on no account consider giving up any of their prisoners: they called us a crowd of women against whom they would not bother even to use their spears and daos, their wives' wooden pestles being good enough to beat us off with. But in spite of their boasting messages they apparently became uneasy when they heard that we really intended to attack them. They sent us therefore through intermediaries three of the captives whom they had taken at Saochu and Kejok: one young woman and two children. I have never seen three more miserable creatures. Since their capture they had been dragged from one hostile village to the other, aware all the time of the terrible fate awaiting them. The stories of prisoners of war, who are beheaded at the great Feasts of Merit or sacrificed at the building of a new bachelors' hall, are only too well known in those hills.

As, according to our information, there remained at least one other girl still in the hands of the Pangsha men, their attempts to buy us off did not deter Mr. Mills from his plan. He was determined to march against Pangsha and liberate the remaining captives. However we had first to deal with one of Pangsha's allies, Yimpang, a village on a ridge in sight of our camp. The men of this village still held a captured boy from Saochu. With the help of



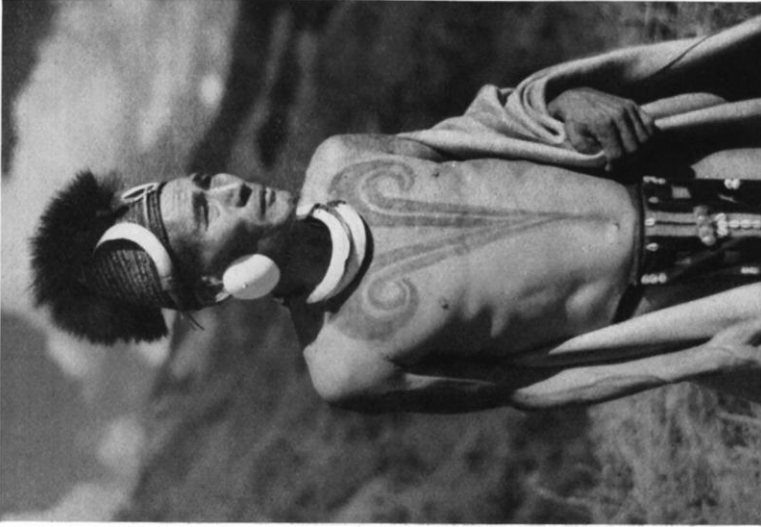
Naga carriers crossing a river



Konyak Naga bridge of suspended cane



Chang girl from Tuensang



*Chingmak, chief of the Chang village of
Chingmei*

the chief of Chingmei we succeeded in impressing on Yimpang the necessity of giving up their prisoner and letting us enter their village in peace.

Yimpang lies 6860 feet above sea-level and is inhabited by a mixed population of Kalyo Kengyus, Changs and Yimsungr. Yet the style of the houses is the same as in the villages of unmixed Chang population. The Yimpang people differ from the Changs however in their manner of treating captured heads, and follow the custom which we were to meet again in the pure Kalyo Kengyu village of Panso. The head-tree, an *Erythrina*, stood in the centre of the village. Long bamboo poles had been leant against this tree and from their tops hung numerous heads. Large wooden horns and a small carved board, representing a hornbill feather, had been attached to some of the heads. Bamboo spikes had been stuck in the eye sockets; thus the victors intended to blind, in a magical way, the souls of their victims so that they should be unable to take their revenge. The hair of the Saochu men, who wear it long in Konyak fashion, had been removed, together with the scalps, for human hair is valuable and is used for many ornaments. Though our reception in Yimpang was anything but friendly, the visit passed without incident.

Two days later we marched off towards Pangsha, the main objective of the expedition. We left the majority of our coolies and all dispensable luggage at the base camp at Chingmei. As guide we were fortunate to secure a certain Yimpang man, who nursed a personal grievance against Pangsha. Neither Chingmak nor any other Chingmei man had ever before risked his life by such an excursion, which illustrates how Nagas often live a life-time in their own villages without ever seeing parts of the country in their immediate neighbourhood. Our maps, which until then had served as rough guide, were of no more use in the area east of Chingmei, for no survey party had ever penetrated into that country. We knew however from the Chingmei men that another large Kalyo Kengyu village, Noklak, lay on the path to Pangsha. As Noklak had been at war with Chingmei for some time, the path which runs along a steep hill-side was completely overgrown. With infinite trouble we had to cut our way through the jungle, and we had soon ample proof that we no longer moved in friendly country, for the path was thickly set with *panjis*, sharp bamboo spikes which Nagas stick into the ground for the benefit of the feet and legs of the unwary enemy. These *panjis* are almost invisible in the grass and before long three of our men had fallen victims. A Chingmei man, accompanying us as a scout, had his foot pierced right through, but taking little notice of the wound he happily continued.

A great crowd of warriors in full dress awaited us near the village of Noklak. After long shouting to and fro we arrived at a peaceful understanding and were told that Noklak dared not offend Pangsha by giving us easy passage and had therefore blocked our way with *panjis*. Noklak was the first Kalyo Kengyu village we had seen, and the great difference between it and the Chang villages struck me immediately. Never before have I seen a clearer ethnographic boundary than here between Kalyo Kengyus and Changs. Environment, climate, supplies of materials are much the same in Chingmei and Noklak, and yet the two villages, only a few miles apart, are as different as Naga villages can be. Noklak justifies the name of the Kalyo Kengyus, meaning "stonehouse dwellers." The small low houses are roofed with

slates, but a thin layer of palm leaves lies on top of the slates. The roofs are flatter than those in any other Naga village.

It is understandable that these slate roofs were considered strange and curious by all the neighbouring tribes, for the use of stone for slating houses is restricted to the Kalyo Kengyus and a few villages of the southern Sangtams. It is not recorded from any other hill people in Assam or Burma. No wonder the slate roofs of the mysterious Kalyo Kengyus should spread the fame of a tribe of whom little else was known, and it is this fact which has raised the interest of anthropologists in this remarkable people. The expectation that the Kalyo Kengyus would differ in more than this one way from the better-known Nagas was fulfilled by all we saw in Noklak and in other of their villages. One of the most outstanding features of Kalyo Kengyu culture is the enormous xylophones, made of hollowed trees. Inside such a log-drum, which has no slit along the top but is open at both ends, a man can sit with comfort. No other Naga tribe makes xylophones of exactly the same type, but I have seen a log-drum open at both ends in the Yimsungr village of Sangpurr. The chest tattoo of the Kalyo Kengyu men of Noklak is richer than that of the Changs and consists of curved lines, small circles, and conventionalized figures.

The defences of the village are excellent: sentry-boxes high up in the trees, accessible by bamboo ladders from within the wall, overlook the country around. One enters by a narrow, roofed gangway, leading through a living wall of impenetrable creepers and prickly shrubs. Only towards Pangsha, with which Noklak lives at peace, defences were almost lacking.

From Noklak we looked down into the valley of the Langnyu river, which flows southward through unknown country, evidently joining the Zungki and Tizu later, and finally, as the river Tiho, flowing into the Chindwin. After camping a night at Noklak, we proceeded cautiously on our way to Pangsha. Our path lay along the slopes on the western bank of the Langnyu, and across it to the east the hills swept magnificently up to the main range of the Patkoi, beyond which lay Burma. When ultimately the whole of the hills are surveyed the boundary between Assam and Burma will probably run along this range. Its highest peaks must be well over 10,000 feet, for according to our rough estimate we moved at a height of at least 6000 feet above sea-level.

At last, on one of the far slopes, Pangsha came in sight. It consists of two separate settlements some 3 miles apart. Peacefully it seemed to lie above golden fields; and no one, seeing the scattered houses, the roofs shining in the sunlight, would have believed that the inhabitants of this inoffensive village terrorized the whole country. We had been warned by the Yimpang man, Pangsha's former ally, of their plan to lead us into an ambush, by meeting us with a present and thereby putting us off our guard. True enough, for it was not long before we saw a small party approaching conspicuously leading a goat. But at the same time our field-glasses picked out masses of armed men crossing the river below us and disappearing into the jungle where our path would lead down into the valley. The envoys with the goat attempted to greet us as friends, but declared falsely that they could not produce the girl, whom we knew by this time to be in Pangsha's hands. Thereupon Mr. Mills sent them back and thus formally declared war. In order to avoid the ambush,

we cut our way straight down into the valley and camped by the river for the night. We expected to receive a few of Pangsha's famous poisoned cross-bow arrows in the camp, but there was no incident. A scratch from one of these arrows is fatal in a few minutes. Though the same poison is sometimes used by the Changs, we were unable to identify it. All we heard is that it is made of the juice of a certain tree, but it seems that however far one goes into the hills it is said to grow yet further on. Experiments undertaken with samples in a Calcutta laboratory proved that it is a still unknown and potent vegetable poison which paralyses the respiratory organs.

On approaching the main village of Pangsha the next morning we were surprised that there should be no resistance. The inhabitants had removed all their moveable property and were in hiding in the jungle.

While other Naga villages are heavily fortified, Pangsha had no defences. Its incomparable prestige rendered it immune from all aggression so that fortifications appeared superfluous. Therefore the houses stood, not crowded together as in other villages, but loosely scattered between kitchen gardens and banana trees. They are however low and rather miserable looking bamboo buildings. Only the bachelors' halls are better built, having strong carved posts and protruding roofs rising towards the front. The granaries stand apart and are built on low piles. Flat discs slipped over the piles, in the same manner as in the Konyak and Chang villages, prevent the rats from getting into the granaries. On the head tree, which overshadowed one of the large log-drums, hung thick bundles of human heads, some with skin and hair still well preserved.

In their hurried retreat the Pangsha people had been unable to evacuate all their domestic animals. Cattle, goats, pigs, and chickens ran about the deserted village. I was surprised to find here Indian cattle, which are otherwise only kept by those Nagas who live near the plains of Assam. I can only suppose that the Pangsha had bought them from Burma. They also keep mithan (*bos frontalis*) and buffaloes in a semi-wild state; some of the former we had seen the day before on the open slopes above the river. Like other Nagas the Kalyo Kengyus use mithan, buffaloes, and cattle solely as meat and as sacrificial animals. We heard that mithan sacrifices are performed in the course of Feasts of Merit, but in no Kalyo Kengyu village did I see the forked posts or monoliths which among other tribes are invariably erected at such ceremonies. As the inhabitants had fled taking with them the captive child there was nothing to be done but to burn the village. The flames sprang from roof to roof, and soon the invincible village was one blazing mass of fire. Clouds of smoke covered the sky and the light of the sun turned to an unreal and ghastly violet.

But the task of the expedition was not yet finished. The next day the coolies and half of our escort were sent ahead, back towards Chingmei; and with fifty rifles, we ourselves went up to burn the smaller settlement of Pangsha. Again we found the inhabitants had fled, and soon the village stood in flames. Here also many heads hung from a tree and among them the leg of a child, not more than three years old. I decided to take some of these heads back with me as anthropological specimens, but though we found a convenient basket in which to carry them none of the Nagas in our company volunteered

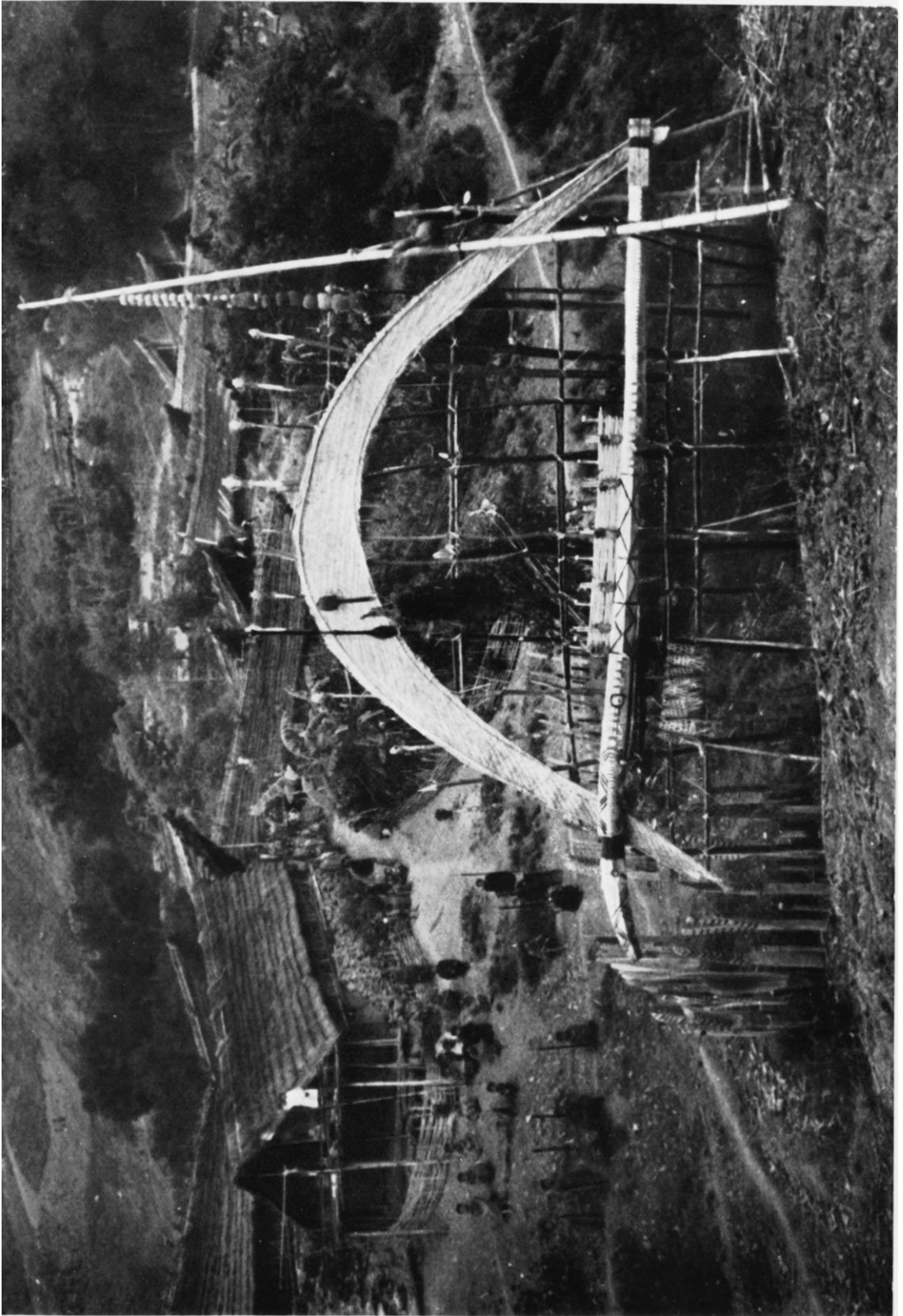
to carry the heads. Thus I had, to the amusement of the Nagas and the surprise of the sepoys, to take the basket on my own shoulders.

Our way down led through fields of giant millet, 10 feet high. We had only gone a few hundred yards, when we saw a stream of armed men coming from the main village. Though carrying spears and shields they ran with incredible speed and it was immediately clear to us that they meant to cut us off and, we feared, wipe us out. They outnumbered us ten to one, they knew the country, and had never known defeat. Our only chance was to seize some position where range would help us; for the giant millet was easy to charge through and yet effective cover from our rifles, and thus the enemy would be on us before we could have seen them properly. We hurried down the slope as fast as we could and just succeeded in getting between the attackers and the river. But the Pangsha men were close on our heels and with a hoarse roar from hundreds of throats, which none of us will ever forget, they came rushing behind us down the slope. Even then we were unable to see them and the warcries rose to a frightening noise; just then our advance guard reached a knoll where they made a stand. Rifles cracked, and bullets whistled as they fired over our heads at the enemy close behind, but invisible to us. Fortunately five Pangsha men dropped to the ground, and this checked the attack at the very last minute. We were saved, for though they followed us roaring and shouting down to the river, the first determined attack was not repeated. Through all the fight I had carried the head trophies and I proudly brought them into camp when we rejoined the rest of the column some hours later.

Mr. Mills, familiar with Naga mentality for twenty years, was convinced that in spite of our rapid retreat, Pangsha would take the loss of five of their best warriors and the burning of the village as a shattering defeat. He sent word therefore through men of another village to Pangsha that he was ready to talk things over with them and would guarantee the security of any negotiators. To my great surprise a deputation came to our base camp at Chingmei two days later. It was an amazing scene. Men who had attacked us, with no intention of quarter, were soon talking quite amicably about the incidents of the fight and discussing terms for an understanding. They accepted Mr. Mills's terms and promised to give up the girl, whom they still held. Peace was solemnly sworn and a few days later the girl, a child of four years, was duly brought to our camp.

A few men from Ponyo, a village on the Burma side of the Patkoi, had come in the company of the Pangsha envoys. Curiosity to see the mysterious white men must have attracted them. Their language is said to be entirely different from the dialects of Pangsha and Noklak. They are richly tattooed on the breast, back, arms, and legs, and wear the hair long, tied up in a knot in the way of the Konyaks. They have apparently little in common with the Kalyo Kengyu and may belong to the southern group of the Konyaks. If that is so, it would be evident that, apart from some fifty thousand Konyaks on the Assam side of the Patkoi, there are also Konyak villages on the Burma side.

In the course of the remainder of our tour we visited the Kalyo Kengyu villages Yukao and Panso, which lie south of Noklak on the hills lining the Langnyu river. The country round is extremely poor in forest and jungle. Only single alders (*aldus nepalensis*), a few bamboo clumps, and some scattered



Funeral monument in Ching mei, consisting of a bamboo crescent and a row of forked posts



Main range of the Patkoi, on the slope of which lies Pangsha



Houses in the Chang village of Tuensang

bushes stand on wide open slopes. It is clear that the country has been cultivated to the point of exhaustion. Rice does not grow well in those heights, and its place as the staple diet is therefore taken by the more resistant Job's tears; early in December the reaping had not yet been finished. Millet and maize are also grown and even small quantities of rice on particularly favourable spots. The cultivation of maize, not introduced into India before the middle of the seventeenth century, shows that the seclusion even of these tribes has by no means been complete.

In Panso, where we were received with friendliness, I had at last an opportunity of collecting some information on the social life of the Kalyo Kengyus. The main settlement of Panso is divided into two *khels* or quarters, separated by a narrow corridor. Each of the two *khels* is fortified against the other by a strong palisade which runs along the corridor. Sentry-boxes in trees guard this inner line of fortification. It seems that civil war is not an uncommon occurrence, but in contrast to more civilized nations the men of Panso have wisely invented special weapons for these internal quarrels. They are in the habit of using for these fights, wooden swords instead of their iron daos, protecting their heads by huge plaited helmets lined with pieces of old cloth. So armed, even the fiercest rivals cannot seriously harm each other and superfluous energies find outlet without upsetting the community.

There is no hereditary chief in Panso, nor in any of the other Kalyo Kengyu villages which we came to know. They are all organized on democratic lines, men excelling in war or wealth acting as leaders. In Panso however there is a certain man who acts at magical and religious ceremonies, whose dignity is hereditary in his clan. He functions at all rites connected with head-hunting, and after the heads have hung long enough on bamboo poles they are brought to his house and kept there until his death; they are then thrown away and his successor must start anew his own collection. There are three exogamous clans in Panso. While polygamy is frequent among the Changs, the Kalyo Kengyus are strictly monogamous. They pay no bride-price and marriages are therefore not very stable; it is said that the women run away from their husbands on the slightest provocation. Like the Konyak and Ao Nagas, the Kalyo Kengyus of Panso and Noklok place their dead on platforms. This is the most southern example of platform burial known in the Naga Hills.

The people of Panso, having only recently lost ten heads to Pangsha, were so pleased with the burning of their enemies' village that they arranged a great dance in our honour. The ceremonial dress of the men is very like that of the Changs. The cane hats are decorated with goat's hair dyed red, hornbill feathers, boar's tusks, and mithan horns; and a cheek strap set with tiger's claws holds the hat in place. Strong cane rings protect the right upper arm against dao blows and leggings of bear's skin the legs against panjis. The long daos are carried in a wooden sheath on the back.

On our return journey we passed through the Yimsungr village of Sangpurr. There I saw several wooden forked posts which are erected on the occasion of mithan sacrifices. Similar sacrificial posts in Y-form are set up by Semas, Aos, Sangtams, and Changs, but strangely enough they are absent in the Kalyo Kengyu villages though Feasts of Merit are also held there. The

Yimsungr outwardly resemble the Changs, but nothing is known of their social organization. Among them as well as among the Kalyo Kengyu much work is still to be done.

We returned to administered territory by way of Tuensang and Longtang, a route north of that by which we had come. The Chang and Sangtam villages through which we passed, though by no means well known, have been visited before and they have been partly described by Prof. J. H. Hutton in his "Diaries of two tours in the unadministered area east of the Naga Hills" (*Memoirs of the Asiatic Society of Bengal*, vol. XI, 1929).

After returning to Mokokchung, the starting place of the expedition, I parted from Mr. Mills and went back alone to the Konyak country. The news of Pangsha's defeat had already spread over the hills and soon it became known that I was bringing with me human heads. My Konyak friends, who to their great distress are no longer permitted to go on head-hunting raids, jumped at once at the opportunity of procuring some heads, for the manner in which they are acquired is irrelevant. In any case the ceremonies may be performed, and the magical power attached to the head benefits the whole of the community and increases the fertility of the crops. As I approached the Konyak land therefore the Konyaks of Wakching, with whom I had lived for four months, and those of several neighbouring villages came to meet me; they besought me to hand over the heads from Pangsha. Since I had looted them from the same hostile village, some inhabitants of which were subsequently killed in open fight, they could be considered perfectly good head-hunting trophies.

Since in handing over the heads I gained the opportunity of taking part in head-hunting ceremonies that no white man had ever watched, I did not hesitate to fulfil the wishes of the Konyak men. The heads were cut up and the pieces distributed among all administered villages; my personal friends from Wakching received extra privileged shares and it was then that I learned how differently the various parts of head are valued. The jaws and the parts round the eyes are the most prized; the back of the head is considered much less precious.

When the Wakching men arrived at their village they placed the pieces of the enemies' heads at the threshold of the gate and the oldest man of each of the clans that had received a share of the heads performed an important ceremony. He first took a raw egg and smashed it against the head; then he poured rice-beer over the head saying in a low voice: "May your mother come, may your father come; may your brothers come; may all come to drink our rice-beer, to eat our rice, to eat our meat, may they come!" The smashing of the egg is intended to blind—by sympathetic magic—the victim's relatives. It is a custom never omitted in ceremonies of this kind and the people of villages never buy or accept, even as presents, eggs from a village they have once been at war with, for they say that they could not accept from their former enemies eggs so like those thrown into the eyes of their own relatives whose heads had been taken. The feeding of the skull, another widespread custom, is intended to compel the soul of the victim to call all his relations so that they too may be killed and their heads brought to the





Bachelors' hall in the Kalyo Kengyu village of Pangsha



Log-drum in Pangsha

village. This rite was performed independently by the clan elders, representing each men's house. For in the case of a head actually being captured, the raid has usually been undertaken by men from only one or two *morungs* (men's houses) and members of these morungs only take part in the subsequent ceremonies. But I had distributed parts of the heads to all the morungs and so the whole village celebrated the event.

Every morung formed a procession, headed by the oldest warrior carrying the trophy, and the processions solemnly marched through the village. First they moved to the house of the chief. The chief himself does not take any particular part in these ceremonies, but the men danced in front of his house for a while and then each group rushed off to their own club-house. Here the girls, in accordance with an old custom, brought them water with which the warriors "washed off the blood of their enemies." The basket containing the head was then fastened to the end of the enormous log-drum and the young men started immediately to beat on it in the peculiar rhythm which announces the capture of a head to all the villages in the neighbourhood.

Later in the evening the head was removed and hung up on the large central post of the men's house. It was then the turn of the girls and young women to beat the drum, while the men and boys danced inside the morung. The old people sat chatting and drinking in the open porch; even the women being admitted that night. There were tears in many eyes as they watched the roaring and dancing crowds that revived the happy memories of their own youth.

The next morning found the whole village busy with preparations for the great head-taking dance. It was many years since Wakching had celebrated such an event and the young men proudly put on the ornaments of warriors for the first time. They sat about on the open bamboo platforms of their houses arranging the hornbill feathers for their hats and brushing the tassels of human hair which hang down from their head-dress. They painted each other's backs and their own faces with chalk and drew designs on their bark belts with indigo. For the first time they were entitled to put on the boar's tusks worn as neck-ornaments, ivory arm rings, and cane rings worn below the knees. Later in the day the men of each of the five morungs killed a pig and prepared the meat for the feast, which was to be held that night.

Once more a procession was formed outside each of the morungs and the younger men proceeded to the chief's house carrying fully leaved bamboos; they were followed by the old men carrying the head and models of heads made of cane with mithan horns attached. In front of the chief's house stands a small monolith, before which lies a flat stone. There a man, who is a descendant of the village founder and who acts on such occasions, is supposed to cut off the tongue and the ears of the head and bury them under the flat stone. There were no tongues and ears left on the heads I had given to the Wakching, but the rite was carried out with the existing requisites as well as it was possible. The descendant of the village founder killed a chicken and repeated the spell by which the relatives of the victim are supposed to be compelled to share his fate. This ceremony performed, the rest of the day was spent in dancing and singing.

Finally the men of each morung placed their piece of head in a carrying

basket and hung it up on a ficus tree close to their morung. In the case of a fresh head it hangs there until the flesh has rotted away.

The next weeks were filled with the preparations for the final ceremonies and feasts. Many of the ornaments to which the young Wakching men were now entitled had to be made or bought from other villages. An important part of a head-hunter's outfit is, for instance, the ceremonial spear, tufted with black and red goat's hair. These spears are not manufactured at Wakching, but only in some neighbouring villages to the east, such as Chi and Totok. The Wakching men had therefore to set out on trading expeditions in order to provide the necessary ornaments as well as the pigs for the coming feasts, and for these they bartered daos, brass rings, and other goods made in Wakching. In the meanwhile the women were busy in preparing the enormous quantities of rice-beer, which were required during the feast days.

On the fifth day of the new moon the final feasts began. For three days no one went to the fields and only that housework that was most necessary was done. Those who could afford it killed a pig and shared the pork with their less fortunate relatives and friends. The heads were then taken down from the trees near each morung where they had been hung up, and mithan horns were attached to them. The descendant of the village founder repeated the ceremony which had already been performed when the heads were brought in. Once again he fed them with rice and rice-beer, bidding them to call all their clansmen in order that they might be slain. It was after this that the dancing began. The men and boys in full ceremonial dress wore all the ornaments which they had bought and made in the last weeks. The oldest men carried the heads, in baskets decorated with tassels of palm leaves; they danced outside the circle of the other dancers, swinging the heads and singing in shrill voices of the glorious deeds of their morungs.

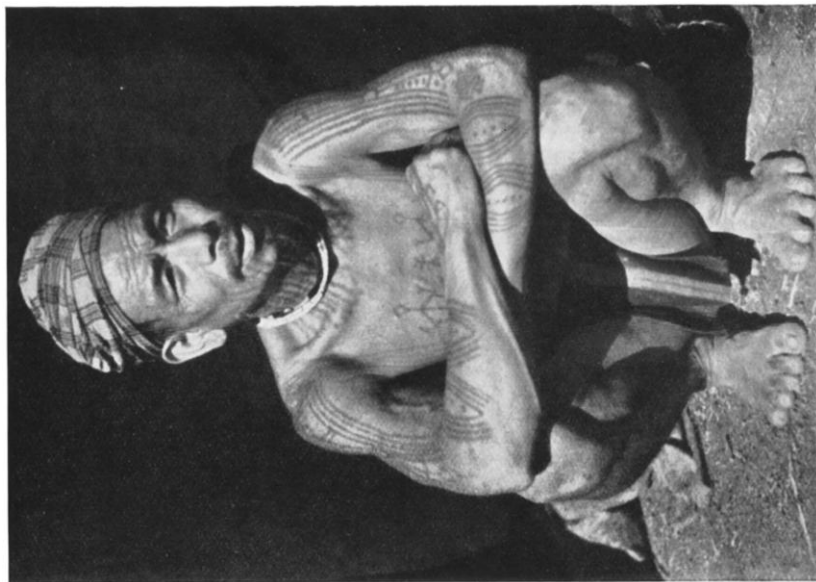
The feast lasted three days. Only then did the village life return to normal; but to a normal that nevertheless differed from the time before the heads were brought in. The young men continued of course to wear some of the ornaments to which the recent ceremonies had entitled them. There was dancing on every possible occasion and even the work in the fields was accompanied by songs. In other years the gangs of boys and young men must work silently, but after a head has been taken their songs may be heard from every slope. They danced and shouted on their way to the fields, where they cut and burnt the jungle, and even during the tedious work of weeding the rice-fields.

All the people of Wakching were convinced that this year, in which the heads have been brought in, would have a particularly good harvest, and when I left Wakching in June the promise of the crops seemed really better than they had been for many years. It is obvious that the bringing in of the head does not only provide an opportunity for feasting, a pleasant interruption in the monotonous life of a Naga village, but it exerts also a stimulating influence on the economics of the people.

The main result of my tour into the unadministered territory with J. P. Mills is the material which I was able to collect on the Kalyo Kengyu Nagas. Though necessarily incomplete and superficial, it allows for some comparison



Kalyo Kengyu Nagas of Pangsha meeting the column as negotiators



Native of Ponyo, a Naga village on the Burma side of the Patkoi range



Konyak Nagas during the headhunting dances, carrying pieces of the heads in a ball of cane adorned with mithan horns and tassels of palm leaves



Kalyo Kengyu Nagas from Panso in ceremonial dress

with other tribes and fills a gap in our knowledge of Naga culture. We now know that the Kalyo Kengyus, in spite of numerous interesting cultural peculiarities, do not differ completely from the other eastern Naga tribes. It has become evident that there are two main cultural strata in the Naga Hills. The stratum undoubtedly the youngest is represented by the Angamis, the tribe bordering on Manipur. Rice cultivation on irrigated terraces is peculiar only to them, to the eastern Rengmas, and to some of the Nagas of Manipur. All other Nagas grow dry rice, knowing of no artificial irrigation; neither are rice terraces found among any other hill tribe of Assam. Moreover the Angamis have a highly developed megalithic culture; at their Feasts of Merit, menhirs are erected and stone circles built, while graves are often constructed in the form of stone platforms.

The erection of monoliths as memorials for Feasts of Merit is less frequent among the Lhotas, and unknown among the Sema, Aos, and Konyaks as well as among the Sangtams, Changs, Yimsungr, and Kalyo Kengyus. Among the Aos, Semas, Sangtams, Changs, and Yimsungr the stone memorials are replaced by wooden forked posts of Y-shape; in much the same way such Y-posts are used as substitutes for menhirs in the megalithic cultures of Africa, Indonesia, and Oceania. Yet it seems that only a last and rather weak wave of megalithic culture touched these eastern Naga tribes. The Konyaks erect stones during their head-hunting ceremonies, but not in connection with Feasts of Merit.

Common to all northern and eastern tribes is the shifting cultivation, a method of agriculture by which jungle is felled and burnt and the crop sown on ground only slightly dug over. While the staple crop of the Aos and Semas is rice, the Konyaks plant also a good deal of taro and the Changs, Yimsungr, and Kalyo Kengyus live mainly on Job's tears. It has been already mentioned that the cultivation of taro must be a cultural preference of the Konyaks, for their country is very suitable for rice. The prevalence of Job's tears among the latter tribes however is due to climatic reasons: the ranges on which they live are so high that rice does not grow well.

An element peculiar to the Konyaks, Aos, Sangtams, Changs, Yimsungr, and the Kalyo Kengyus is the enormous log-drums, which, not found among any other people of India or Burma, have their nearest parallels in Oceania. We are safe in saying that they belong to the oldest stratum of Naga culture. Apparently equally old are the men's houses (*morungs*) which remind us in their function and style of the men's house of New Guinea. They are absent in Angami and Sema villages and reach their most imposing form among the Konyaks.

Still a mystery is the origin of the slate roofs of the Kalyo Kengyus and of some of the southern Sangtams. We do not find slated houses anywhere else on the main land of south-eastern Asia, but some of the hill tribes of Formosa also cover their houses with slates. This parallel is all the more interesting as the head-hunting ceremonies of these tribes resemble, even in detail, those of the Nagas.

There is another element which appears to be very old in the Naga Hills: the custom of tattooing the face and body. It is practised among the Konyaks, Kalyo Kengyus, Changs, and Aos, but not by the Angamis, Lhotas, and

Semas. The most elaborate tattoo I have ever seen was that of the men of Ponyo, the neighbour-village of Pangsha.

These few examples may show that the oldest cultural types still surviving in the Naga Hills are found just among the less-known tribes to the east and north. There a great field lies open to the anthropologist. The work that has been done is very limited compared with the vast possibilities for research. In Africa and Oceania anthropologists work among peoples whose own culture is already partly destroyed and disintegrated by western influences, but in studying the Nagas of Assam no laborious reconstructions of old customs and beliefs are necessary. Most of them still live practically the same life as their ancestors, while many thousands of the northern and eastern Nagas have never seen a white man.

Thus we have the chance of studying the social and economic life of primitive tribes whose ancient culture is still flourishing. It is fortunate that a wise administration makes every effort to preserve native culture, thus sparing to the Nagas the sad fate that has befallen many other primitive races. Those who have been to the Naga Hills will agree that it is difficult to imagine a form of administration better suited to primitive peoples, and I am personally greatly indebted to the interest of the British authorities in native culture and anthropological research. My thanks are due particularly to Mr. J. P. Mills, whose continual assistance enabled me to work for thirteen months in a district otherwise closed to all travellers.

DISCUSSION

Before the paper the PRESIDENT (Professor HENRY BALFOUR) said: The lecturer to-night is Dr. von Furer-Haimendorf, a distinguished Austrian anthropologist who has recently spent a year making an intensive study of one of the most interesting tribes in the Naga Hills. During the course of his time there he was able to go with Mr. J. P. Mills on one of the unfortunately necessary punitive expeditions into a portion of the Hills never visited before by Europeans, and this portion of his tour was thus actually off the map. Dr. von Furer-Haimendorf has much of very great interest to tell us, and, in introducing him to you and asking him to deliver his lecture, I would like to extend to him a very cordial welcome.

Dr. von Furer-Haimendorf then read the paper printed above, and a discussion followed.

The PRESIDENT: We have with us to-night one who is the greatest authority on the Naga Hills in general. I am sure you would like to hear some remarks from Professor Hutton.

Prof. J. H. HUTTON: I have been watching a lot of old friends and many familiar scenes, and it has made me quite homesick. I feel rather unhappy too—"maya logicche" is the expression in the Naga Hills—because not only have I seen places I have been to often and ones I have visited occasionally, but Dr. von Furer-Haimendorf has been to the promised land that I was only able to look at from the Pisgah of Chingmei.

He mentioned the question of maize and millet. I rather think that millet is the oldest grain cultivated in that area. It has a distribution across to Formosa, and I believe it is grown all over the East. Maize probably dates within the last one hundred years in those hills; it was no doubt brought in by the British,

though it may have gone in earlier. In any case, I do not think we can allow much more than one hundred years to maize. Millet, of course, goes back for thousands of years. Rice came in as wet cultivation and is now cultivated dry. I think it probably came in with the terrace cultivation to which the lecturer referred.

He mentioned the poisoned arrows. I had some tested in Calcutta, and though they could not be certain the poison used was aconite, they reported that there was nothing to show it was not, and we know that aconite grows in those 8000-foot Naga Hills.

Dr. von Fürer-Haimendorf referred to platform burial, and we get curious cases of it farther south. Among the Angami, for instance, the particularly beloved daughter who has died young is not as a matter of course buried in the ground. Probably platform disposal of the dead has over that area been common at an earlier date and been superseded by burial in the ground.

As to the importance of the jaw and the tongue which Dr. von Fürer-Haimendorf mentioned as being buried under menhirs, yawning is associated by the Chang Nagas with the soul's dancing. They take it as meaning that the soul wants to get out; they believe the soul leaves the body during sleep and comes back through the nostrils, ears or mouth when the man awakes. I cannot help thinking that the particular importance attached to the lower jaw is associated with the tongue which, though a little member, is a very important one. There is a common superstition all over the world—I have met it elsewhere than in the Naga Hills and it is probably more widespread than we realize—that to cut the tongue causes loss of life. There again I think we have indication as to why the lower jaw is thought so important. It is not only in the Naga Hills that the lower jaw is separately disposed of. There is a similar custom among the Baganda in East Africa, where a chief, on his succession, has the lower jaw of his predecessor specially treated and put in a special shrine. In West Africa also the lower jaw is separated from the head and put by itself.

A word as to slate roofs, which are seen also in the southern Sangtam and in some of the Yimsungr villages, where slate is often used for roofs, these villages being very closely allied. In the Angami country a man who has completed his Feasts of Merit may roof his house with wooden shingles, cut like pieces of slate. I suspect if slate were available he would use it. The villages which use slate are those that can get it. There is a good deal, I think, in using the material which is available on the spot. I am not sure that the use of slate is so universal in those tribes that use it as to make one certain that there is a difference of culture. It is possibly, I suggest, an alternative method, depending on the availability of a material which is not everywhere found in the Naga Hills.

An interesting point raised by the lecturer concerned bride-price. Bride-price in the Naga Hills runs everywhere with cross-cousin marriages. The tribes that have no bride-price have no cross-cousin marriages. The cross-cousin marriage seems to have arisen by way of giving a bride as compensation for a bride received, instead of some other form of payment. Where there is no bride-price, no cross-cousin marriages are found, and there is a different pattern in social life.

Dr. von Fürer-Haimendorf spoke of the use of drums or xylophones, but I think "gong" a more satisfactory word. There is a good deal of evidence to suggest that the long gongs, which in most tribes take a form similar to that of dug-out canoes, have possibly started in the Pacific as canoes and survived in these villages, where no canoes are used, in the form of a canoe used as a gong. I think that suggests north-western migration from Melanesia.

The PRESIDENT: I think it can be said without any doubt whatever that we

have all enjoyed the lecture by Dr. von Fürer-Haimendorf. To me it has been a very great pleasure indeed, because it has recalled to my mind many scenes which I have actually looked upon. I made a long tour of some 800 miles or so through the Naga Hills many years ago in company with Prof. Hutton and Mr. Mills, and I never in all my life enjoyed a trip so much.

The lecturer has touched upon a number of points which confirm the very high interest which attaches to the culture of the Nagas. Although habitually one speaks of the Naga Hills as inhabited by the Nagas as a whole, there are considerable differentiations when you come to study the various tribes, and even divisions of tribes. It is to be hoped that in the long run the various divisions of the Nagas will be studied intensively, and that eventually there will be material for a comparison of the different cultures involved.

The matter is one of geographical interest also. In many places the Nagas show links with very far distant areas. Prof. Hutton has spoken of many of them, and he has pointed out how it is possible to link up unmistakably cultures so far distant as those in the Naga Hills on the one hand with those right away east to New Guinea on the other; and also away in Melanesia one finds numbers of most striking resemblances. If there were only a few they might be called fortuitous, but they are so numerous now that one has been able to track a number of them along a chain-like route of dispersal, and the culture-linkage becomes a certainty. But up to the present it has not been easy to disentangle the ethnological make-up of the Naga Hills. There are indications here and there, mentioned by the lecturer, of tribes which appear to have been early immigrants into the region, as compared with the Angami and some of the others, who appear to have arrived later and to have brought different culture-elements with them.

The punitive expedition which was conducted so ably by Mr. Mills was most successful in its results, with very little bloodshed; and it brought out some of the qualities which one cannot help noticing amongst the Nagas—notably their emotionalism, which makes them very ready to be stirred up, but equally ready to calm down and discuss matters quite amicably. They will be foaming, literally, at the mouth at one moment and perfectly agreeable, or at least with a sardonic grin on their faces, the next.

Much has been said with regard to the stone-roofed houses, and during the lecture I also was reminded of the fact that Prof. Hutton mentioned—namely that the stone roof is not entirely restricted to the Kalyo Kengyu area. I remember seeing some few stone-roofed houses in the villages of Phozami and Puchimi, which are southern Sangtam villages. And I remember in the eastern Angami region, in Mezalozumi, seeing instances of wooden imitations of stone-roofed houses, which seemed again to suggest a still further dispersal of the idea into a region where the stone slats were not to be found otherwise. I concluded at the time that this was due to the influence of Kalyo Kengyu culture on some of the neighbouring tribes, but it may be largely due to the fact, as Prof. Hutton has suggested, that the distribution of the materials is an important factor in the matter. In connection with stone-roofed houses there is also the curious fact that in the village of Karami, now called Laruri, which is one of the southern Kalyo Kengyu villages, as far as I remember there was not a single stone-roofed house in the whole village. All the houses were thatched. Although the stone roof still is chiefly characteristic of the Kalyo Kengyus it is not universal in all their villages.

Dr. von Fürer-Haimendorf was able to live with the Konyaks for the best part of a year. I am very glad indeed that he has done so and that he has been able to make an intensive study of their culture. When I was touring the Naga

Hills I saw a certain amount of the Konyaks in some of their villages, and it struck me then that they were one of the tribes best worth studying. Now that Dr. von Furer-Haimendorf has made a most careful study of their general culture, we look forward to another volume being added to the series which was initiated by Prof. Hutton, and which will provide us with the sixth monograph on one of the Naga tribes. It may now be said that the Naga Hills massif is possibly one of the best documented regions in the world, and the study of the customs of the tribes is of the greatest benefit to an administration.

I should like, before closing, to mention a last point which struck me in Dr. von Furer-Haimendorf's paper. He referred to the village of Ponyo which, although in the Kalyo Kengyu area, presents a culture which is obviously not Kalyo Kengyu but seems to belong to the Konyak group. It is one of the instances of small sections of tribes having been cut off from the main mass of their tribe and thus become isolated. There are other instances, notably the village of Swemi, where there is a similar cut-off of a small section of the Sema people. They have been separated from the main mass of the tribe and cut off as a village surrounded by Angami. Also one can recall a somewhat similar instance which has caused a split in the Rengma tribe and kept separate the western members from the eastern members. This cutting off of a section of a tribe is not an infrequent occurrence. It is liable to happen owing to various movements which have taken place within the area.

I am quite sure that you would wish to join with me in thanking Dr. von Furer-Haimendorf for an extremely interesting lecture, and also in congratulating him, and especially Mr. Mills, on the success of the expedition which carried them into the unadministered and unknown area. It is hoped that eventually, as a result of this punitive expedition, more or less friendly relations will be established which will enable the Kalyo Kengyus also to be studied intensively.

THE SHAKSGAM EXPEDITION, 1937

ERIC SHIPTON

Evening Meeting of the Society, 10 January 1938

THE main object of the expedition to be described in this paper was the exploration and survey of the unexplored country in the vicinity of the Shaksgam river, which is situated somewhere on the undemarcated frontiers of Ladakh, Hunza, and Sinkiang. Our principal interests lay firstly in the large unknown region of high mountain country which lies north of the main Asiatic watershed, between the Sarpo Laggo valley, and the Shimshal pass, and bounded on the north-east by the Shaksgam (about 1000 square miles in area); secondly, in the glacier system lying to the north and north-west of K²; thirdly, in the portion of the Aghil range, west of that explored by Professor Mason in 1926. The two outstanding problems of this last area were the exploration of the lower reaches of the river discovered by Mason and named by him "Zug Shaksgam," and the discovery of its outlet; and the fixing of the geographical position of the Aghil pass. This being the fiftieth anniversary of Sir Francis Younghusband's journey across Asia we had an added incentive to visit this famous pass.

When, in September 1936, I obtained permission from the Government of India to undertake this project, I had intended that the party should consist of Tilman and myself with two Indian surveyors to work near our base and form a nucleus of accurate work to which we could attach our long, less detailed traverses. But on closer examination of the problem involved, I decided instead to invite Michael Spender to undertake the work of this detailed survey. Fortunately he was able to accept. The Survey of India most kindly contributed to the funds of the expedition. I also asked J. B. Auden, of the Geological Survey of India, to accompany the party, to assist in the exploratory work and to carry out as much geological investigation as he could. Seven Sherpa porters were recruited from Darjeeling, and owing to generous contribution to the funds of the expedition, we were able to engage for permanent employment four men from Baltistan. Apart from coolies employed temporarily as far as our base in the Sarpo Laggo, this completed the personnel of the party.

The next thing to be decided was how to tackle the problem of getting to the Shaksgam. Apart from attempting to reach it from China, three alternatives were open to us: firstly, to cross from the Karakoram pass to the head waters of the Shaksgam, and make our way down over the difficult glacier trunks which had defeated Mason's party in 1926; secondly, to cross the Shimshal pass early in the spring, and force a route up the lower gorge of the Shaksgam before the river became too high; and thirdly, to cross the main Karakoram range from the Baltoro glacier. The first two alternatives would probably have involved considerable difficulties with the river even early in the year, and would have rendered us liable to be cut off by the summer floods until late in the autumn. Besides which, the journey either to the Shimshal or the Karakoram pass is very long and costly, particularly early

in the year when the routes are not officially open. The difficulties involved by the third alternative were of a purely mountaineering character, and though we were likely to have considerable trouble in getting several tons of stores and equipment over a difficult glacier pass early in the year, I chose this route.

Our rough plan of campaign then was this: to reach the Baltoro glacier by the end of May; to cross the watershed with sufficient food to last the party for one hundred days after reaching our base below the snout of the Sarpo Laggo glacier; leaving a dump there, to cross the Shaksgam and spend as much time in the Aghil range as was possible without being cut off by the summer floods; and to return to the Sarpo Laggo about the middle of July and spend the remaining two months working on our other two objectives.

The chief difficulty which had to be faced in working out details of the above plan was the fact that, once across the main Karakoram range, the party would have to be entirely self-supporting for the whole period of its stay there—nearly three and a half months. This, and the enormous expense of transporting each effective load across the watershed, necessitated the rigorous exclusion of every ounce of superfluous equipment, and very careful rationing and the rejection of all delicacies which did not carry the maximum food value, or which interfered with a proper diet balance. Our food was based on a variety of Arctic sledging rations altered to suit the different conditions of supply and transport. We took a .375 rifle with us, but although we succeeded in shooting a good deal of meat, we did not rely upon it as a source of supply.

We left Srinagar on May 5 and crossed the Zoji La to the valley of the Indus. Although that pass is only some 11,500 feet high it was still under deep snow and impassable for animal transport. In order to avoid avalanches we had to cross it with our twenty-five local coolies at night. We reached Skardu in Baltistan on May 18. Here we obtained supplies of rice, sugar, tsampa, kerosene oil, salt, ghee, and blankets for the coolies we were to employ above the Baltoro glacier. We were assured by the local authorities that as there had been a famine in Askole we would be able to obtain any quantity of flour at that village and at very cheap rates. Without being able quite to follow this curious reasoning we relied on the statement, as we were able thereby to avoid the expenditure of several hundred rupees in transporting two tons of flour from Skardu. The remaining five days' journey to Askole introduced us to three of the local methods of river crossing. The quietly flowing Indus was crossed in a huge wooden barge (said, I believe, to be the identical boat used in the days of Alexander the Great) which had accommodation for ponies; the fierce Braldu stream was negotiated on a raft of inflated skins—it was a sickening sight to watch the survey equipment and the load containing the treasury being swept down the rapids on this inadequate craft; and higher up, the river was spanned by two of those V-shaped rope bridges which I think are peculiar to these parts. This horror we were able to avoid however by a sensational rock climb along the face of the cliff which the bridges were designed to circumvent.

We reached Askole on May 24. Spender and Auden went ahead from here to carry out a large-scale survey of the snout of the Biafo glacier, in order to compare its present features with those that Auden had observed when he



*Phot. H. W. T.
Skyang Kangri (Staircase) from Peak 6350 above K₂
glacier*

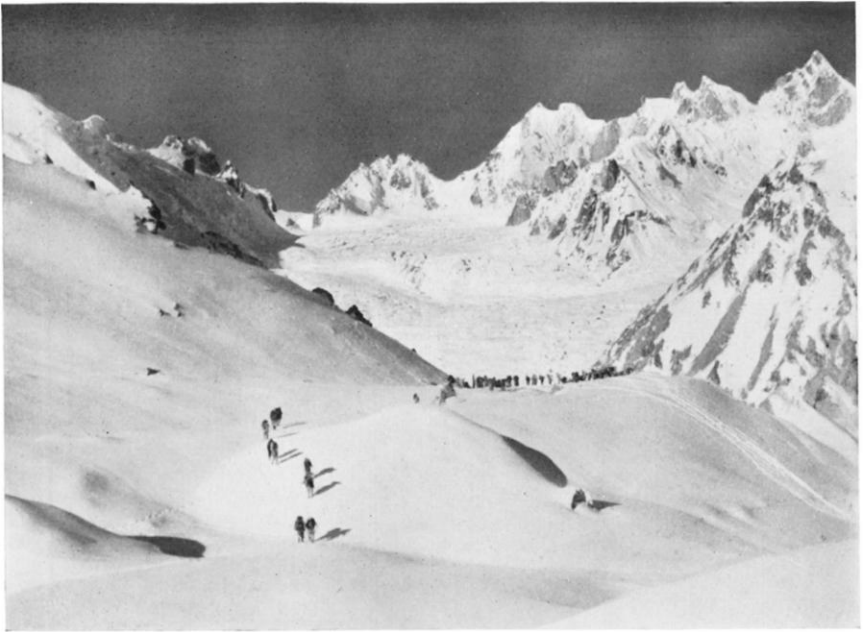


*Phot. E. E. S.
Peak above Trango glacier*



K² from Peak 6350

Phot. H. W. T.



Porters at high camp above Trango glacier

Phot. E. E. S.

had visited the glacier in 1933. On his return to Askole, later in the year, he repeated this work and so was also able to obtain some data about the behaviour of the glacier during the summer. Meanwhile Tilman and I bought and bagged two tons of flour, the great bulk of which was to be eaten by the coolies who carried it towards our base, and recruited 104 men from the neighbouring villages for transport work on this final stage of the journey. We agreed to pay them a rupee a day each and to give them bonuses according to the number of stages they were taken. We left Askole with this huge caravan on May 26. The whole success of the expedition now depended upon how far we could get these men, and it was essential that they should be induced to go as fast as possible, for in its present form the party was consuming 230 lb. of food a day and each extra day which was occupied in crossing the range meant that we would have a week less for our work in the country beyond. Moreover the cost of employing such a large number of men was considerable.

Having made a late start on the 26th it took us three marches to reach Pajju, below the snout of the Baltoro glacier. Being on a path the men went well, and except for the fording of the stream coming down from the Panmah glacier we had no trouble. But the weather was bad and we had a great deal of rain, which, besides threatening to spoil our all-important flour supply, which we could not protect while on the march, was depositing an alarming amount of snow on the range we were about to cross. Spender and Auden caught us up at Pajju, having completed their job on the Biafo glacier. Here our troubles began. On reaching Pajju, Tilman and Sen Tensing went down with a fairly severe fever; we could make no accurate diagnosis of their complaint and it was difficult to know what action to take. Auden volunteered to stay with them, and to deal with any situation that might arise, and it was decided that Spender and I should go ahead with the rest of the party and attempt to get them across the range. We had no idea how far the Baltis would be prepared to go nor what conditions we were likely to find. If they were to desert us early we would be obliged to relay all the stuff over ourselves, which, even if it were possible, would take several weeks of hard work. In any case the party we left behind would have ample time to catch us up, unless the fevers proved to be serious. It was agreed that, if we had no news of them by the time we had got all our food and equipment across the range, I should return to decide what was to be done, leaving Spender to begin his preliminary work on the Sarpo Laggo glacier.

Only one route across the main watershed between the Shimshal and the Karakoram passes, the western and eastern extremities of the range, had been used by Europeans. This was the Muztagh pass which had been crossed by Sir Francis Younghusband in 1887 at the end of his trans-Asiatic journey, and which subsequently had been used only once, by the party sent into the Shaksgam by the expedition led by H.R.H. the Duke of Spoleto in 1929. This pass is known to have been used prior to Sir Francis' journey by Baltis, emigrating into, and trading with, Chinese Turkistan. But it had long fallen into disuse, and an alternative pass was said to exist somewhere in the vicinity of the head of the Panmah glacier, though its exact position is not really known. Both the 1887 and the 1929 parties had encountered

considerable difficulties and it was by no means certain that it would be possible in any year to get laden men over the Muztagh pass, particularly as early in the year as we were attempting the crossing. Professor Desio of the 1929 expedition however had reported the probable existence of an easier saddle at one of the heads of the Trango glacier, which is the second tributary on the true right flank of the Baltoro glacier. We decided after much deliberation to attempt the crossing by way of this saddle. The plan had one great drawback, in that the Baltis all regarded the Trango as entirely unexplored ground, and however much we expressed our confidence in the existence of a route, we could not persuade them that they were not being led to an impasse, and they had to be driven every step of the way.

On the first day after leaving Paiju, May 29, we got involved in badly broken ice in crossing the Uli Biaho glacier at its junction of the Baltoro, which did not improve the mental state of the coolies. On the 30th we had a very long and anxious day coaxing them over the desolate intricacies of the Trango glacier. It was an exasperating business, and our difficulties were increased by falling snow and a cold wind. Unfortunately we did not succeed in reaching a point from which we could reconnoitre the upper part of the glacier. That night we were introduced to the worst trait of the Baltis. When conditions are bad they seem to be entirely incapable of looking after themselves. They crumple up in the open, and refuse to do anything towards making themselves comfortable or protecting themselves from the wind. We were obliged to bully them into action in order to avoid deaths from exposure. The next day, after moving the party a short way farther up the glacier, Spender and I set out to look for the pass. We realized that the spirit of the coolies would only stand one high camp, and that, only if the weather improved. It was essential then to get the camp within striking distance of the watershed. But we returned at 4.30 thoroughly depressed after a long climb, having drawn a complete blank. The coolies noticed our depression and demanded that they should be paid off and sent home. Until dark there was terrific confusion, every one shouting at once, and no one listening to what was said. Occasionally blows were exchanged between the coolies themselves. The Sherpas struggled nobly to help us to deal with the crisis, but when darkness fell and cold put an end to the tornado of abuse, we had no idea whether or not the men would go any farther. Fortunately the morning of June 1 was brilliantly fine, and with promises of greatly increased bonuses the men were induced to start.

We got on to hard snow on the main glacier and made very rapid progress. We climbed a steep but easy ice-fall of a side glacier, and saw before us what we took for the proposed pass. It was separated from us by easy ground. We camped on a little plateau at about 17,000 feet, and spent a busy evening taking off the men's boots ourselves and placing them on rocks in the sun to dry, digging and levelling spaces on which they could sleep, issuing rations and fire wood (which we had brought up from the Baltoro), and helping the men to light their own fires. In this way they were persuaded to spend one more night with us. Though the night was fine, a bitterly cold wind blew which produced another crisis in the morning. We got going early however on beautifully firm snow. But higher up we found deep powder snow and though

Up the east Surukwat valley to the Aghil pass

Phot. J. B. A.





Conglomerate cliffs in the Zug Shaksgam valley *Phot. H. W. T.*



Zug Shaksgam river just below the point reached by Major Mason in 1926 *Phot. H. W. T.*

we went ahead with the Sherpas and stamped a trail, the Baltis became very exhausted. When we reached the saddle we found that we were not on the watershed, but that another col lay in front of us, about a mile and a half away across a hanging glacier terrace. This proved to be the last straw. However it was still early in the day and before the Baltis arrived on the saddle we descended on to the terrace and flogged our way half the distance across it. Here we spent one and a half hours shouting back to the Baltis that they had got to come to us in order to receive their pay. These threats eventually worked. Amongst our coolie force we had seventeen men who had been recruited in Skardu. These were greatly superior to the Askole men, and even now, after a little persuasion, expressed themselves willing to come on with us. The rest were paid off. We watched them on to safer ground and made a stack of their loads. Then, carrying as much as we could, we struggled up to the second saddle from which we looked down on to the Sarpo Laggo glacier. Snow conditions on the northern side were very bad indeed. We had to work as hard as we could to get down to a rock outcrop on which to camp before nightfall.

On June 3 another relay was brought over the pass and, early on the morning of the 4th, Auden arrived bringing the welcome news that Tilman and Sen Tensing were somewhat better, and were following slowly. We sent a Sherpa and two Baltis to help them, and I escorted the first relay down the glacier to Mone Brangsa. There we found the remains of Professor Desio's camp, and probably Younghusband's, and obtained scraps of fuel. We found that a side glacier just above this place had made an enormously rapid advance. In 1929 Desio had shown it as a tiny ice stream ending a long way above the floor of the main valley; now it is a considerable tributary joining the Sarpo Laggo glacier in a confusion of ice pinnacles. Desio's photographs of the place confirm the fact of this remarkable change.

Meanwhile Spender had begun his survey. From the upper part of the glacier K² was clearly visible. It was the only G.T.S. point which could be seen from anywhere in the district, and the whole survey, with the exception of the work in the Aghil range, had to be based on it. Using a Wild theodolite, subtense-bar and plane table, he laid out a base and fixed the relative positions of a large number of prominent peaks in the district, which formed a network of fixed points for a plane-table survey. This process was repeated at intervals throughout the season, in order to keep a check on the plane-table work, and to renew the supply of distant fixed points. Azimuth determinations fixed the map with relation to K². It had originally been intended to take with us a portable wireless set in order to be able to carry out longitude determinations, but the firm to whom the order for the set had been given had failed to deliver it, and so we were deprived of the opportunity of doing this valuable work. Spender made latitude observations from time to time.

We returned to the upper camp on the 6th, and the following day went over the pass to fetch the last lot of loads from the dump on the glacier terrace. When we reached the top of the pass we saw Tilman and his porters coming up from the other side. Tilman's fever had come on again during the previous night and he was having very great difficulty in getting along. Sen Tensing had recovered but was still rather weak. Auden and I took a round of angles

from a point above the pass before returning with the others. It was a great relief at last to have the whole party and all the stuff on the right side of the range. By June 10 we had relayed all the loads down to Mone Brangsa. Leaving a big dump here we took to a camp some 3 miles below the snout of the Sarpo Laggo glacier sufficient food for our proposed expedition to the Aghil range. Here, on the 15th, we had a day's halt, which Spender occupied in mapping and in determining the distances to and heights of peaks in the neighbourhood. Auden was occupied with geological work, while Tilman and I shot a couple of bharal. We also discharged all but four of the Skardu men, for although we had hoped to take them at least as far as the Shaksgam, they refused to come any farther. I sent Angharkay and Lhakpa to accompany them some of the way back, while the rest of the party started working the loads up the Shaksgam. We wasted a good deal of time in doing this, but it gave Spender and Auden an opportunity of doing their work. Also Tilman's fever had come on again. But when the two Sherpas caught us up we were able to shift all the loads, which included three weeks' supply of food, without the tedious business of relaying.

Our difficulty now was to decide upon which of the many valleys coming down to the Shaksgam from the Aghil mountains was the one by which Sir Francis had descended from the Aghil pass. The largest and most obvious valley, which cut right back into the range and which Desio had taken for the valley leading to the pass, did not answer in any particular to the one described by Sir Francis. Eventually, after fording the river, we selected a steep and inconspicuous nala which we thought was most likely to be the right one. We were correct in our choice and as we made our way up it we found plenty of evidence of the caravan route over the pass. Some of these traces appeared to be very recent, though for what purpose the route could now be used it is difficult to say. We crossed the Aghil pass on June 20 and camped by a fine lake half a mile below it on the northern side, among drifts of mauve primulas which covered the grass slopes above the shore.

The next day Auden left us to carry out a geological traverse to the Yarkand river, and to explore the possibilities of an alternative pass over the range to the west. Tilman and I climbed a 20,000-foot peak to the east of the pass in order to see into the country between it and the ranges explored by Professor Mason. The weather was perfect. From the top we obtained uninterrupted views in every direction. We concluded that to the east we were looking into valleys running into the Zug Shaksgam. We secured a complete photographic panorama. Meanwhile Spender was busy preparing the framework for his survey of this portion of the range. From the pass several G.T.S. points of the Karakoram could be seen. Besides K² there were the Gasherbrum peaks, also "Broad Peak" and "Staircase."¹ These provided good checks for Spender's range-finding and azimuth methods, and I think it can be claimed that the position of the Aghil pass was fixed with sufficient accuracy. Observations for latitude provided an additional check.

On June 22, leaving Spender to continue his work in the vicinity of the pass, Tilman and I, with two Sherpas and two Baltis, descended to the north,

¹ The officially recognized name for Conway's "Staircase Peak" is now *Skyang Kangri*. The name "Broad Peak" has been authorised.

taking with us twelve days' food. A tremendous amount of yak dung lying around the lake had provided us with fuel, and was evidence that the pastures hereabouts are at present used extensively, probably by Turki nomads. A couple of miles below our camp we came upon a much-used shepherd camping ground. We went on down past the junction of several big valleys coming in from the west and camped at the foot of the first big eastern tributary of the Surukwat. We called this the Kharkhul Lungpa.

The following day we made our way up this valley. Our object was to find a way over into the large valley which we had seen from the top of the peaks we had climbed, and which we suspected would prove to be the lower part of the Zug Shaksgam. After going for two hours Tilman was again taken ill with fever. He stayed behind with one porter while I went on with the rest to explore the head of the valley. Farther up, it divided into two branches. I chose the left-hand one and we carried all the loads to a col (about 18,000 feet) at its head. I found that it led over to another tributary of the Surukwat. However, it commanded a fine view to the north, and I took a round of angles with the Watts theodolite. We managed to get back to the main Kharkhul Lungpa by nine o'clock, when it got too dark to travel. The next day, leaving the rest of the party here, Angtharkay and I explored the glacier of the right-hand branch. Higher up the snow was very bad, but we reached a saddle (about 19,500 feet) at one of the eastern heads of the glacier. It provided a practicable pass into the country we were trying to reach. When we got back to camp we found that Tilman and his porter had come up. This bout of fever had only lasted a day and proved to be the last of the series.

The next day we carried all the loads to the top of the pass, took a round of angles and photographs with the photo-theodolite and descended the glacier on the other side; we managed to cover some 4 miles of it before dark. Until the results of our various surveys have been worked out it is difficult to give an accurate description of the topographical details of the range we were going through, as we were in entirely unexplored country, and had no means of fixing in the field our own position, or that of anything we saw. I hope we have brought back sufficient data to be able to plot our traverses and photographs. We found ourselves in a large glacier system with numberless branches coming down from the extraordinarily complex range we had just crossed, whose general trend seemed to us to be from north to south.

After leaving the glacier we entered a difficult conglomerate gorge. As we had made a very early start we found the stream to be fordable and were able to follow its bed without being forced up on to the almost unclimbable flanks of the nala. We were obliged to cross the river about twelve times, and had to go as hard as we could to reach its end before the late afternoon floods. Even so we had to camp half a mile above its junction with a large valley running south-east to north-west. There was a plentiful supply of birch wood and other fuel. When we reached this valley early next morning we found that it contained a very large river—certainly bigger than the Shaksgam at the place where we had crossed. We concluded that this must be Mason's Zug Shaksgam. We decided to follow it upstream for a day or so and then to make our way down it. On a well-wooded spit of land at the junction of the two valleys we were surprised to find a collection of stone

shelters. As there was no possibility of grazing in the vicinity, this spot must have been used as a regular halting place on some route. But from where and to where we could not guess. Below this point the river entered what appeared to be an almost impassable gorge. Angharkay was sent with one Balti to see if it were possible to force a way through this, while the rest of us were exploring up the river. Each party took food for one night. The weather being fine we were able to dispense with tents and carrying very little equipment were able to travel at a great speed.

Along the floor of the valley, or on the ancient river terraces which are such a prominent feature of this country, the going was good, though we were held up from time to time by deep ravines cut into the conglomerates by side streams, and sometimes by the side streams themselves. We came upon several oases caused by springs of water. At each of these we found buildings of various types; at one was a collection of interesting dome-shaped huts. It seemed as though a little simple irrigation of these terraces would render the valley very fertile, but we did not see any traces of cultivation, recent or ancient. The problem presented by these relics of former habitation in such difficult country is a very interesting one and should be more closely investigated. By nightfall we had covered a lot of ground and fancied that we must be approaching the farthest point reached by Mason from the opposite direction. The valley had opened out enormously and we could see a lot of the surrounding country. We started again at 3.30 next morning, went several miles farther up the valley, crossed a large side nala which we fancied came down from the peaks above Durbin Jangal, and climbed a prominent spur standing some 2500 feet above the valley at the corner of a big bend in the river. We recognized several of Mason's points which now stood around us. After taking a round of angles and photographs with the Watts-Leica instrument we descended to the valley and marched up it to a point nearly opposite that which Mason had reached. The river appeared to be unfordable.

We failed to get back to our dump that day and spent a hungry night on the way back. When we reached it next day Angharkay reported that he had failed to find a way through the gorge. He had found however that it was possible to circumvent the gorge by climbing some 4000 feet up the steep side of the valley. Two days later we got down into a valley which flowed back into the Zug Shaksgam 4 miles lower down. We did two high photo-theodolite stations on the way. We reached this side stream at about three o'clock in the afternoon, and, badly misjudging its volume and steepness, attempted to cross it. Tilman was swept off his feet but managed to climb out on the other side. He and I held a rope across the water and Lobsang and Angharkay started across. A rolling boulder upset the latter, and although Lobsang made tremendous efforts to hold on to him, Angharkay was carried away down the river, his waterlogged load making it impossible for him to struggle effectively. It was a sickening sight, and we could do nothing to help, for had we let go of the rope Lobsang would have gone too. Angharkay was being crashed against the rocks with tremendous force and I expected any moment to see his head go under for good. However before this happened, by a stroke of luck, he got hung up on a rock in mid-stream, and Lobsang being safely across, the Baltis were able to drag him ashore. He was badly shaken, and

so bruised that for once he was unable to laugh at his own misfortune. But fortunately no bones were broken, and wrapped in dry sleeping-bags he recovered quickly. We had to remain where we were. It rained and snowed heavily throughout the night, and Tilman and Lobsang on the other side of the river, without any covering, fared badly. By dawn when we started, the stream was reduced to ridiculously small dimensions and we were able to make our way down the valley by continually fording it. But it was an alarming business for the rain and snow had soaked into the conglomerate cliffs which towered thousands of feet above us. Stones and boulders kept up a continuous bombardment all the way down the valley, and we had repeatedly to take cover.

When we regained the Zug Shaksgam at 9 o'clock we found that we were just below the mouth of the gorge down which Angharkay had failed to find a route. We hurried down along the wide gravel flats as fast as we could, for our food was running short and we were by no means sure how long it would take to get back to the Surukwat, though by now we were certain that it was to there that the Zug Shaksgam flowed. After a mile the river swept against the cliffs on our side of the valley, rendering further progress along the river-bed impossible. Again we were obliged to climb 4000 feet up steep mud cliffs and traverse along above the valley. Going was difficult and complicated. We were continually being forced to perform some hair-raising feat of rock climbing on vertical conglomerate cliffs. The Baltis excelled at this as they did in dealing with dangerous rivers. Lack of water forced us to go on until long after dark, and we succeeded in regaining the river bed near an extensive *Jangal* a mile above the junction of the Zug Shaksgam and the Surukwat. On July 2 we marched up the Surukwat and found Spender's party encamped at the foot of the Kharkhul Lungpa. They had made full use of the fine weather, and Spender had mapped an area of about 300 square miles between the Aghil pass and the Yarkand river. We returned to the pass next day and found a note sent up by Auden with the unwelcome news that the Shaksgam was in flood. He also gave a rough account of his movements since he had left us.

He had descended the Surukwat, reaching the Yarkand river on June 23; here he met two Yarkandi boys, tending a flock of goats—these were the only human beings outside our party which any of us met during the active part of the expedition. Auden's party returned to a camp at 14,000 feet up the Surukwat on the 24th. It was here that Younghusband's guides in 1887 were in doubt as to which valley to follow. Auden ascended a minor peak of 18,300 feet for geological mapping and in order to prospect for an alternative route across the range. He succeeded in effecting the crossing by way of a pass about 18,600 feet in height, and so brought his party back to the Shaksgam by way of a long wide valley which proved to be the one which Professor Desio had supposed to lead to the Aghil pass. Auden named this valley the "Skam Lungpa" because of its barren nature. He had made a compass survey of all the country he had traversed, and examined its geology as far as was possible. He then ascended the Shaksgam to a point 3 miles above Durbin Jangal, where he found fossiliferous rocks of Permo-Carboniferous age. When the food supply was exhausted he brought his party back to the

base in the Sarpo Laggo, and while his two men were bringing more food down from Mone Brangsa he continued his geological work in that part. Fortunately the bad weather beginning on June 30 had reduced the size of the Shaksgam, and neither party had great trouble in crossing; but to have protracted our stay in the Aghil range even for a few days would have been very dangerous, though there was much we would like to have done. Before leaving the Aghil pass I managed to add to our food supply by shooting five bharal. This enabled us to spend a little longer in this part of the Shaksgam. While Spender was extending his map in this direction Tilman and I went some way up the main valley to try to recognize some of the peaks which we had seen to the south-west of the point we had reached in the Zug Shaksgam. We rejoined Auden at Sughet Jangal on July 8 just as he was about to set out in search of us.

The next day Tilman, Auden and I started up the K² glacier with two Sherpas, while Spender returned up the Sarpo Laggo glacier with the rest of the party. During the next week while all the food was being brought down from Mone Brangsa, Spender mapped the glaciers from the main range between K² and the Sarpo Laggo pass, and we explored the country to the north of K². We made a series of photo-theodolite stations, and there should be no difficulty in filling in that portion of the map. Tilman and I climbed an isolated peak of about 20,700 feet which commanded some of the finest mountain views I have seen. To the south of us were the colossal northern faces of K² and other peaks of the main watershed, the entire Aghil range from the Karakoram pass to the Oprang river and the peaks beyond the Yarkand river were to be seen, and we could trace the course of the Shaksgam valley from its source to its junction with the Yarkand. The fantastic spires surrounding the Panmah glacier were clearly visible, and we saw into the complicated tangle of great peaks at the head of the Crevasse glacier,¹ which was to occupy our attention for the next two months. Later we went up to the head of the main K² glacier and stood in a cirque formed by the Savoia Saddle, K², and Skyang Kangri ("Staircase"), and many unnamed peaks of equal grandeur. The north face of K² itself is stupendous, rising out of the glacier in one continuous sweep for 12,000 feet. We were able to sit beneath it and watch ice avalanches break off 2 miles above our heads and drift away, ground into wind-blown powder long before they reached the foot of the mountain. Tilman crossed from the K² glacier on to a large glacier which we had seen from our peak, flowing down from the north face of Skyang Kangri along the southern side of the dolomite walls of the Shaksgam. Auden unfortunately was now suffering from a fever displaying similar symptoms to the one which had attacked Tilman, and I contracted an attack of snow-blindness by foolishly stalking bharal for a whole day over a hillside covered with new snow, without wearing snow-glasses.

¹ The name "Crevasse glacier," which at first sight seemed a curious description for a major glacier of the Karakoram, was, after some discussion, adopted by the expedition and incorporated in the map because of Younghusband's definite pronouncement: "The glacier we did our best to surmount I called the Crevasse Glacier, on account of the great number and size of the crevasses, which were wider and deeper and far more frequent than I have seen on any other glacier." (*Geogr. J.* 14 (1892) 216.)

On July 17 the whole party re-united at the junction of the Sarpo Laggo and the Crevasse glacier valleys. A stocktaking of our food supplies showed that we had sufficient for fifty-five days. On the following day we started relaying everything up the Crevasse glacier. It was a slow business at first, but if we wished to be in a position to carry out any effective survey and exploratory work from the head of the glacier, we were obliged to take with us all the supplies we had. The exploration of country, when it is necessary to work from a base which is entirely out of reach of any outside assistance, presents a very different problem from that which one is used to tackling when some sort of transport and supplies, however bad, are available. This year I found, as I had expected, that cutting ourselves off from such support for a period of three and a half months placed a considerable strain on the party.

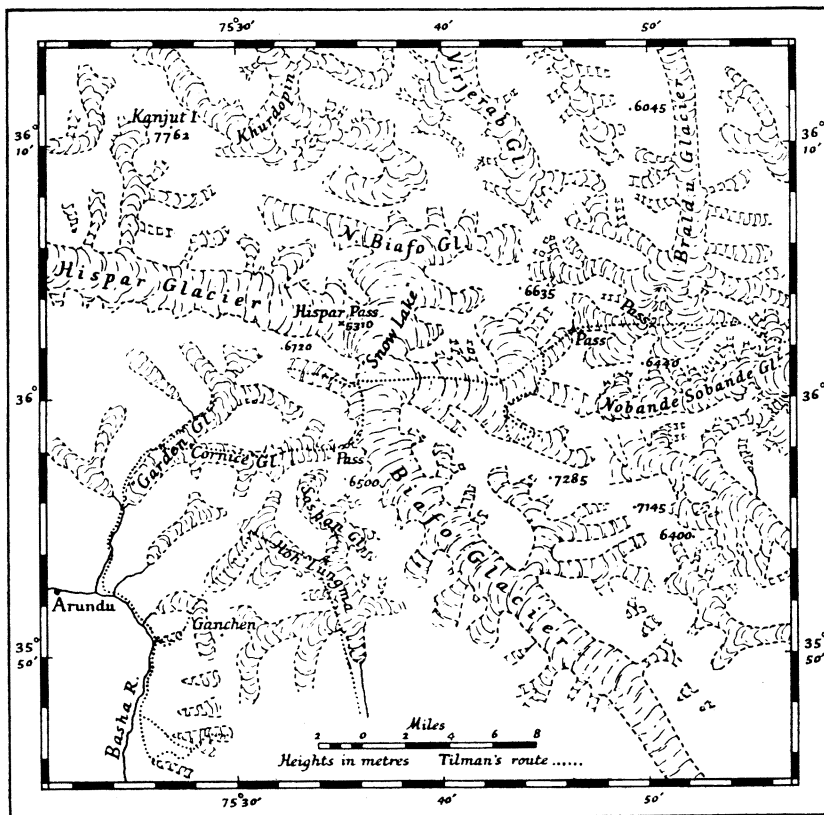
While we were working our way slowly up the glacier, Auden, with two Baltis, went down the Shaksgam river with twelve days' food, in order to continue his geological investigations in that direction. He also took with him the Watts theodolite. Our slow progress up the glacier gave Spender plenty of time for a detailed survey of the surrounding country. Two camps took us to the junction of a number of large ice streams flowing from all directions in an amazing confusion of pinnacles and ice-falls. We called this point "First Divide." Above it we got on to dry and broken ice, and going was considerably easier. We kept to our westerly course and by August 1 had established a camp about 17 miles up the glacier. Above this it divided into two branches of about equal size ("Second Divide"). Auden caught us up here, and in three parties, with light camps, we explored the heads of these branches. Auden and Tilman were prospecting for a route which would connect up the Crevasse glacier with the Nobande Sobande and the Biafo country; Angtharkay and I were trying to find a way over on to the head of Colonel Schomberg's Braldu glacier, while Spender investigated the head of the northern of the two branches.

On August 3, while Tilman and Auden were investigating another part of the watershed, Angtharkay and I reached a saddle at the head of the southern branch. The weather was bad, and in order to see anything we were obliged to climb down a difficult ice-slope on the other side for several hours. When we got below the clouds it was evident that we were in the upper basin of the Braldu, the whole of which could now be seen quite clearly. Having got down on to one of the branch glaciers of the basin, and thus proved that the pass was practicable, we returned by the way we had come. We failed to get back to our camp before dark, with the result that I had a serious fall into a crevasse.

The following day Tilman and Auden discovered a route over the main range to the Nobande Sobande glacier, and we returned to the Second Divide on the 5th. From here the other two took a camp up a large glacier coming from the north and called by us the "Crown glacier." We hoped that exploration in this direction would tell us something about the complicated range of mountains lying between us and the Shaksgam, and also connect up with Auden's surveys in that valley. I went up the northern branch of the Crevasse glacier to establish contact with Spender's party.

I found that he had already completed the survey of the northern branch and had also discovered an easy pass leading from its head towards the north-west.

The whole party reassembled at the head of the Second Divide and we were confined to our tents for two days by a heavy snowfall. As a result of our exploration of the head of the Crevasse glacier, and in view of the immense amount of work that there was to be done, it was decided that now the expedition should be split into three self-contained parties: (i) Auden, with the four



Sketch-map showing the heads of the Biafo and Braldu glaciers

Baltis, was to cross the pass they had found and descend to the Panmah glacier and so reach Askole. This party was allotted twelve days' food and the Watts-Leica instrument. (ii) Tilman, with two Sherpas, was to accompany Auden over his pass, and from the Nobande Sobande force a route to the so-called "Snow Lake," which forms the unknown head of the Biafo glacier, and having explored that to work a way across the ranges south-west of the Hispar pass. They were to take food sufficient for twenty-two days. (iii) Spender and I, with five Sherpas and thirty days' food, were to cross the pass which Spender had found and which we expected would take us into a

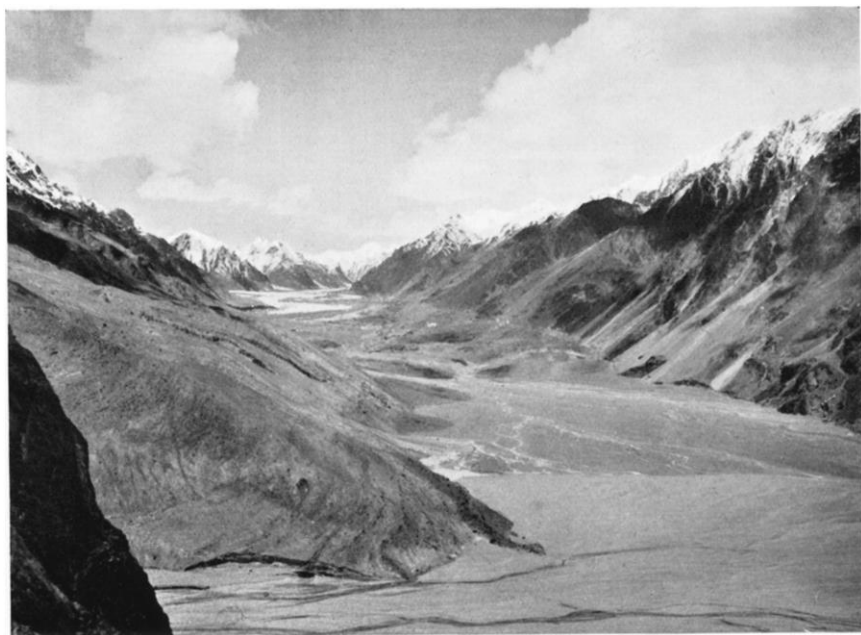


*K² and K²
glacier
Phot. J. B. A.*



Phot. M. A. S.

Up the Sarpo Laggo glacier towards the pass from the Trango glacier



Phot. J. B. A.

Snout of Crevasse glacier from above the expedition dump

tributary valley of the Braldu, which we proposed to explore and map, and then make our way down to the Shimshal pass mapping as much country between that and the lower Shaksgam as weather and our food supply would permit.

Auden and Tilman crossed their pass on August 11-12. From the Nobande Sobande they succeeded in reaching a point on the divide between that glacier and the Braldu. They also climbed a 19,000-foot peak on that divide, on the top of which they did a theodolite station and took a round of photographs. Auden then made his way slowly down the Nobande Sobande and Panmah glaciers surveying and doing his geological work as he went. He became involved in very difficult country and had his work cut out to reach Askole in less than a day after his food had run out.

Tilman's party having made a dump on the first pass (which he called "Faith") in a blizzard, crossed it on August 15, and that evening camped on the eastern arm of the Braldu glacier. From the peak above this pass Tilman and Auden had enjoyed an extensive view which included Conway's "Ogre" (23,900 feet), the triangulated peak whose position relative to the Biafo was very puzzling, Kanjut peak (25,460 feet), the Upper Braldu, and the Drenmang, Chiring, Upper Panmah and Nobande Sobande glaciers, together with a mass of peaks to the south amongst which Masherbrum was very prominent. From here Tilman could make out a route to the west across the two main arms of the Braldu. If there was a pass at the head of the western arm it must lead either to the Virjerab or the Biafo; and believing it led to the latter he determined to attempt to cross it.

The next day was devoted to reconnoitring. Crossing a small saddle (subsequently called "Hope") into the western branch of the Braldu, they trudged up a long tributary glacier to the west. The saddle at the head of this was very rounded and they had to descend some way on the other side of it before being able to see anything. Clouds were rolling up from the west, but they were in time to see and recognize the strikingly bold peaks of the west wall of the Biafo, and the end of what the Workmans had called the "B.15 Range," which we had come to know so well from their photographs.

Two days later they camped on the north side of the so-called Snow Lake, the upper basin of the Biafo glacier. Tilman estimated its area to be about 30 square miles. It is remarkably flat and perhaps that might be sufficient justification for the name. A day was devoted to examining the south side and the two feeder glaciers which led east in the direction of the Nobande Sobande and Choktoi glaciers. The southern boundary of the Snow Lake is the high precipitous and remarkably straight ridge, on which, at the eastern end, stands the Ogre. The ridge terminates some 10 miles west where the Biafo proper descends in a south-easterly direction. On August 20 they traversed the Snow Lake, which at this season was mostly bare ice, and camped under the west wall of the Biafo just below where the wall turns west towards the Hispar pass. On the other side of this wall lay the Cornice glacier, which the Workmans said was without an outlet. In three days' time they found and crossed a pass over the west Biafo wall on to it. The basin of this glacier is low-lying, perhaps not more than 15,000 feet, shut in between high steep walls as the Workmans had described it, and

remarkable for the luxuriant vegetation growing in its valley within a mile or two of the head. Some 5 miles west from the Biafo it is joined by a slightly larger glacier coming down from the Hispar wall. It was disappointing to find the glacier behaving in a perfectly normal manner, and some 2 miles below the junction the combined glaciers terminated in a small grazing village in the Kushuchung valley. They emerged into the main Basha valley at the village of Bisil just below Arandu. Wishing to make quite sure that this was indeed the Workmans' Cornice glacier, they crossed, after some vicissitudes, a pass over the Ganchen range which bounds the Basha valley on the east, and thus reached the Hoh Lungma and Sosbon glaciers. Following up the Sosbon in the footsteps of the Workmans they climbed the col at the head and looked down, as the Workmans had done, upon the Cornice glacier and the pass which they had crossed from the Biafo ten days earlier.

Tilman's journey was a fine performance. In the space of three weeks allotted to him he covered a tremendous amount of ground. He managed to connect up the country which we had been exploring and the unexplored head of the Biafo with the country round the Hispar pass, and also succeeded in unravelling the complicated glacier system to the south-west. In doing this he solved two interesting geographical problems, the nature of the Snow Lake, and the supposed phenomenon of the Cornice glacier.

Spender and I spent a few days in completing the survey of the southern section of the Crevasse glacier. The section of country from which it rises is topographically one of the most interesting of the whole Karakoram range, for, besides the Crevasse glacier itself, it gives rise to a series of gigantic ice-streams such as the Hispar, Biafo, Panmah, Virjerab and Braldu. These glaciers, flowing in different directions, terminate at points which by the only known routes are many weeks' journey from each other. Only one pass had hitherto connected up any two of these glaciers (the Hispar pass, between the Hispar and Biafo glaciers, which was crossed by the Conway and the Workman parties in 1891 and 1903 respectively). It was fascinating now to be in a position to make a thorough exploration of this area and to be able to cross passes from one glacier to another almost at will. The scenery too was superb and enormously varied, the limestone mountains to the north being in striking contrast to the granite peaks of the southern glaciers. Strewn over all the glaciers which we visited we found large numbers of dead birds of many kinds, mostly belonging to the duck family, though there were also some much larger skeletons, bones of which I brought home for identification. Presumably all these birds had perished during migratory flights, though it is hard to understand why they should choose such difficult routes from Central Asia to India.

We started up the northern branch on August 13, and on the 17th managed to get all our loads over the saddle which Spender had found. We descended to a very badly crevassed glacier. The crevasses were disguised by a covering of fresh snow and as we were all carrying enormous loads (the Sherpas were carrying more than 130 lb. each) we had some difficulty in getting through. The next day we climbed a peak in order to get some idea of the country we were now in, and Spender set up his plane-table on top. The country to the north was very complicated and there was still no evidence that the

mountains in front of us formed the southern walls of the Shaxsgam. The glacier we had descended plunged down in a 1000 foot ice-fall below the point at which we had camped, to join another larger glacier (which later we named the "Wesm glacier") flowing in a north-westerly direction. From our peak we had a good view of the head of this glacier which, we imagined, shared a common watershed with the Crown glacier.

But in order to get any idea of country which was still a closed book to us, we saw that we must go up to a high point on the watershed. Spender had fixed from his earlier stations several peaks in this area which were now of very great value to us. The same day we descended the ice-fall to the Wesm glacier and took a light camp up it to a point on its right bank at about 16,000 feet. From here the view down the valley puzzled us a lot. Instead of the glacier flowing gently down into the Braldu as we had expected, it ran steeply through the usual pinnacled zone, and ended abruptly 5 miles down. At first we thought that the valley below made a right-angled bend to the north, but soon we saw that it kept on its north-west bearing, and we began to suspect that it would turn out to be the nala which Colonel Schomberg had noticed joining the Braldu valley, near the snout of the main glacier and called by him "Wesm-i-Dur." This suspicion proved to be correct. On the 19th we climbed to a point, over 20,000 feet high, on the ridge bounding the Wesm glacier on the north. A large cornice on the narrow ridge made it a difficult station on which to work, but it commanded a superb view. We were able to disentangle much of the country towards the Shaxsgam and also had a view down the Crown glacier. Many of the peaks we had been amongst a month earlier, including K², were visible, and provided a welcome check on the accuracy of the plot of our present position. To the west the great peaks of the Kanjut range provided us with new food for discussion and argument as well as a renewed vision of the incredible size and majesty of the Karakoram. North-west of us were the snow domes of the Shimshal mountains, beyond which in the blue distance stretched range after range towards Kashgar and the Hindu Kush. We were lucky enough to have another perfect day and were able to spend many hours in trying to digest this limitless tangle of country. We camped that night amongst the ice-pinnacles a few miles down the glacier and the following day reached a grassy plot by the stream of the Wesm-i-Dur, which provided a welcome change after more than a month of glacier camps.

On the 21st while Spender was plane-tabling and the rest of the loads were being brought down from the glacier, Angtharkay and I went after fresh meat. Through my own fault I failed to shoot a bharal, but managed to get some *ram chikor* (snow cock) instead. We saw a tremendous number of these birds throughout our stay on the northern side of the main watershed and had found several nests earlier in the year. It was rather a difficult job to shoot them with a rifle; a small shot-gun would have paid well for its transport, for there is a great deal of meat on these birds. Although we had come across any number of *kyang* (wild ass) in the Aghil range and in the Sarpo Laggo, we saw no trace of them in the valleys of the Braldu basin. Hares were plentiful in all the valleys below the glaciers. On the Crevasse glacier the Sherpas had caught a fox.

The ancient river terraces, extending several thousand feet above the present river level and cut by side streams into fantastic canyons, caused us a great deal of trouble, as they had done in the valleys of the Aghil. Although we gradually evolved a technique for dealing with the obstacles presented by these conglomerate deposits, it was always a somewhat frightening business negotiating them with a heavily laden party, and it took us three days of bad weather to unravel the intricacies of the Wesm-i-Dur, and to reach the wide gravel flats below the Braldu glacier, where we found a sheep pen and a shepherd's hut.

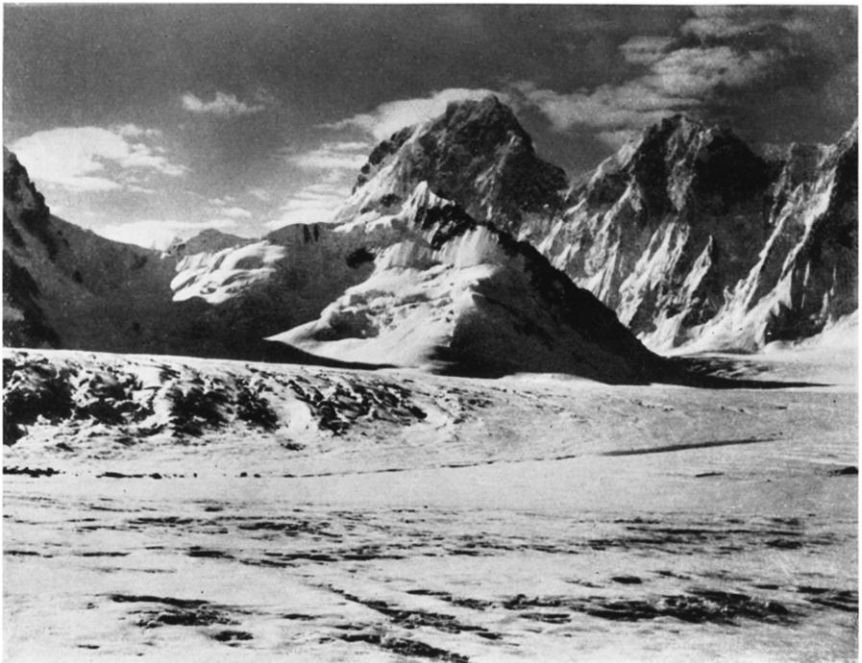
On August 26 we started up the Braldu glacier taking with us food for eight days. The first night we camped on beautiful pastures $5\frac{1}{2}$ miles up the glacier. While stalking bharal above these, Angtharkay and I came across a pack of six wild dogs which were after the same herd as we were. In the confusion which resulted the bharal escaped unharmed. The next day we made another $5\frac{1}{2}$ miles, and on the 28th we camped in the midst of the vast glacier basin into which Angtharkay and I had descended on August 3. The next four days were perfect and we wasted none of our precious time. Angtharkay, Lhakpa and I reached a high saddle at the head of a branch glacier on the west. It was not situated on the main watershed as I had hoped, but from it we were able to climb a small peak (about 19,000 feet) for a round of photographs and compass bearings. Again I was able to see the great peaks of the K² range, and this time my view was extended past the Muztagh Tower to Masherbrum and the pinnacles of the lower Baltoro whose acquaintance we had made three months previously. Conway's Ogre and all its fantastic satellites were now close at hand, and seen from this angle they looked more astonishing than ever. But all this was of small interest compared with the fascinating newness of the world we were in.

While surveying on a glacier to the south, Spender saw through his telescopic alidade a large cairn. We sent two Sherpas to investigate this and found that it had been built by Tilman's party to mark the site of one of his camps. There was a letter in it, telling us of his movements up till August 18 and of his discovery of a route to the Biafo.

The Braldu glacier proved to be a very large one with a great number of branches in its upper part. The head of some of these branches were 22 miles from the snout of the main glacier. The basin of the Braldu glacier abuts on those of the Virjerab, Biafo, Nobande Sobande and Crevasse glaciers, and its bounding walls form a considerable part of the main Asiatic watershed. With the help of his survey of the head of the Crevasse glacier, and the fine weather, Spender had no difficulty in completing a detailed survey of this basin in the short time allotted to him for the task; and we got back to our dump at the beginning of September with the job finished. The still much swollen Braldu river gave us a lot of trouble before we reached a deserted village at the foot of the valley coming down from the Shimshal pass. We had now developed a good technique for crossing swift rivers: one man was tied on to the end of the rope and the rest of the party would anchor the rope at a point upstream, preferably on the outside of a bend. Leaning, if necessary, his full weight on the rope, the first man would then advance through the water, swinging pendulum-wise on the rope. The rest of the party (except for the



The Skamri peaks from the upper Crevasse glacier *Phot. M. A. S.*



Peak 18/43 M from the Snow Lake *Phot. H. W. T.*



*Skamri peaks
seen from the
south-east
across the
Drenmang
glacier
Phot. J. B. A.*

last man), carrying the bulk of the loads, would have the safeguard of a rope stretched at right-angles across the river as well as the pendulum rope, and the last man would cross in the same way as the first. The support of the pendulum rope enables one to withstand the force of the water to an astonishing extent.

The deserted village (Chikar) was surrounded by a beautiful grove of willows. The day after our arrival there, shortly after we had got down from a morning's work on the hills above, four men and four yaks came from across the river. The men proved to be Shimshalis. At first they were very scared of us, but although we had no language in common we soon convinced them of our friendliness. We managed to converse with them by means of signs, and soon learnt a small vocabulary of their words. We managed to persuade them to send one of their party over the Shimshal pass to get us some food. This man took with him the news that some Chinese had come across the Muztagh river—he had evidently taken our pig-tailed Sherpas for the leaders of our party. This startling report was carried to Hunza and thence to Gilgit.

We spent a most interesting week in the lower Braldu valley escorted by our Shimshal friends who were quite delightful. At frequent intervals down the valley we found well-watered oases which are used by the Shimshalis as winter grazing grounds. The Yarkandis, we were told, do not penetrate as far as here. A great variety of birds inhabited these lush oases, the commonest of which was the hoopoe. Half-way down to the Shaksgam is an ancient fortress known as Darband. It is built on the edge of a conglomerate ravine at a point where the main stream flows through a narrow canyon, and must have rendered the valley quite impregnable from the north. The ramparts are still kept in good repair and our guides were very particular about keeping barred the great wooden gate through which we were allowed access to the lower valley. The towers of the fortress are still used, and in one of them we found some ancient matchlock guns and drying bharal meat and skins, together with some ripening cheeses. Looking down from the turrets over the battlements and across the grim gorge in front, one had an impressive sense of the present mediaeval state of Central Asia.

While Spender was doing some high plane-table stations above the valley I rode with one of the Shimshalis down to the Shaksgam. On the way in a wood of tall willows I was shown one of the places from which salt is extracted from the soil. A pit is dug and flooded with water which is then churned up with the soil containing the salt. The mud is allowed to settle and the water is evaporated from the salt solution in slate and clay vessels. It is a long and tedious process and the output of salt is very small. This and the enormous distances to which it is carried are evidence of the value of this commodity in these parts. From the junction of the Braldu with the Shaksgam, a scene of magnificent desolation, I went some way up the great gorge of the Shaksgam and climbed a long way up its cliffs to get a view of this part of the Aghil range. The river contained an enormous amount of water, and though the cliffs of the gorge could probably be forced by a mountaineering party, it can only offer a practicable caravan route for a very few months in the winter.

We returned to Chikar and from there crossed the Shimshal pass to the grazing village of Shuijerab. The pass itself is situated in open, gently undulat-

ing country and it was hard to believe that we were crossing the main continental watershed, so great was the contrast with the other sections of it which we had visited. Just below its crest on the eastern side was a large village of some four dozen houses which is only occupied in the winter. On the western side of the pass is a lake, a couple of square miles in area, below which enormous herds of yaks and sheep were grazing on the extensive pastures. From the top of the pass we had a grand view into the country which we had been exploring. It was a fine day and Spender was able to get a good fix for the position of the pass and to round off the survey of these parts. The country to the north-east of the pass is still quite unexplored and we were sorely tempted to penetrate it by way of one of the large glaciers flowing down from its dome-shaped peaks, and to look for a pass over into the Oprang river. But by now our boots were worn out and it was doubtful too whether we would be able to get the necessary food. We consoled ourselves with the reflection that, though there were thousands more square miles of this fascinating country to be explored, we must stop somewhere if we were to get back to England during the winter, which unfortunately was imperative for both of us.

And so we went down through amazing conglomerate gorges to Shimshal where we were given a wonderful reception, and where we came to like the people of that isolated country even more than when we had first met them. The journey back from there to Srinagar by way of Hunza and Gilgit was the most varied and the most absorbingly interesting which I have made through populated districts of the Himalaya.

Exploration and survey

The party surveyed about 500 square miles, and an accurate system of heights was carried throughout the whole area. In undertaking this work Spender was set a difficult task, for it was necessary to reduce his equipment to a minimum. In dealing with this difficulty and with the remarkable absence of fixed points on which to tie his work he displayed considerable ingenuity. Again, the necessary lack of tent space compelled him to do his compilations, the inking in of his sheets, and the difficult job of transferring from one plane-table sheet to another while lying in his sleeping-bag in a tent 6 feet by 4 feet which was often shared by a companion. The maintenance of his enthusiasm for the job and of his standard of accuracy throughout the expedition was responsible for the achievement of satisfactory results.

Perhaps the three main items of interest in the field of exploration were: (i) the fixing of the geographical position of the Aghil pass. (ii) The tracing of the course of the Zug Shaxsgam river from the point reached by Mason in 1926 to its junction with the Surukwat and Yarkand rivers. (iii) The unravelling of the topographical problems at the sources of the great glaciers of the Panmah, Biafo, Virjerab, Crevasse, and Braldu.

The area explored included 75 miles of the main Asiatic watershed whose northern side was hitherto unknown.

Mountaineering

With such a vast area of unknown mountains to explore, the climbing of any of the countless peaks one sees offers little interest compared with the

enthraling business of finding one's way about the country, and crossing passes which lead from one region of mystery to another. Incidentally this occupation provides all the mountaineering one could wish for. In the course of our travels about half a dozen peaks were climbed, but all for the old-fashioned reason of wishing to see the view.

We discovered and crossed seven major passes, four of which led across the main Asiatic watershed, and also four minor passes such as that which led from the Surukwat to the Zug Shaksgam, and that which led from the head of the Biafo to the Cornice glacier.

I should like to conclude by suggesting to mountaineers who have the opportunity of visiting the Himalaya that it is not by climbing its great peaks that we can most enjoy this unique range. We have now the opportunity to see the Himalaya as de Saussure saw the Alps. When the country is known, we shall enjoy it by climbing its peaks; and, when all the peaks are climbed, we shall look for more difficult routes by which to climb them, in order to recapture the feel of adventure and to demonstrate our modern superiority.

APPENDIX I: MAP-MAKING

MICHAEL SPENDER

In this expedition all members of the party were surveyors; it is only for this reason that it was possible to map so large an area. It is very seldom that the leader of an expedition considers the map as the first object of the journey; when this happens most of the surveyor's usual difficulties vanish. It should be realized that this involved for Shipton and Tilman a definite sacrifice. These two, if they were to further the map, had to give up doing throughout the expedition that which they would most have liked to do—to travel faster and cross more passes. Auden, too, threw himself with zeal and enthusiasm into map-making. Although his own science kept him very busy, he learned how to use the Watts-Leica phototheodolite; his survey of the head of the Panmah glacier (the Nobande Sobande) was the first map ever to be plotted from the Society's Watts-Leica phototheodolite.

The special problems of this area were (i) the scarcity of fixed points; (ii) the necessity for restricting the weight of all survey gear to 100 lb. or less. The only way of meeting the first condition was to make some more points. To do this by triangulation would have been out of the question. The only possibility seemed to be to use the Base method described in the paper by Nörlund and Spender, "Some methods and procedure developed during recent expeditionary surveys in south-east Greenland" (*Geogr. J.* 86 (1935) 321). It would be necessary to have some astronomical azimuths in any case; and observations for latitude and longitude might provide additional scientific results.

It was decided therefore to use a Wild Universal theodolite for the star work and for the base observations. By direction of the Surveyor-General this was kindly lent by the Frontier Circle of the Survey of India. The tripod and sub-tense bar were already the property of the Society. The main work would be to fill in from these fixed points on to a plane-table. For this the Society agreed to purchase the Wild plane-table equipment. This comprised, apart from the table (53×43 cm.—a very convenient size), a slow-motion attachment to the theodolite tripod, a telescopic alidade, level, plumb-bob, box-compass, slide rule, extension arm for alidade, divided scale, dividers, and accommodation for pencils, pens, inks, etc. In fact it was a kind of travelling office, which,

contained in a robust, metal-shod box with shoulder straps, weighed 22 lb. The table was of soft wood and weighed 5 lb. I doubt whether much weight was saved by specifying soft instead of the usual hard wood; in any case a spare should be carried, for one is continually anxious lest the table should be broken in a minor slip or fall. The light tripods weigh 10 lb. each; the theodolite 15 lb. in its case; the subtense bar (Wild Precision Invar) weighs 14 lb.

The telescopic alidade is an essential part of the equipment if triangulation is to be done on the table. Without it it is practically impossible to pick up stations which have been already or which will be later occupied. It shows up moreover very promptly any inaccuracies in the points laid out by the base method. Vertical angles can be read from it to the nearest minute in the same setting as that to draw the ray. The Wild alidade has the $36\times$ magnification of the telescope of the Universal theodolite; angles are read through an auxiliary telescope.

The remaining part of our instrumental equipment was the Watts-Leica phototheodolite, of which there is a description in the *Himalayan Journal* of 1937. This instrument was as convenient and useful in the Karakoram as it has already shown itself to be in the high Himalaya.

For the plane-table I used Correctostat, an aluminium foil lined paper which served exceedingly well for plane-tabling (cf. *Geogr. J.* 87 (1936) 286). A roll of this, surrounded by a cardboard cylinder, was packed in an ordinary canvas case for a collapsible tripod, allowing a large area of paper to be carried without inconvenience. For the survey camera and for our private cameras Selo Fine-Grain Panchromatic Film was used and found excellent for the severe conditions of the expedition.

Immediately after crossing the pass into the Sarpo Laggo we camped on an uncomfortable piece of frozen moraine above Changtok. But this was close to a good position for the first base. When the usual range-finding observations were made, rays to all the points of this series, as well as many more for detail mapping, were laid out on the plane-table sheet. Passing from one base-end to the other I started a small avalanche, which delayed arrival at the other end. Fortunately however the weather was very fine that day. When, at that time of the year (early June), there was any wind at all at 19,000 feet, it was so unbearably cold as to make work almost impossible. K^2 was visible from here, and in fact from almost the entire area: it stands out like a cathedral spire above the roofs of a provincial town.

Bases were placed later at the foot of the Sarpo Laggo, on the Aghil pass, at the northernmost station I visited in the Aghil, on the Crevasse glacier and its northern branch, in the Wesm-i-dur, at the foot of the Braldu and at Chikar. Astronomical observations for latitude and azimuth were made at the foot of the Sarpo Laggo (by our main dump) and on the Aghil pass. From above the Wesm valley we had a long-range resection from K^2 , Kanjut No. 1, and Dastoghil to check azimuth.

Plane-tabling was done on the 1 : 100,000 scale, a scale very suitable to show mountain detail without being too fussy. Almost every point intersected was fixed in height. Angles could be taken very quickly from the alidade, and the slide-rule supplied by the makers much reduced the work of computation. Metric notation was used, since the subtense bar was a 2-m. standard, and with the 1 : 100,000 scale arithmetic is reduced to a minimum. The sheets were inked up with 100-m. contours.

I myself never used the photo-survey equipment. The idea was always that some one else should do the survey of an enclosed area with the photo instrument: Shipton's experience of recognizing peaks, observing to them, and

booking them was of course of very great value and saved me any anxiety lest the stations would be inadequately fixed. This is an ideal way of working and saves the enormous trouble of carrying two plane-table surveys through new country. Auden was already experienced in carrying out and booking a compass traverse, which was also a great asset. Finally Tilman's journey showed how much a few photographs and bearings can be made to produce if they can be referred to a good survey framework.

From a surveyor's point of view the weather was exceptionally good. On the whole practically no time was lost on account of weather. I should say that there was a deterioration during the first three weeks of August, but fortunately at that time the party was moving so slowly in triple-banked relay up the Crevasse glacier that I was able to get the stations I needed. The time lost in crossing moraine-covered glacier, or the absolute obstacles of pinnacled ice or swollen rivers, make the real difficulties of the region. Some vantage point to scramble to can generally be found for the least skilled climber in the worst country.

Our method of survey, to make a framework of known scale including K² and then to find its azimuth astronomically, was tested by closing in on the Peak 18/43M. The closure was excellent in plan and height: it also identified this disputed point 23,900 feet high, which has variously been called the Ogre, Kailasa, and B.15.¹

That we have a map to show is nevertheless due to the Survey of India, who took over the costs of compilation at the Geodetic Branch Office, Dehra Dun. Compilation took place on a very large board, on which was pasted a graticule of our area on the scale of the survey. Photographs of my own plane-table sections and of all adjoining work were mounted on this board. Photostations were graphically resected on it, and sheets for plotting prepared by making blue-copies of the areas concerned. These, when plotted, were again photographed and copies pasted to the compilation. The records of many surveys had to be looked into, in particular of Captain Deasy's triangulation of the Yarkand river in 1879; of Conway's journey up the Hispar in 1892; of the various journeys of the Bullock Workmans; of various journeys of Mr. and Mrs. Visser; of Major Mason's Shaksgam Expedition of 1926; and of the Italian Expedition of 1929. Colonel Godwin-Austen's plane-table made on his remarkable journey of 1861 was a perpetual reminder of the high standards laid down by the Survey of India.

The connection with Muhammad Akram's work on Visser's 1935 expedition was perfect; with Afraz Gul Khan's on Mason's expedition fair and reasonably imperfect where disagreement existed; with the Italian work very good. Serious discrepancies only occurred at the join with Afraz Gul Khan's work on the Visser 1925 expedition; that is in the Shimshal district. Here a wholesale adjustment had to be made: it is supposed that the present placing of the Hispar and Biafo glaciers, and of the glaciers and mountains between the Hispar and Shimshal, is reasonably correct.

The plotting of the photo-surveys was done by laying out the principal direction of the photographs on to the drawing paper and constructing a photo-line perpendicular to it at the equivalent focal length of the enlargement from the station. The Leica pictures were found adequate in every way for this work; heights were rounded off to the nearest 50 m. and found very consistent. The actual drawing was done by native draughtsmen who soon became very quick workers. Much office time is saved by fixing the station with the theodolite and only using horizontal photographs.

¹ See "Karakoram Conference Report." (*Geogr. J.* 91 (1938) 134-35.)

Nevertheless travellers must always bear in mind that the completion of a survey takes about as long in the office as it has taken in the field; and that unless this office work can be done during a wintering or similar pause in the field work, provision must be made for it afterwards. Our sincerest thanks are due to the Survey of India for having made it possible to prepare our map.

APPENDIX II: PROVISIONS AND COST

ERIC SHIPTON

Food allowance per day per man

Pemmican	4 oz.
Rice, flour, and tsampa	10
Butter	2
Dried skimmed milk	2
Sugar	8
New army emergency ration	1
Oats	2
Cheese	3
	<hr/>
	32

Vitamins A and D were taken in Crooke's Halibut Liver Oil.

Vitamin C was taken in Hoffmann La Roche a-scorbic acid tablets.

„ B was taken in dried yeast.

The above ration was supplemented from time to time with fresh meat. There was no illness which could be attributed to food or vitamin deficiency, and the party was free from septic cuts and other sores.

Summary of Cost of Expedition

	£
Food	92
Equipment	118
Travelling (including 3 passages to India and back)	239
Extras (hotels, tips, telegrams, meals on train, etc.) ..	54
Sherpas (pay, food, and travelling)	156
General transport	181
	<hr/>
	£840

The above represents the total cost for four Europeans. The party was in the field for exactly five months.

Cost of food supplied to local coolies comes under the heading of "General transport."

Below are the estimates which I drew up two months before leaving England:

	£
Food	90
Equipment	110
Travelling	225
Extras	80
Sherpas	150
General transport	200
	<hr/>
	£855

APPENDIX III: GEOLOGICAL RESULTS

J. B. AUDEN

Until the material collected on this expedition has been examined in greater detail, it is possible only to give a brief account of the main geological features of the country. The Karakoram ranges and the region to the north were not entirely unexplored from a geological point of view before our visit. Hayden had been in the Pamirs in 1914, Mason had collected fossils from the Sa Lungpa in 1926, and De Terra had examined the Depsang in 1928. Desio carried out in 1929 a valuable geological reconnaissance over some of the region which we explored. The only results of Desio that were available to us when we left Srinagar had been published in the *Journal* for May 1930. His more detailed account, and his sketch-maps, given in 'La spedizione geografica Italiana al Karakoram (1929),' and published by Bertarelli in 1936, were not to be obtained in India. A geological account of my own previous traverse to Baltistan in 1933 was published in *Records, Geol. Surv. India*, LXIX, p. 124 (1935).

It should be pointed out that no detailed geological mapping was possible on account of the absence of topographical maps, but the data and rough plans obtained during our traverses will permit of a reasonable geological map being made when the topographical map is available.

The sequence of formations determined is as follows:

Sedimentary rocks

- Aghil series: marine Triassic and Jurassic.
 Shaksgam series: Permo-Carboniferous, mainly marine.
 Sarpo Laggo series: slates, phyllites, quartzites, greywackes, impure limestones, probably of lower Palaeozoic age. These rocks become highly altered towards the south.

Igneous rocks

- Dolerite: Mesozoic or younger in age.
 Lamprophyre: post Triassic and post granodiorite.
 Granodiorite: }
 Gneissose granite: } post Permo-Carboniferous in age.

The sedimentary rocks are disposed in a broad syncline, with an axis running N.W.-S.E. The youngest rocks, proved by their fossils to be largely Jurassic in age, occur in the form of a basin about 16 miles in length, which occupies the part of the Aghil range lying between the Shaksgam and west-Surukwat rivers. Another basin of Jurassic rocks, probably *en échelon* with that found this year, must occur along the Sa Lungpa, since Jurassic fossils were found in Mason's collections from that river.

Surrounding the Mesozoic rocks occur successively the Shaksgam and Sarpo Laggo series. Fossils collected this year from the former support the list of genera previously found by Desio. The Sarpo Laggo series is mainly pelitic, and has been found extensively up the Sarpo Laggo and Crevasse glaciers, and along the lower reaches of the Surukwat river as far as the Yarkand. It clearly crops out in the Kun Lun range.

There is no doubt from the work carried out this year, and previously by Hayden, De Terra, Mason and Desio, that a zone of marine Tethys sediments extends for many miles along the northern side of the Karakoram range. The northern boundary of the marine facies must have been along what is now the Kun Lun range.

The whole region has been invaded by granodiorites and gneissose granites, in which the Permo-Carboniferous rocks sometimes occur as long wedges, divorced from their former associations. Lamprophyres cut both the granitic rocks and the sedimentaries, being found intrusive in the Shaksgam series and the *Megalodon* limestones of the Aghil series. These rocks are uncommon in India, except amongst the coal-bearing formations of the Gondwana basins.

Of great interest are the varied degrees of metamorphism shown by the Sarpo Laggo and Shaksgam series. When the Biafo glacier was visited in 1933, Auden was inclined to regard the metamorphic rocks found there as belonging to the archæan Salkhala series, which occupies large areas of Kashmir. Work this year has shown however that gradations exist from these altered rocks to the less altered and unaltered rocks of the lower Sarpo Laggo and Shaksgam valleys, and it seems probable, as believed also by Desio, that many of the metamorphosed rocks of Baltistan are relatively young.

All of us were impressed by the recent decrease in thickness of the Sarpo Laggo and Crevasse glaciers near their snouts. That these glaciers are subject to periodic changes is suggested by historical records, since at different times they have been easy and difficult of access. The Nobande Sobande branch of the Panmah was inaccessible to Younghusband in 1887 beyond Skinmang. It was so smooth and uncrevassed in 1929 that Desio was able to ski up to its head. In 1937 it was again highly broken up. The snout of the Biafo glacier has shrunk considerably since 1933, but appeared to show no seasonal retreat between May and August 1937.

DISCUSSION

Before the paper the PRESIDENT (Professor HENRY BALFOUR) said: The lecture which we are going to listen to to-night is concerned with a surveying expedition in an area which is of very great importance to the Royal Geographical Society. As a result of this expedition it has been possible to fill in what was a very glaring hiatus in the map which the Society has drafted. That the expedition was a successful one you will learn very shortly, and as there is a good deal to be said on the subject I will not delay you, but will ask the leader of the expedition, Mr. Eric Shipton, to tell us about it.

Mr. Eric Shipton then read the paper printed above, and a discussion followed.

The PRESIDENT: Two other members of the expedition are present, the third being still in India, and I am sure we should like to hear from them. I will call upon Mr. Tilman to add some remarks.

MR. H. W. TILMAN: Mr. Shipton's account was necessarily condensed, nor is there time now for explaining the reasons for my short independent cruise. Sufficient to say that it was devoted to clearing up the misconceptions of earlier and better travellers than myself—Sir Martin Conway and the Bullock Workmans. I can assure you that for me it was a bitter disappointment to find that Sir Martin Conway's Snow Lake hardly justified its title and that the Cornice glacier of the Workmans' was not without an outlet as they had imagined. Almost thirty years ago, from this same platform, Sir Martin Conway ridiculed the idea of a completely enclosed glacier on scientific grounds, and last summer, when the discussion began afresh, he was supported by Shipton and Spender in opposition to Auden and myself. When I started I had hopes of being able to vindicate the Workmans and so confound the scientific sceptics; but, as you have heard, the Cornice glacier behaved normally, and that startling topographical phenomenon, a glacier with no outlet, has gone the way of the lost continent of Atlantis.

75° 45'

76° 0'

36° 15' 36° 0'

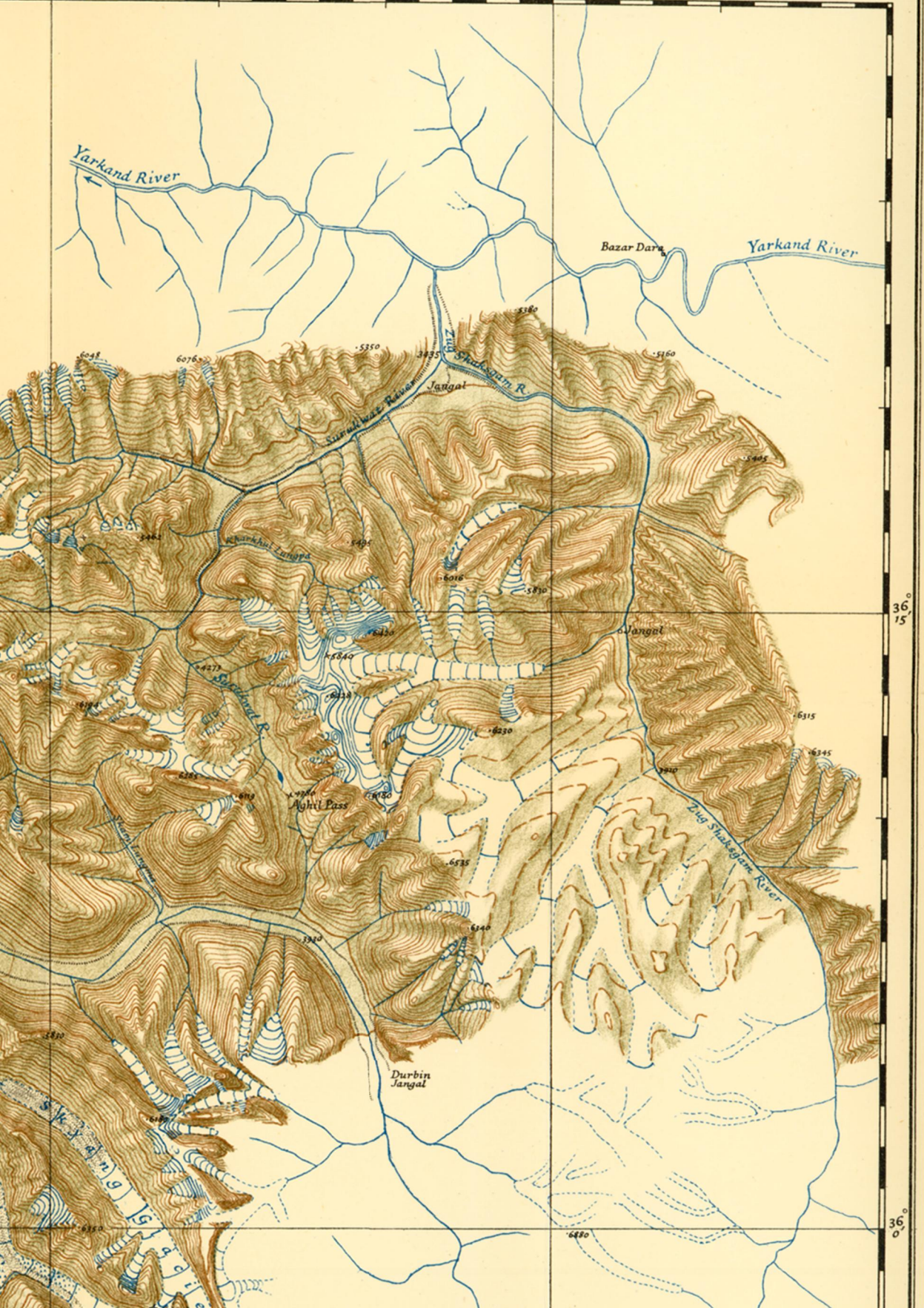


PARTS OF THE GREAT KARAKORAM
AND OF THE AGHIL MOUNTAINS
Surveyed by Michael Spender and colleagues
on the Shaksgam Expedition 1937



76°30'

76°45'



36°
15'

36°
0'

36° 15'

36° 0'



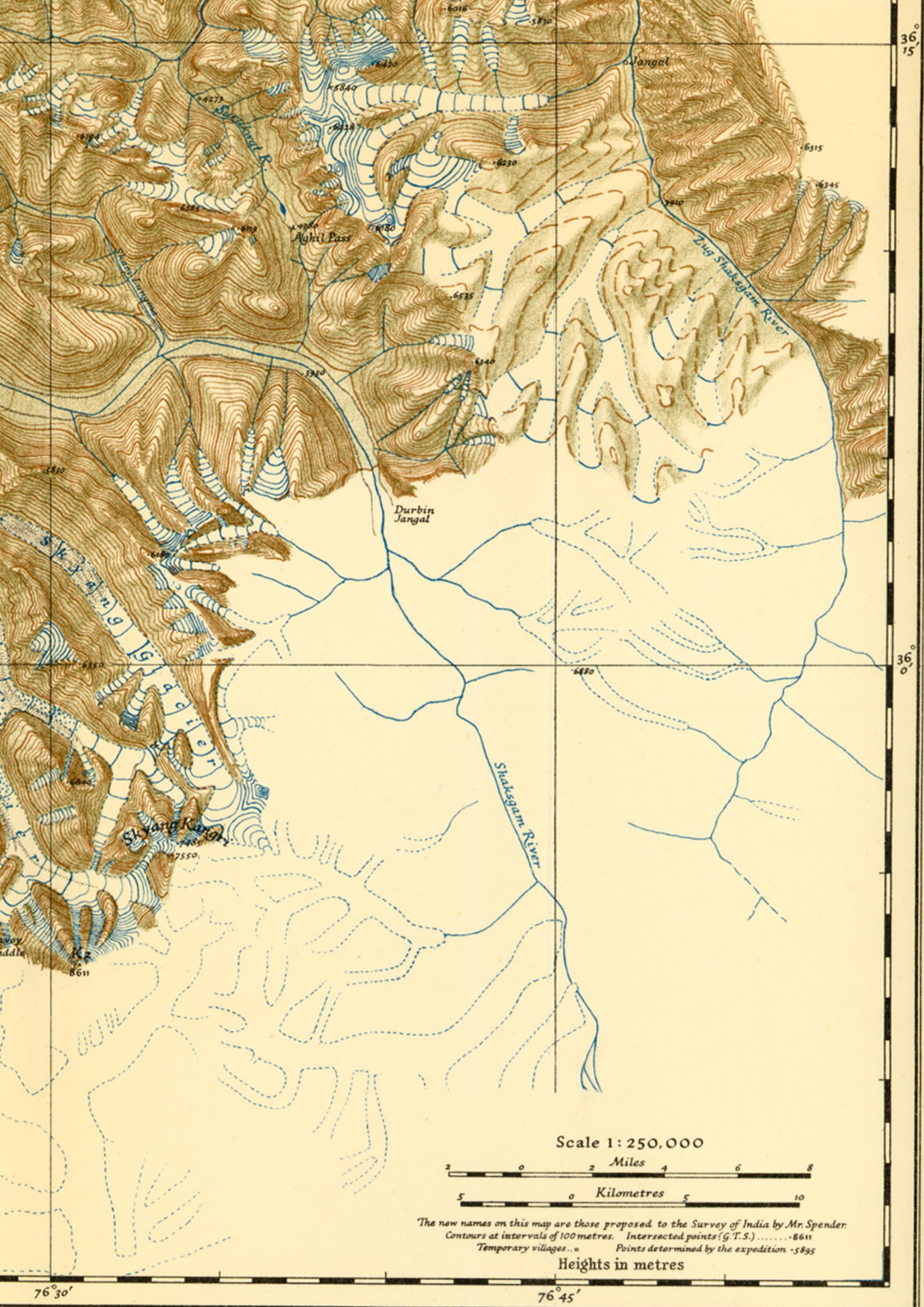
75° 45'

76° 0'



76° 15'

76° 30'



Scale 1 : 250,000

0 2 4 6 8 Miles

0 5 10 Kilometres

The new names on this map are those proposed to the Survey of India by Mr Spender.
 Contours at intervals of 100 metres. Intersected points (G.T.S.) 8611
 Temporary villages... Points determined by the expedition .5895

Heights in metres

SHAKSGAM
Sipton

Some of you perhaps are less interested in mountains than in the men who visit them, so I am going to let you into a secret. I was never quite at home on this trip, for there was a man to whom slide rules and trigonometry are as intelligible as Chinese, making one of a party who thought in angles, talked in tangents, and read log tables for amusement—all this, by the way, in the metric system, so that if any height or distance was under discussion, pencil and paper were necessary to reduce it to intelligible terms. Shipton, of whom I hoped better, was the chief offender, and proved to be a confirmed “theodoliter”—a word I have coined and patented to denote the worshippers of the theodolite. True, in a moment of forgetfulness we did climb two peaks, and very good fun they were too, thanks, in the one case, to leaving the theodolite behind, and in the other the rope.

Those of you who read *The Times* may have noticed that we came upon the tracks of the Abominable Snowman; indeed the past season was a very favourable one for snowmen, not only in the columns of *The Times* but in their more usual habitat, the Himalaya. Mr. Smythe saw tracks in Garhwal which were obviously bear tracks, and in the course of a column and a half and with the doubtful assistance of several eminent zoologists, succeeded in proving that they were bear tracks.

The tracks I saw were certainly not those of bear. They were roughly circular, about 8 inches across and 9 inches deep, and the remarkable thing was that they were all on the same axis and not “staggered” to right and left as in the case of other four-footed animals. The Sherpas of course said they were the tracks of the “Yeti” or Snowman, of which there are apparently two variations, the larger which eats yaks and a smaller existing exclusively on men. These were of the smaller kind, and when I pointed out to the Sherpas that no one had been in those parts for thirty years and that he must be devilish hungry, they were not so amused as I expected. I think the pundits of the Natural History Museum must either accept the Yeti or else find us a carnivorous one-legged bird weighing several hundredweight.

To return to our journey: it was all work of great interest carried out amidst the most remarkable mountain scenery—scenery that attracts by its grandeur and repels by its desolation. Moreover we were there for a definite purpose, supported to some extent by this Society, by the Royal Society, and by the Survey of India. I hope you will agree that much was accomplished. It was due to the fact that Shipton ran the show as he has run others: lightness, mobility, and simplicity were the keynotes. If you grasp that important point you will be able to understand how we covered so much ground and how we existed in that inhospitable country for four months without seeing a village and beyond reach of supplies.

The PRESIDENT: I will ask the other member of the party who is present, Mr. Auden, to address us.

Mr. J. B. AUDEN: This is not the occasion for going into details about the geology, but I might mention one problem that was interesting us. It is well known that the Himalayas and the Alps are young mountain chains, but it is also known that there were older revolutions or periods of earth movement that had taken place before the latest Tertiary movements, and one of the things that I was trying to find out was whether there were any signs of the older movements incorporated in the younger. I think it was Professor Gregory who used the analogy of a cathedral. You might have a Norman structure with a Gothic superstructure built upon it, or you might have a Norman building pulled down and its stones used again in making an entirely new building. In the Garhwal there are certain signs of the earlier structures, but it is quite

definite that most of the structures are Tertiary. On the other hand, in the Alai and Kun Lun mountains the structures are probably old and have to only a small extent been refashioned by the later earth movements. We found in the Karakoram that the fossiliferous rocks, of Permo-Carboniferous and Mesozoic age, were laid down upon a basement of older rocks without any marked unconformity, and that both series have been penetrated and altered by young granites. These mountains would appear to show few signs of the older earth movements and to belong in the main to the youngest revolution.

A word about the glaciers. At the end of his long traverse across Asia, Sir Francis Younghusband went up the Panmah glacier in the hopes of finding an alternative route over the Karakoram range. He was unable to get beyond Skinmang because the ice there was piled up in blocks as large as houses and the glacier beyond was completely inaccessible. In 1929, Professor Desio, the geologist of the Italian Expedition, was able to use skis over a considerable part of the glacier, and his photographs show that it was remarkably smooth. When Tilman and I came over from the Crevasse glacier we thought that the Nobande Sobande branch of the Panmah, in spite of its crevassed appearance, would be a moderately easy route for me down to Askole. This glacier turned out however to be so broken up by gaping crevasses and tumbled masses of ice that our route had to be made laboriously down the left wall of the valley. This is an interesting point, for it appears that this glacier must be subject to periodic changes, sometimes being relatively uncrevassed and smooth, at other times highly broken up and almost impassable as a route. This question of periodic change may have a bearing on the use and disuse of routes over the Karakoram range.

In conclusion, I should like to thank Mr. Shipton very much for his invitation to join the expedition, and for the extremely efficient way in which it was run.

The PRESIDENT: We have been listening to the latest account of this new survey. I think now we ought to go back half a century in order to listen to a description by one who was a pioneer surveyor in this region. You have already heard his name mentioned this evening—Sir Francis Younghusband.

Sir FRANCIS YOUNGHUSBAND: I should like at the start to thank Mr. Shipton for his very kindly and indulgent references to me. For quite fifty years I have been afraid of Shipton and Tilman. It is true that they were not born when I was there, but I knew they would be sooner or later, and that one or other of them might indulge in the sport of picking holes in what their predecessors had done. But they have been kind enough to let me off very lightly, and I thank them most sincerely for that.

You have seen the photographs of that region, and you can imagine the excitement with which I looked upon them, but I must confess that I was disappointed at the result. They were as good photographs as it was possible to obtain, but any one who has actually seen these mountains will, I am sure, admit that they do not give the faintest idea of the impression which those peaks make upon one on the spot. And here I would like to go back to a Presidential Address I gave to this Society about twelve years ago in which I urged the importance of describing natural beauty. I said then that while geology is concerned with the interior of the earth, it is by convention left to geography to deal with the surface. And I argued that describing the beauty on the face of Mother Earth was as much a matter for geographers as the mapping of it. Therefore I very much hope that now that the map of this region is fairly well completed Shipton and Tilman will return there and bring us back real pictures of it. I hope that they will devote perhaps another season to climbing the heights for no other purpose than, as Shipton has said, to see the view. Tilman

stated that this is the finest mountain scenery in the world, and I would corroborate that from what I have seen of other parts of the Himalaya.

I thank Mr. Shipton very warmly for his lecture and I congratulate him on the splendid piece of exploration he has done.

The PRESIDENT: We have another and more recent pioneer with us whose name has also been mentioned this evening, namely, Professor Mason. I should be very glad if he would say a few words to us.

Professor K. MASON: I should like to second Sir Francis Younghusband's vote of thanks to the lecturer, and to congratulate him and the other two who have spoken, as well as the one who is absent, on a very magnificent performance.

I am not homesick to go back, especially when I see these pictures of rope bridges and the like. I always hated them, and I also disliked the rivers. No photograph can bring out their dangers, when they are coming down in flood, with great boulders rolling with the stream, boulders which can easily break a man's leg. They do not invite one a second time. It was not the mountains, but the flood water in the Zug Shaksgam river that eventually stopped our progress.

The PRESIDENT: You will agree with me when I suggest that this expedition was one which was thoroughly worth while, and it is interesting to learn at what very small cost it was carried out. That is a very important factor, because it is always very difficult to raise money for expeditions. What they have done in the course of this expedition has been to fill in a blank upon a map which itself has been produced in the most exquisite manner. I daresay you noted in that enlargement of the Society's map of the Karakoram the intricate detail which was brought out with such clearness. It is a beautiful piece of draughtsmanship and its completion is much desired. This blank has now been filled up with equal detail, and it is a remarkable thing that so small a party should have been able to cover so much ground. It was not easy going, as you have seen for yourselves, but the party successfully departmentalized the work, breaking up into small sections, and in that way they covered a very considerable area indeed.

There is a great deal I would like to say in regard to this lecture, but I will only mention the fact that I have just received a letter from the Surveyor-General of India expressing his very high appreciation of the work which has been accomplished. As we have depended very largely upon the goodwill of the Survey of India, it is very gratifying to find that they have found satisfaction in this remarkable journey.

It only remains for me to offer on your behalf very cordial thanks indeed for the extremely fine piece of work which has been done, and also for the way in which it has been presented to us this evening. Before I close my remarks, I would like to offer all good wishes on the part of this Society to those who are proceeding very shortly on, possibly, a more important and epoch-making adventure still—the conquest of Mount Everest.

The GEOGRAPHICAL JOURNAL

Vol XCI No 6



June 1938

LHASA IN 1937

F. SPENCER CHAPMAN

Evening Meeting of the Society, 13 December 1937

I SPENT the spring and early summer of 1936, as a member of Marco Pallis' expedition, climbing and bird-watching in the neighbourhood of the Zemu glacier and Lhonak in the north of Sikkim. Towards the end of June I happened to be staying with Mr. B. J. Gould, the Political Officer of Sikkim, in his Residency at Gangtok. Ever since the famous mission of Sir Francis Younghusband to Lhasa in 1904 the Tibetan Government have occasionally invited the Political Officer of Sikkim to visit their capital. It happened that in the spring of 1936 Mr. Gould was invited to Lhasa, and he asked me if I would like to accompany him as his private secretary to help with ciphering, and to undertake survey, photographic, and natural history work. I would like to record my deep gratitude to Mr. Gould for giving me the chance of fulfilling one of my most long-cherished dreams.

I spent a very busy month taking a refresher survey course at Mussourie and collecting the necessary photographic equipment and trying to pick up the elements of the most complicated Tibetan language before we left Gangtok on the last day of July 1936. The other members of this diplomatic mission were Brigadier P. Neame, v.c., d.s.o., H. E. Richardson, i.c.s., the British Trade Agent at Gyantse, Captain W. S. Morgan, i.m.s., also stationed at Gyantse, two wireless officers from the Royal Corps of Signals, E. Y. Nepean and S. G. Dagg, and the invaluable and charming Rai Bahadur Norbhu, o.b.e., the British Trade Agent at Yatung, who acted as interpreter for the Mission and who had preceded us to Lhasa. This was therefore the largest diplomatic mission ever to visit Lhasa, and we spent practically six months there from August 1936 to February 1937.

On political matters I am not qualified to speak. I shall therefore confine myself to my own departments and to a general account of Lhasa as it is to-day, especially in so far as it has changed since the visit of Sir Charles Bell, who spent nearly a year there in 1920-21.

The thirteenth and greatest of the Dalai Lamas had died in 1933, and during our visit a Regent was in charge of affairs while the next reincarnation was being sought by a complicated system of divination. Meanwhile

the Norbhu Lingka, the summer palace of the Dalai Lamas, was open to our inspection; we were allowed to visit it and to take photographs there as often as we liked. Its grounds, half a mile to the west of the Potala and a mile to the west of the city of Lhasa, are surrounded by a high wall pierced by several ornamental gateways. Within are magnificent groves of trees and beautiful gardens. In a more private enclosure is an artificial lake surrounding a small island on which there is an exquisite pagoda where the last Dalai Lama would spend many hours each day in meditation. Scattered in the grounds are several small but attractive palaces roofed with highly glazed tiles surmounted by golden turrets. In the lake pavilion and in several rooms of the palaces were heavy silken cushions on which the Presence—as the Dalai Lama is called—would sit cross-legged in Tibetan fashion either in meditation or when engaged in affairs of state. We noticed that in nearly every such room things were prepared for the apparently imminent appearance of the next ruler. His tea cup, bell, and prayer wheel were put ready, while frequently a bowl of fruit or other food stood upon the carved wooden table before the seat. The rooms were all beautifully clean and ready for immediate occupation, though the new incarnation, when divine signs and portents have at last led to his discovery, will be only a child and will have to spend some years being most carefully taught and prepared for his office before he can come to occupy his palaces at the Norbhu Lingka.

The last Dalai Lama was extremely fond of animals and he had a small collection in the Norbhu Lingka. Though his herd of stately Mongolian camels still roam the thorny waste land between the summer palace and the Lhasa river, the rest of his menagerie seems to miss his loving care. Two *shou*, the almost extinct Sikkim stag, are still tethered on one of the lawns. A monkey is chained to a pole; some Demoiselle cranes and a pair of Monal pheasants are confined in cages; while on the pond are numbers of half-tame bar-headed geese and Brahmany ducks. But only a few remain of the fierce Tibetan mastiffs which used to inhabit the stone kennels standing at frequent intervals beside gateways and before the doors of the palaces. Roses, hollyhocks, sweet-williams, and many other familiar flowers abound; bamboos grow to a height of 20 or 30 feet; and apples and peaches bear fruit, at a height of nearly 12,000 feet above sea-level. But the lawns are now untended, the borders unweeded, and most of the annuals have seeded themselves and are forcing their way up in the cracks between the paving stones and on the granite staircases.

The most striking part of the Norbhu Lingka is the Dalai Lama's stables. Here there is room for some fifty ponies, and above every stall is an enchanting fresco in bright colours on the wall. Many are of equestrian subjects: Pegasus-like horses with scarlet wings, a man leading a pony laden with symbolic jewels, and a diagrammatic painting showing the bones and arteries of a horse. On each side of the stable entrance are two larger paintings: one the conventional sign of welcome, a Mongolian leading a tiger; and the other a work of art calling to mind an Italian primitive, a man leading an amiable-looking elephant. I was able to take both black-and-white and colour photographs of these paintings. They have a peculiar charm, and, though occasionally incorrect in perspective, exhibit a rare economy of line and colour.

The Tibetans, although they are remarkably fond of flowers, are not notable gardeners. In the summer nearly every window and verandah is adorned with pots of gay blooms, but only at the Norbhu Lingka and at the homes of the Regent, of Tsarong Shap-pe, and the Lhalu family did I see what could be described as gardens. Here there were flagged paths bordered by beds in which plants were set, often still in their pots. In this way a continuous show of flowers can be maintained, for as soon as one kind is over, another, about to flower, is put in its place. Thus the Regent's garden had for August and half September sunflowers, which grew to a height of 6 feet; from then until the middle of October coreopsis, which was 4 feet high; and finally Michaelmas daisies, which for some reason did not do well. After the middle of November the beds were manured and left empty.

There are few lawns in Lhasa. Where animals are prevented from cropping the grass it is usually plucked by hand. The city is surrounded by *lingkas* or parks, which are square walled enclosures, often as much as 100 acres in area, wherein trees are planted. In these there is usually a small summer house for picnics but no flowers of any sort. The trees are for the most part willows, which are usually pollarded every few years, and black or white poplars. The greatest variety of trees is seen in the Norbhu Lingka, but the finest individual specimens grow beside the temple of the State Oracle at Netchung, a mile from Drepung monastery. In the gardens walnuts, apricot, peach, and apple trees, bamboos, cypress, and pines are grown. The apples and peaches grown in Lhasa are undersized and lacking in sweetness, but the walnuts are large and delicious. Better fruit is imported from south-eastern Tibet.

There are a certain number of vegetable gardens in which cabbages, peas, beans, and potatoes grow excellently, also a root which is intermediate between a turnip and a radish. I saw glass frames only in Tsarong's garden. The seeds are usually forced in boxes indoors and it is here that most of the perennial plants are taken for the winter, though these are few, as nearly all the flowers are annuals grown from seeds which the gardeners collect themselves or obtain from India. The perennials I observed were a few roses, hollyhocks, chrysanthemums, carnations, phlox, and Michaelmas daisies.

All who have visited Lhasa are captivated by the enduring wonder of the Potala, the monastery-palace of the Dalai Lamas. Built, storey above storey, on the summit of a 700-foot hill that rises from the level plain it completely dominates the landscape. Its exquisite setting, in the centre of the green vale of Lhasa, surrounded by a circle of austere mountains, its phenomenal size, and the inspired restraint of its decoration, combine to make the Potala the most beautiful and impressive building of the world. It seems to have grown there rather than to have been built, so perfectly does it harmonize with its surroundings.

On the summit of the Potala are golden pagoda-like shrines covering the tombs wherein are embalmed the mortal remains of former Dalai Lamas. The tomb of the last Pontiff has only recently been completed and it is interesting to see that the work done in Lhasa to-day is apparently indistinguishable from similar work carried out at various times since the seventeenth century when the palace, in its present form, is supposed to have been built. The actual tomb runs up through several storeys of the building, and it can be

seen from the photographs of Sir Charles Bell taken in 1920 (see his 'Tibet past and present,' p. 54) that some structural alteration has been made. The part containing the tomb is a small red-washed block on the left of the central similarly coloured portion. Formerly this was white, and therefore not included in the most sacred part of the Potala.

The great depth of unbroken wall below the lowest windows is to make a platform for the building on its narrow sharp ridge of rock. Thence the even rows of small windows lead up to flat roofs sparingly ornamented with turrets. The irregular height of the different blocks of the building gives variety, and the whole is crowned with glittering pavilions on the summit. The lower walls of Tibetan buildings are of granite blocks; the upper storeys of the houses often of mud. In the dry Lhasa air, with annual rainfall of 14 inches and negligible snowfall, these mud walls last for about a hundred years.

Along the top of nearly every Tibetan roof is a broad maroon-coloured band bordered above and below by a string course of square beam ends. This is made by laying willow twigs horizontally and cutting them vertically like a half-used haystack. These osiers are stamped down with mortar which has been mixed with a reddish dye. The resulting matt surface forms an ideal background for the golden monograms and emblems which are usually placed there. This dark band can be seen right along the top of the various blocks of the Potala.

The inside of the building, compared with its superb exterior, is disappointing. It would be interesting to have an architect's report on its construction and condition. Dark passages, slippery with centuries of spillings of Tibetan buttered tea, lead with no apparent design from assembly hall to shrine, and from temple to private apartment.

The Tibetans have never learnt to construct an arch. In all their rooms a number of square poplar pillars support the heavy roof beams, which themselves uphold transverse willow poles placed a foot or 18 inches apart. In the larger halls the roof is supported by composite pillars formed by several smaller tree-trunks clamped together with iron bands. Above these transverse poles, smaller branches are laid at an angle giving a pleasant herring-bone effect. On top of these are small twigs on which is laid the flooring of the upper storey. The vertical and horizontal beams are painted red and picked out with conventional designs in gold and bright colours. The smaller roof poles are painted a bright milky blue.

When the last Dalai Lama died, the faithful from many parts of the Buddhist world contributed what they could towards the ornamentation of the inner tomb or *chorten*, which must be about 60 feet high. The framework is of solid silver; it is covered with exquisitely worked gold leaf embellished with gifts of onyx snuff-boxes, strings of amber and pearls, turquoise head ornaments and charm boxes, pieces of lapis lazuli, amethyst, coral, and other semi-precious stones. Around the foot of the shrine are shelves whereon are displayed more precious presents: gifts from the rich monasteries of Mongolia and China, and from the ancient and noble families of Lhasa. Here are chalice-like golden vessels, heavy silver bowls and butter lamps, marvellous examples of cloisonné, rare porcelains and vases, meticulously wrought metal work, and curiously fashioned china plants in glass cases. Against one wall are



Panorama of the Chomolhari range from Tuna, with Chomolhari on



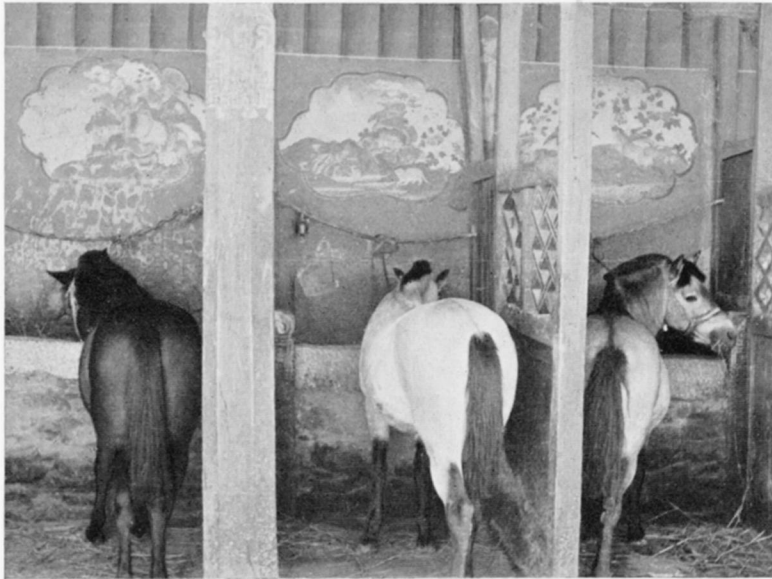
The vale of Lhasa, showing the Potala and, to its right, Lhasa city. At the foot of the mountains (centre) Hill, and immediately behind it Kundeling monastery. The Norbhu Lingka lies to the extreme left



Chomolhari range from Tuna, with Chomolhari on the extreme right



Lhasa city. At the foot of the mountains (centre) is Sera monastery. To the left of the Potala is the Iron Norbhu Lingka lies to the extreme left



Frescoes over the stalls in the Dalai Lama's stables



Conventional painting of a Mongolian leading a tiger, signifying welcome



Three ladies



ables



er, signifying



Tsarong



Three ladies of high rank, with Tsarong's wife in the centre

images of different Buddhas, and holy books set in carved alcoves, and in front of the tomb are immense silver butter lamps always burning to the memory of the saintly ruler.

All visitors to Lhasa come to pay their respects to this shrine, and many Tibetans make long pilgrimages for this especial purpose. It was probably on account of this that there were an unusual number of nomads in Lhasa during the winter months. These swarthy independent-looking people come down from Amdo, Golok, the high desolate Chang Tang, and the far Mongolian border. Many of them bring herds of yaks and sheep with them, carrying loads of wool, salt (which they collect from the shores of the great brackish lakes), and yak dung. A part of this curiously assorted merchandise is paid as their year's taxation at the Potala. The rest is exchanged for *tsamba* (parched barley meal) which they are unable to grow up on the arid wind-bitten plateau where they live.

Groups of these attractive-looking people would be seen in the early morning making the prescribed holy walk around the precincts of the city. They turned their prayer wheels as they walked, while their lips moved with continuous repetitions of the holy formula.

Little is known about these magnificent people. Had one the requisite knowledge one could tell by examining the clothes and the curious head-ornaments of the women from what far corner of high Central Asia the family had come. One woman had her hair tied into innumerable small plaits sewn on to the top of a long strip of scarlet and green chequered cloth which hung almost to the ground. The squares of this were ornamented with Chinese dollars, cowrie shells, rows of trouser buttons, and fragments of agate and turquoise. Another wore over her forehead a disc as large as a saucer made from concentric rows of coral and turquoise, while her hair was divided into two series of plaits which were looped at each side to her belt. Over her nape hung a square of cloth ornamented with ivory and bone objects.

These nomads are noted bandits when occasion offers; and it was interesting to see how diffident and shy they seemed in the presence of the sophisticated and self-assured townsmen. It would be fascinating to return with them to their homes, often many months' journey to the north of Lhasa, and to find out more about the generations of self dependence and fortitude that have gone to the making of these proud sunburnt men with a faraway look in their eyes. But the language problem would be difficult: though they could understand my halting Lhasa Tibetan, and were vastly amused thereby, I could make nothing of their sing-song vernacular and even our Tibetan servants found them almost impossible to understand.

During our stay the young Regent was the highest official in Lhasa. One of the incarnate lamas in charge of the six small but important monasteries in the vicinity of Lhasa is usually elected to fill this office; but the present Regent was chosen by the late Dalai Lama shortly before his death. He was the only Lhasa official who was too great to be permitted to visit the small house between the Potala and the Norbhu Lingka which had been lent to us by the Abbot of the nearby Kundeling monastery. The young Prime Minister, the four Cabinet Ministers, the four Grand Secretaries corresponding to a Lama Cabinet, the monk and lay Commanders-in-Chief, the Abbots of Drepung

and Sera monasteries, and even the State Oracle from Netchung all came to pay their respects and to present white silk scarves of greeting.

One of our most arduous tasks as members of a Diplomatic Mission was to eat formidable lunches with each of these ministers in turn. Preceded and followed by gaily dressed mounted servants, we would leave our house at about eleven o'clock and ride to our host's residence, which might be in a park-like enclosure on the outskirts of the city, or perhaps opening off some squalid back street where we would have to splash through flood-water and filth.

Having reached our host's front door, which would be of exquisitely carved woodwork painted in bright colours, we would ride into a cobbled courtyard, often of great size. Here would usually be mules or yaks laden with bales of coarse wool, the real wealth of Tibet, ready to be sent down to Kalimpong from where it would eventually be shipped, curiously enough, to America to be made into carpets. Servants dressed in long robes of indigo-coloured home-spun cloth would steady our ponies while we dismounted on to granite blocks ornamented with carved swastikas placed on either side of the entrance door. The lower storey rooms are given up to granaries, storehouses, and the offices of stewards and senior servants. We would then climb a rickety wooden ladder to the first storey; it is curious that the Tibetans, such marvellous external architects, have never learned to build staircases inside their houses. Our host would usually come down to meet us, and after exchanging scarves with him we would go into the main sitting-room for a preliminary meal of tea, dried fruits, sweets, and biscuits. Later on the main meal would be brought in: to begin with many small dishes of boiled mutton, yak tongues, preserved prawns, dried fruits, and always small nuts and sunflower seeds. Then these *hors d'oeuvre* dishes would be put to one side and a series of large china bowls of steaming savoury courses would succeed each other. There would be sea slugs, sharks' fins, mushrooms, bamboo roots, meat balls, stuffed eggs, and many other delicious and highly spiced dishes. We would always eat with chopsticks, which in any case are difficult to manipulate, and especially so when dealing with such slippery things as sea slugs and sharks' stomachs. *Chang*, a local barley beer, would always be served by attractive "chang girls" who force reluctant guests to drink as much as, or preferably more than, they can manage. The Tibetans have the most charming natural manners, and they are excellent if exacting hosts. It would often be four or five in the afternoon before we were allowed to return from these banquets.

The Tibetan living-rooms are extremely decorative and comfortable, though we often found them rather cold, as it is their custom to put on an additional silken fur-lined robe rather than to warm the room. Although glass has to be carried on the backs of pack animals from Kalimpong or Gangtok, it is gradually replacing the Tibetan windows of ornamental trellis work covered with oiled canvas.

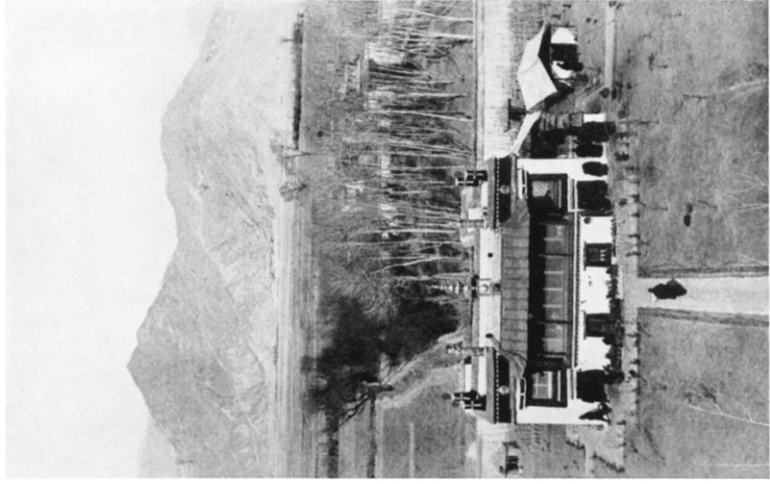
A few signs of Western influence would appear in the houses. There might be framed portraits of Political Officers who had formerly visited Lhasa, and such things as gramophones and silver tea sets, usually gifts from these visitors. But it was rare to see their own characteristic and beautiful scheme



Pierced chorten forming the western gate of Lhasa



A street in Lhasa with the Potala in the background; on the left is a prayer pole



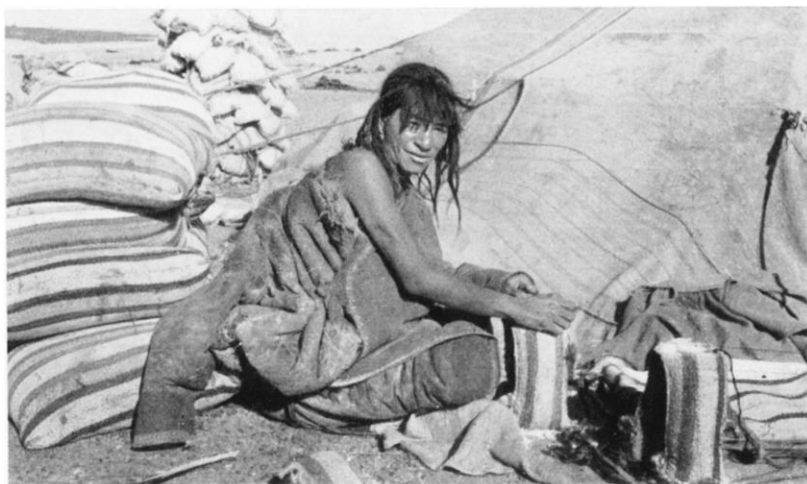
The Regent's summer palace



Yaks threshing corn



Flailing barley



Nomad sewing a bag of salt, carried on the back of a sheep

of decoration upset by the juxtaposition of some tawdry representative of an alien civilization.

Prior to our visit the only wireless transmission set in Lhasa was one in the possession of a Chinese who, together with the apparatus, was left in Lhasa after General Huang Ma Sung's mission of 1932. We presented portable reception sets to several of the officials.

There is no cinema there, though our 16-millimetre projector provided a most popular series of entertainments. Films of themselves, especially in colour, proved most popular, closely followed by Charlie Chaplin's early successes, one of the Jubilee procession, and a Rin-tin-tin film called "The night cry."

The Lhasa postal and telegraph system is most efficient. It is in charge of a Tibetan monk who was trained at Kalimpong and who speaks adequate English. The line was laid from Kalimpong over the Jelep La as far as Gyantse by the 1904 Mission. In 1921-22 it was continued to Lhasa. It is maintained by Nepalese line-men, with occasional visits—as far as Gyantse—from English engineers. The muleteers sometimes take the posts for fire-wood and amuse themselves by throwing stones at the insulators, but during our visit we were always able to telegraph messages to India. The Potala is connected by telephone with the Post Office.

Stamps, in five values and colours, are printed at the Lhasa mint; they are current only within Tibet. Post-runners carry the mails to Gangtok (our letters were re-stamped at Gyantse). Running from dawn to dusk in relays of about 8 miles they covered the 330 miles from Lhasa to Gangtok in from eight to ten days.

Several of the larger houses and official buildings of Lhasa are lit by electric light instead of by the traditional lamp of a wick burning in a bowl of mustard oil or yak butter. The origin of this anachronistic streak of our civilization is a strange story. The Dalai Lama, inspired by Sir Charles Bell, decided to augment their Tibetan education by sending four boys to school in England, where they spent several years at Rugby. These were trained as a soldier, a surveyor, a mineralogist, and an electrical engineer. Ringang, who installed the hydro-electric plant at Lhasa, after three years at Rugby, had spent a further three years at an engineering college in England. Not only is he in charge of this installation and of the mechanical side of the state mint, but he is the interpreter to the Kashag or Cabinet, a district magistrate, and a municipal officer; he still speaks the most perfect and idiomatic English. Although he was too busy to spend very much time with us we found him a most entertaining and intelligent man. Gonkar, the soldier, died soon after he returned to his native land. Mõndõ, the monk, was trained as a mining engineer, but as his activities were alleged to have disturbed the local spirits and ruined the crops, he fell into disfavour, and spent several years as a magistrate of a remote and unimportant village. He is now a prosperous Monk Official with an office (the Tibetan word literally means "nest of papers") at the Potala. Kyipup has given up surveying and is now a city magistrate and in charge of the company of Lhasa police. As an educated man in Lhasa is one who can write perfectly the complicated Tibetan script, the Rugbeians, after so long an absence from home, seemed to be uneducated.

Now their natural merit or the advantage of their education in England has asserted itself, and they are all three in potentially important positions. They are all primarily Tibetans, whatever Western knowledge they may have acquired.

Perhaps the most interesting personality in Lhasa to-day is Tsarong, a man who was at one time Commander-in-Chief of the Army and a Cabinet Minister, but who now has no official position. He represents a rare thing in Tibet—a layman, not of noble birth (his father was one of the Dalai Lama's archers) who, by his own efforts and merit, has risen to high position. Normally the lay officials are selected from a few ancient and noble families; only in the monasteries do all men stand a reasonably equal chance of preferment. Tsarong has built himself a fine house on the outskirts of Lhasa and his family is as delightful as one could meet in any part of the world.

Although this house had glass windows, a stone staircase, electric light, and a bathroom, it is yet typically Tibetan in detail. The finest room in the house is the altar room devoted to the worship of Buddha. Along one wall of the room are huge gilt images of different deities adorned with jewelled diadems and necklaces of solid amber. In front of these are holy water vessels and curious symbolic images made of butter and *tsamba* mixed into a paste and dyed different colours. There are also silver *chang* pots, porcelain vases and, oddly enough, a terrestrial globe. The floor of the room is of small pebbles and earth beaten down and polished to the consistency and appearance of marble by the continual passage of servants' padded footwear. The walls are ornamented with *tankas*—paintings on fine canvas of some religious subject framed in heavy silk brocade cut from the dress of the departed person for the benefit of whose soul the *tanka* is made. These paintings, often of great size, are of rare beauty though the subjects, to our eyes, are often macabre. The richness, contrast, and depth of colouring is only surpassed by similar frescoes on the walls of Drepung, Sera, and other great monasteries near Lhasa.

At one time it seemed possible that we might go up beyond Lhasa, perhaps as far as Jyekundo, some 500 miles to the north-east of Lhasa. This would have involved crossing the headwaters of the Salween and Mekong rivers and a considerable amount of little-mapped country. If it could have been done without offending susceptibilities I had hoped to carry out some survey work. As we did not go beyond Lhasa the instruments were not even unpacked.

Daily meteorological observations were taken during our stay, including the maximum and minimum temperature and the barometric pressure each day, together with notes on the force and direction of the wind, cloud formations, etc. There were only two falls of snow during our visit, and no rain after September. During the afternoons of parts of December and January dust storms would blow from the west with almost monotonous regularity.

Notes were made on the distribution of plants, birds, and animals. Some five hundred species of plants were collected for the herbarium at Kew, and are being identified. Seeds were also collected. As both Richardson and I were very interested in birds we were able to make very valuable observations, which with the botanical notes will later be published in the appropriate journals.

On the journey to and from Lhasa we passed close beneath the exquisite sentinel peak of Chomolhari (24,000 feet), and I resolved to attempt its ascent.¹

Having been fortunate enough to obtain permission from the Tibetan and Bhutanese authorities, I reached Phari on 12 May 1937, accompanied by C. E. Crawford, of I.C.I., Calcutta, and three Sherpa porters. Enlisting six local men to carry loads we crossed the Sur La into Bhutan, and, as the existing map is only an approximation, spent several days working our way over rocky cols and across deep valleys clothed in pine and juniper forest before we could reach the long southern ridge merging into the snow and ice arête, which seemed to afford the only possible approach to the summit.

After sending back our Phari men the five of us camped on May 16 at 18,500 feet on some névé at the foot of the Giant's Fang, an 80-foot pinnacle of rock which breaks the ridge at the point where the ice starts. Two days later, after many vicissitudes, we had traversed the mile-long lower part of the arête and camped at 20,000 feet some way up the steeper final cone of the mountain. One porter had been left behind at the last camp; now the party was forced to divide again. Crawford, whose leave had almost expired, and one porter, returned; while Passang, the only fit survivor of the Sherpas, came on with me. On May 20 we crossed a formidable ice-fall, and after being held motionless on an uncomfortably steep slope for two hours by a blizzard and thunderstorm, we excavated a platform for our bivouac tent at 21,500 feet. Next day, after eight hours of straightforward kicking and cutting of steps, we reached the summit of Chomolhari and were rewarded with a superb view over the cloud-chequered Phari plain to Everest, Makalu, and all the major peaks of Sikkim.

Our descent started unpropitiously, as a sudden slip resulted in an unpremeditated slide of several hundred feet. We returned to our bivouac camp and attempted to get below the ice-fall, but were stopped by another blizzard. It took us four days to get off the mountain, as knee-deep soft snow and vile visibility daily impeded our progress. On almost every day that we were on Chomolhari it would cloud over between nine and twelve in the morning, and the visibility would be reduced to a few yards owing to falling snow and the lack of any dark object on which to focus the eyes. As crevasses abounded we were thus forced to camp each day after a few hours' advance.

Various fortuitous circumstances added to the discomfort of our descent. Passang was suffering from snow-blindness, having broken his glasses, and, having climbed brilliantly on the ascent, was now virtually a passenger. Our clothes and sleeping-bags became wringing wet owing to absorption of snow melted by the fierce sun; even the matches in my inner pockets disintegrated so that we could not use the primus for warmth or cooking. The zip fastener on the tent opening jammed so that snow continuously blew inside. On one occasion, owing to clumsy handling of the rope as I jumped, I fell 30 feet down a crevasse which was so wide that the only possible way of egress was to cut steps and handholds up one wall. But the clogging new snow and bad visibility were our most formidable and persistent enemies.

¹ A fuller account of the climb was published in the *Alpine Journal* for November 1937, and in the *Himalayan Journal* for 1938.

It was May 26 before we returned to Phari after an exhausting 20-mile walk from the foot of our ridge.

DISCUSSION

Before the paper the PRESIDENT (Professor HENRY BALFOUR) said: Mr. Spencer Chapman spent many months in Lhasa in 1936-37, and is going to give us an account of the city and its surroundings. He is also going to add to his lecture an account of his remarkable ascent of Chomolhari. I have no doubt that some of you have read the preliminary accounts of that expedition and will be anxious to hear directly from him something of his achievement. Mr. Chapman not only has a good deal to tell us, but also has a considerable number of slides and some films to show, and I call upon him at once to speak to us.

Mr. Chapman then read his paper, and a discussion followed.

The PRESIDENT: It seems to me really but a few years ago—just at the beginning of this century—that Lhasa was still a “forbidden city.” As we have with us this evening one who played the star turn in the unveiling of Lhasa, I think you will be glad to hear some remarks from him: Sir Francis Younghusband.

Sir FRANCIS YOUNGHUSBAND: What I liked especially in the wonderful slides we have seen this evening was the revelation they gave of the culture, the artistic ability, and the good manners of the Tibetans. When we went to Lhasa the great fear of the Tibetans was that we would “spoil their religion,” as they expressed it; and this I take it included their whole culture, because in Tibet the entire life of the people, their art, their politics, and everything else is ruled by religion. When, chiefly through the great abilities of Sir Frederick O’Connor, we were able to break down that idea, they suddenly gave way and were ready to agree to anything in the way of a treaty. They did not trouble much about the treaty once they had made up their minds that we were not going to spoil their religion.

I would like to thank the lecturer for the most delightful lecture he has given us and for having brought back such wonderful films and slides. They have given us an idea of this magnificent country and afforded a real revelation of the inner life of Tibet. I am sure we were all much thrilled by Mr. Chapman’s account of the ascent, and more particularly the descent, of Chomolhari, which we saw for three months exactly opposite our tent.

Sir FREDERICK O’CONNOR: I certainly did not expect that in one day in London I should spend an afternoon at the Central Asian Society looking at moving pictures of Lhasa taken by a lady and gentlemen who have just returned from that city, and that in the evening at the Royal Geographical Society I should be looking at still and moving pictures taken by a young gentleman who had also returned quite recently. I do not think that any here ever expected to meet a young man who would tell us about a visit to Lhasa as a sort of *hors-d’oeuvre* and finish up with an account of a single-handed ascent of one of the highest, and most difficult mountains in the world as the sweet. It was a wonderful performance.

I should like to refer to one or two recollections aroused by the pictures. First, the young man named Norbhu, now a prominent official on the staff of the British agent in those parts. When we went out there one of the first things Sir Francis Younghusband drew attention to was the fact that, although we had been on the frontier for a number of years, there was only one interpreter on the whole of that frontier. It was necessary when I was left behind there to try to train two or three young men to speak both English and Tibetan. I asked

a schoolmaster at Darjeeling school to send me one or two promising boys, one of whom was Norbhu, thirteen years old at the time. He has remained on the staff ever since and has been a most useful helper in every way. He is now actually in Lhasa supporting our policy there in every respect.

Another picture which brought a recollection to my mind was that of the beggars. Tibet is full of beggars, some professional and some amateur. As a mark of gratification when we had signed the treaty Sir Francis said he would give a present of a *tankha*, a small coin worth 4*d.* or 5*d.*, to all the beggars in Lhasa. On the appointed day—we thought there would be about a couple of thousand of them—we, to our amazement, saw the whole plain black with beggars. There were about 11,000, and we had to draw the line somehow. We put a few people on the edge of the crowd, and any beggar who rode up on a caparisoned horse was turned back and not given a present!

The PRESIDENT: We have listened to remarks from two of the pioneers in the opening up of Lhasa. I now call upon one who has recently been in Lhasa and is, in fact, the most up to date of those who have been there. It is fortunate that Mr. Suydam Cutting is with us to-day.

Mr. C. SUYDAM CUTTING: When listening to Mr. Spencer Chapman's lecture I felt how much valuable information we are now obtaining in connection with Tibet. There certainly is a tremendous lure about Tibet, especially in the United States, and probably because people there are suddenly beginning to realize something about it that is true. It is no longer a land of the occult, the unknown, and the mystic. We are now getting into Tibet and learning something about the people and the country, and we are all particularly grateful for information such as we have had this evening.

The PRESIDENT: I do not think there is any doubt whatever as to our having had an intensely enjoyable and most instructive evening. You have shown your appreciation throughout the lecture by your applause and also by extremely hearty laughter. I find it difficult to define exactly what has pleased me most: the extreme ease with which Mr. Chapman has delivered the lecture, or the humour with which it has been punctuated, or the excellence of the pictures he has shown. No doubt many of you were prepared for a selection of admirable pictures of Tibet, because you probably saw the coloured films exhibited not long ago by Mr. Gould. Those were also taken by Mr. Chapman, and they do him every credit as a photographer.

There is one hope in my mind, and that is that some day Mr. Chapman will be tempted to return to Tibet to explore that northern region to which he referred. It is very little known, and certainly the people in that northern area should prove of great interest if they could be studied intensively. And if Mr. Chapman will only bring back a further selection of splendid photographs, his journey, which I sincerely hope may materialize, will be well worth while. After all, the pictures which we have enjoyed to-night will be a valuable record for all time, preserving a graphic record of the region in the most perfect manner, and preserving it when contact with exotic cultures will have brought notable changes. I know you will all wish to thank Mr. Chapman very heartily for the most delectable evening he has given us.