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THE HIMALAYA 'EAST' OF THE TSANGPO: *A paper read at the Evening Meeting of the Society on 30 April 1934, by*

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IN 1933 the Tibetan Government gave me permission to botanize in Zayul. This permit was obtained through the kind offices of the Keeper of Botany, Natural History Museum, the India Office, and the Government of India. Nothing was known of the flora east of the Tsangpo gorge, and I therefore decided to reach that area by the most direct route, namely, *via* Assam, the Lohit valley, and Rima. I was fortunate enough to find a willing assistant in Mr. Ronald Kaulback, who undertook to make a route survey, and do any other work assigned to him; but the Tibetan Government was unable to allow him to proceed beyond Zayul. Mr. Brooks-Carrington, of Raycol British Corporation, also accompanied us at the outset to make a colour film.

It is unnecessary for me to dwell on the country between Sadiya and Rima, as this has been described before by Colonel F. M. Bailey (*Geogr. J.*, April 1912) and by myself (*Geogr. J.*, May 1930); more recently in a lecture given before this Society by Mr. Ronald Kaulback (*Geogr. J.*, March 1934<sup>1</sup>). I might however add a few words on the flora. As far as Minzong the valley is filled with Indo-Malayan jungle, although *Pinus Khasia*, *Albizzia*, Oak, and Ash have already heralded a change. The mountains on both sides of the gorge however are very high, and temperate forest and even conifer forest is quickly reached in that direction, with the Lohit still in sight. March however is rather a dead season, and there were few trees in flower. An interesting little ground Orchid (*Odontochilus*) is common almost up to the Tibetan frontier, and below Minzong I found a handsome orange-flowered ground Orchid new to me which might belong to the same genus. Another plant worth mentioning—almost a weed of cultivation right up to Rima—is a species of *Geranium* with lurid crimson flowers.

Above Minzong the climate, and hence the vegetation, begins to change rapidly, until by the time Rima is reached the Indo-Malayan jungle at the bottom of the valley has been entirely replaced by Pine forest, with temperate forest at higher elevations. *Pinus Khasia* is now the only big tree, though thickets of small trees, both evergreens and deciduous, occur immediately

<sup>1</sup> The map facing p. 183 should be used for parts of the present paper.

along the river bank, or lining the streams. But the woody vegetation is now mainly scrub. Meanwhile the mica schists, pyroxene granulites, and diorites of the lower valley have been replaced by granite.

As far as Minzong at any rate there is no evidence of glaciation in the Lohit valley; if it ever existed the abundant rainfall has removed all traces. At Minzong the Ghalum river comes in from the east, in line with the westward direction of the main river; so that looking eastwards from below the confluence, the large valley of the Ghalum appears to be the continuation of the Lohit valley. We spent a day at Minzong in order to examine the confluence. The mouth of the Ghalum valley is about 400 yards wide, and a high gravel bank, covered with vegetation, faces the Lohit; but the Ghalum itself is only a large torrent, at this season 20–30 feet wide, flowing under the northern wall of its valley. It is smaller than the Delei river, and how Mr. D'Arcy Weatherbe could compare it with the Lohit, even in May, I do not understand (*Geogr. J.*, July 1926).

Above Minzong the Lohit, now flowing from the north, is confined to a narrow gorge; the gradient increases, and there are big rapids, the most formidable being near the village of Sati, where there is a fall. The first unmistakable sign of glacier action is seen at Walong, on the Zayul frontier. Here a large terminal moraine fills the valley; the river has cut through it. The outline of the valley now changes: the overlapping convex spurs disappear, and the V-shaped section is replaced by a more open U-shape, concave towards the base. Combined with an entirely different and scantier vegetation, this completely alters the appearance of the country. Straight-sided narrow gravel terraces, covered with Pine forest, replace the cultivated terraces seen below. During or after the disappearance of the ice, the valley seems to have been filled with gravel, to a depth of several hundred feet, which suggests either an arid period following the de-glaciation, or an interglacial period. Subsequently the river cut through the gravel floor, stranding terraces one above the other in series. Some of the high terraces above Rima were formerly cultivated, but are now derelict owing to the impossibility of irrigating them.

We reached Rima on April 1. Several Europeans, including the late Mr. Dundas, and Mr. T. P. M. O'Callaghan, Inspector-General of Police, Assam, visited Rima before the war. In 1872 Mr. T. T. Cooper attempted to get there from Sadiya, and reached the Ghalum river; previous to this, the French Catholic priests, Pères Crick and Bourie, had been murdered a little south of Rima. In 1911, Captain (now Lieut.-Colonel) F. M. Bailey had crossed from Batang to Sadiya *via* Rima. Hitherto no white man had been up the western branch of the Lohit; but the Pandit A. K.<sup>1</sup> had travelled by this route to Lhasa, and had written a report on the country, the accuracy of which is remarkable; not less remarkable is the fact that in fifty years there has been no appreciable change in the valley. Hitherto the east branch of the Lohit has always been regarded as the larger, under the name Zayul chu; the west branch, or Rong Thod chu,<sup>2</sup> as the tributary. The Tibetans regard them as equal, though personally I am inclined to think that the western branch

<sup>1</sup> "Krishna" or Rai Bahadur Kishen Singh. Died 1921.

<sup>2</sup> So written on the maps. Actually Rong Tö chu (རོང་ཏོ་ཅུ་).

discharges more water, at least during the summer, if it is not actually the longer. Both rivers rise in glaciers, and the Rong Tö chu certainly receives more glacier water than the other. Below the confluence, the Lohit is called the Rong Mè, or lower river. Zayul, by the way, is conventional for Tsa yul = "the hot country," or possibly "the grass country"—by extension "the green (forested) country."<sup>1</sup>

The vegetation of the Rong Tö valley is very similar to that of north-western Yunnan at the same altitude (5000–9000 feet), but there is also a strong Himalayan element. Interesting trees found here are *Schefflera shweliensis*, *Cedrela*, *Carpinus*, *Ailanthus*, *Symplocos*, *Acer pentapomicum* and *A. Campbellii*, *Ilex* spp., *Quercus* spp. *Michelia lanuginosa*, *Abies Pindrow*, and *Tsuga yunnanensis*. Rhododendrons include *R. virgatum*, *R. bullatum*, *R. arboreum*, *R. sino-grande*, *R. aurum*, and *R. megacalyx*. Amongst herbaceous plants, *Iris kumaonensis*, *Caulophyllum robustum*, *Lilium Wardii*, *Stellera Chamaejasme*, and *Cypripedium* sp. may be mentioned. There are very many shrubs, including the Himalayan *Vaccinium glauco-album*, a Chinese Jasmine, *Pyracantha*, and two species of *Coriaria*. The important point however is that the Rong Tö valley, and to a lesser extent that of the eastern branch also, is well wooded.

Eastwards and northwards the climate gradually gets drier, with an increasing period of drought in winter. Thus the west range of mountains, forming the Mishmi Hills frontier, is much more dissected than the eastern flank. There are more and bigger streams, and they have thrown out bigger alluvial cones, consequently the population is mainly confined to the right bank of the Rong Tö chu, and there are few crossing places. Although I did not explore the Rong Tö beyond the Ata chu confluence till November, it will be convenient to continue straight up the valley now and consider my further explorations beyond the Ata Kang Pass later. I had already observed a great snowy range trending north-west or west-north-west, and my object in following the Rong Tö was to keep along the base of this range and trace it as far as possible. Above the confluence of the Ata chu, I crossed the first big tributary from the north, clearly a glacier stream, thereafter reaching the last village, called Putsang. The present inhabitants of Putsang came from Chinese Tibet about twenty-five years ago. Long before that there had been a village here, but the inhabitants had migrated over the Kangri Karpo La into Pemako. A mile above the village is a beautiful monastery, built of timber, on a stone and mud foundation. It was built by lamas from Drowa, and is called Drowa Gompa; but owing to lack of funds it is still unfinished. There is no image of Buddha inside it, and the painting is not done. The village itself comprises sixteen or twenty timber houses, in a bay of the mountains. The people live as much by hunting as by agriculture, and trade with Sadiya in skins and musk. They pay no taxes. I found one man who spoke Chinese.

The headman said it would not now be possible to cross the Kangri Karpo La, but he promised me coolies to go several days' journey up the valley, and we organized a hunting expedition. It is at least 15 coolie marches to Shingki

<sup>1</sup> I have not the Tibetan spelling by me. The sound "tsa" might mean either "hot" or "grass," according to the spelling. Another example of a similar extension common in Tibetan is Tsa Ri=literally the "grass" mountain, and by extension, the "wooded mountain."

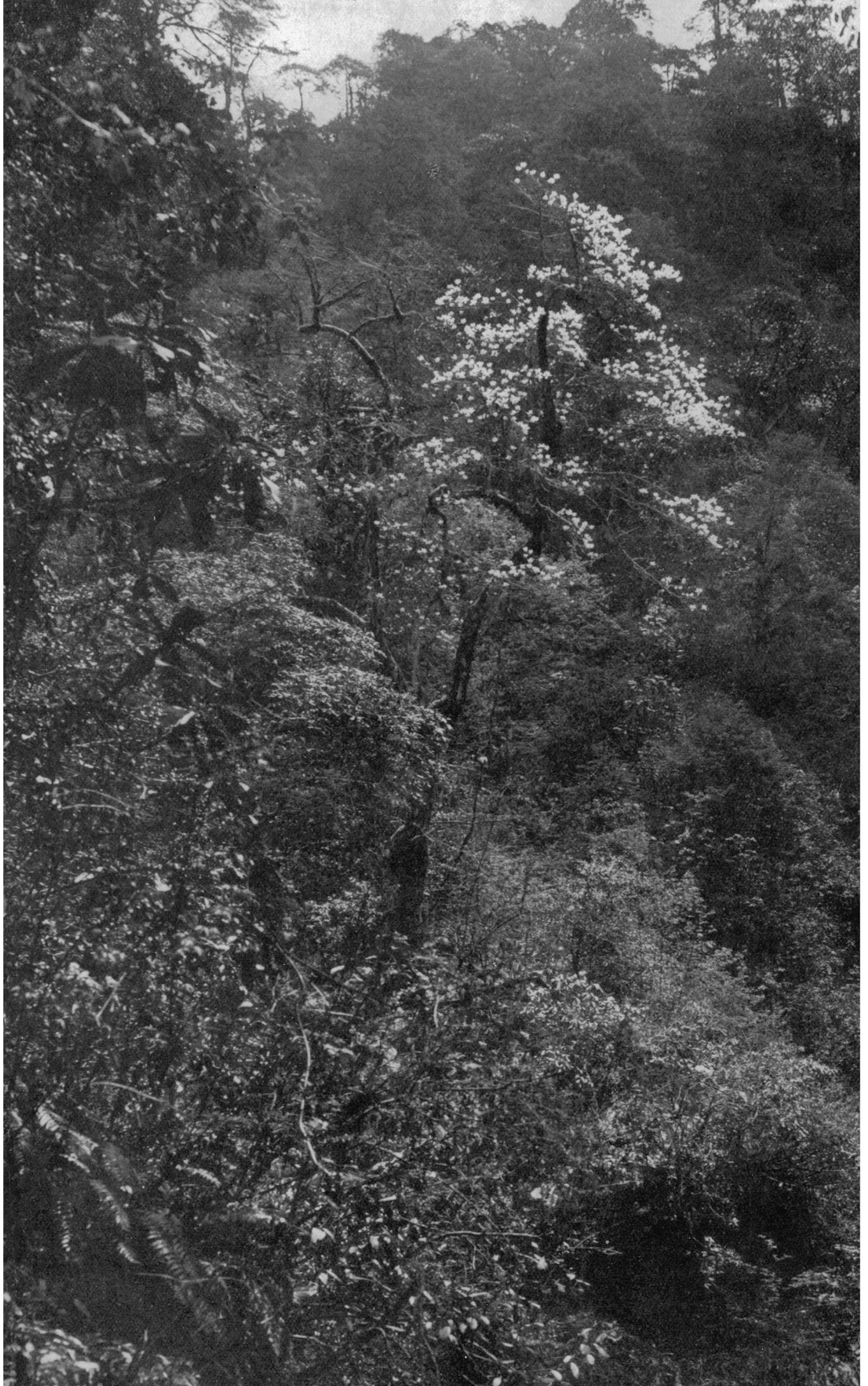
Gompa, on the Chimdrü chu, in Pemako; the pass is higher and even more difficult than the Ata Kang La. No traders pass this way, but a few pilgrims cross each year. Maps show the Kangri Karpo La at the head of the Dri river, which is the ultimate source of the Dibang; but this is incorrect. There is no route between the Dibang and the Rong Tö (here called the Zayul Ngu chu) north of Putsang. Bebejiya Mishmis do not come into the valley of the Zayul Ngu chu.

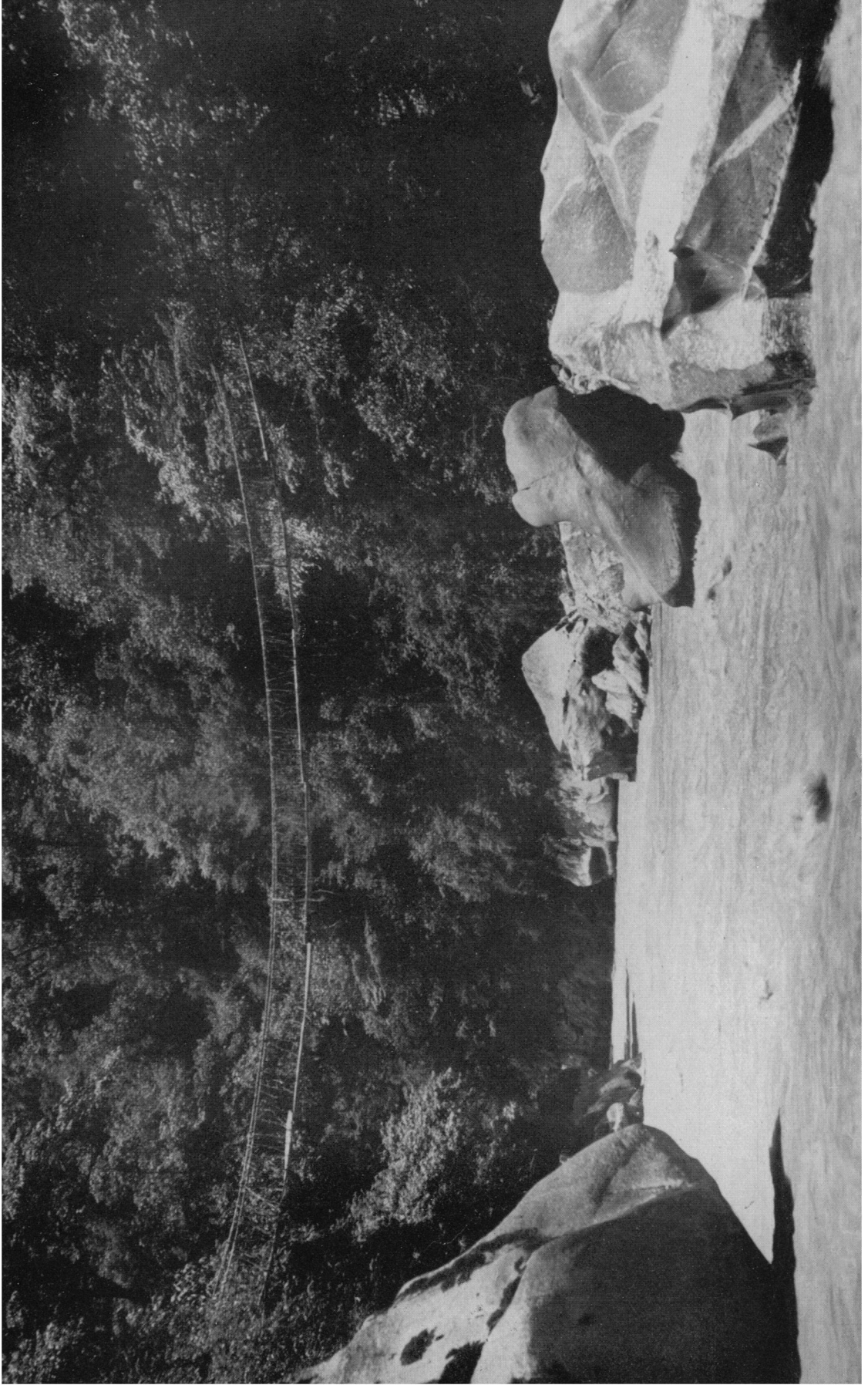
We left Putsang on November 1 and, marching only a short distance, camped in the forest. From this point onwards the gorge was thickly forested. For the next four days we climbed steeply, the river gradient increasing steadily. The Dibang divide rose precipitously in tremendous granite cliffs. From a point a few hundred feet above the river I could see the tops of a group of 19,000-foot peaks near the source of the Dri, which will give some idea how vertical the mountains are. The depth of the gorge is terrific. Not a single stream of any size joins the Zayul Ngu chu from the Mishmi divide, and every stream cascades into the main valley. The large tributary shown on the maps of the Survey of India, in lat. 29° N. long. 96° 15' E., entering the Zayul Ngu chu from the south-west, does not exist. There is no room for it. Practically all the water of the main river is derived from the snow-range to the north. Between the Ata chu and our last camp we crossed five big tributaries coming down from the snowy range; several times I caught sight of glaciers to the north or north-east. We passed through much Rhododendron forest, and could mark the ascent, and also the approach to a drier climate, by the change of species. Where the ground was damper, dense thickets of Bamboo flourished. There were many evergreen as well as deciduous broad-leaved trees.

On November 3 we camped under a cliff, on a platform which overhung the Hrikung chu. This stream had cut a wonderful gorge through the wall of the main valley. We had now ascended 1600 feet in three days. The forests contain takin, goral, serow, and musk deer, and I noticed that there were hunters' paths up all the big torrents. Three of our party now left us, and crossing the main river by rope bridge, climbed up towards the Dri river divide. We continued up the main valley. At last, on November 5, the headman said his coolies could go no farther, and that it would be impossible to reach the pass. There was no snow here, the weather was fine, but a storm might blow up from the south-west any day. The river divided into two equal streams, and we camped in a belt of forest at the confluence. We could not see far up either valley, but the cliffs above us looked quite bare.

Up to this point the path, though not good, had been easy to follow; now it became more difficult. I followed the stream from the north (Dali chu) the next day, and half a mile above the confluence came upon a remarkable gorge, about 100 feet deep and so narrow that one could almost stride across it; the stream plunged headlong into it from a wide open valley, almost bare of trees, at an altitude of about 10,000 feet. Gaining the open valley above we were able to wade knee-deep across the broad stream. Some distance ahead I could see bare peaks and patches of snow and Fir forest. There is said to be a path into Pome, and down to the Nagong chu, and indeed there was nothing to hinder us going on for some distance at any rate; but it can only be a hunter's







trail. The track to the Kangri Karpo La crosses the deep gorge just referred to, and continues up the left bank of the north-west branch (Keli chu). The mountains are composed entirely of granite, which would partly account for their bareness; I could see no permanent snow in any direction, but the sides of the gorge are too precipitous to permit of an extensive view. It seems certain that a glacier descends from the Kangri Karpo La. On November 7 we started back, but hearing that the hunters had shot three takin, we camped early. Next day a working party went up the mountain to bring down the carcasses: the animals were skinned that night, and the meat smoked. We covered the remaining four marches to Putsang in three days. The fine weather had broken up, and the trees were powdered with snow down to 9000 feet; a party of hunters on their way up the valley turned back. From Putsang I marched straight back to Solé, on the Rong Tö chu, where I arrived on November 15.

My next object was to find a pass leading from the Rong Tö valley into the Dibang valley. There was said to be one just north of Solé, where a large stream enters from the west. Some Bebejiya Mishmis, whom we had seen at Solé in May, claimed to have come by this route, which leads to the Tangon river. The Solé people however do not hunt, and I could find no coolies there who knew the route, or were willing to accompany me.

Another route leads to a pass above Mugu, a few miles south of Solé, and this pass, called the Jara La, was well known to the hunters of Mugu, who agreed to take me there. Formerly the pass was used; but owing to friction between the Tibetans and Bebejiya Mishmis over hunting rights, the lamas have closed it. The path—a good one—ascends very steeply through a deep gorge, densely forested, to a high-level hanging valley, which has been graded by ice. During the summer this upper valley is a marsh, and even in November parts of it were boggy; there are several small tarns. Rhododendrons in great variety grow here, also *Meconopsis betonicifolia* ("*M. Baileyi*").

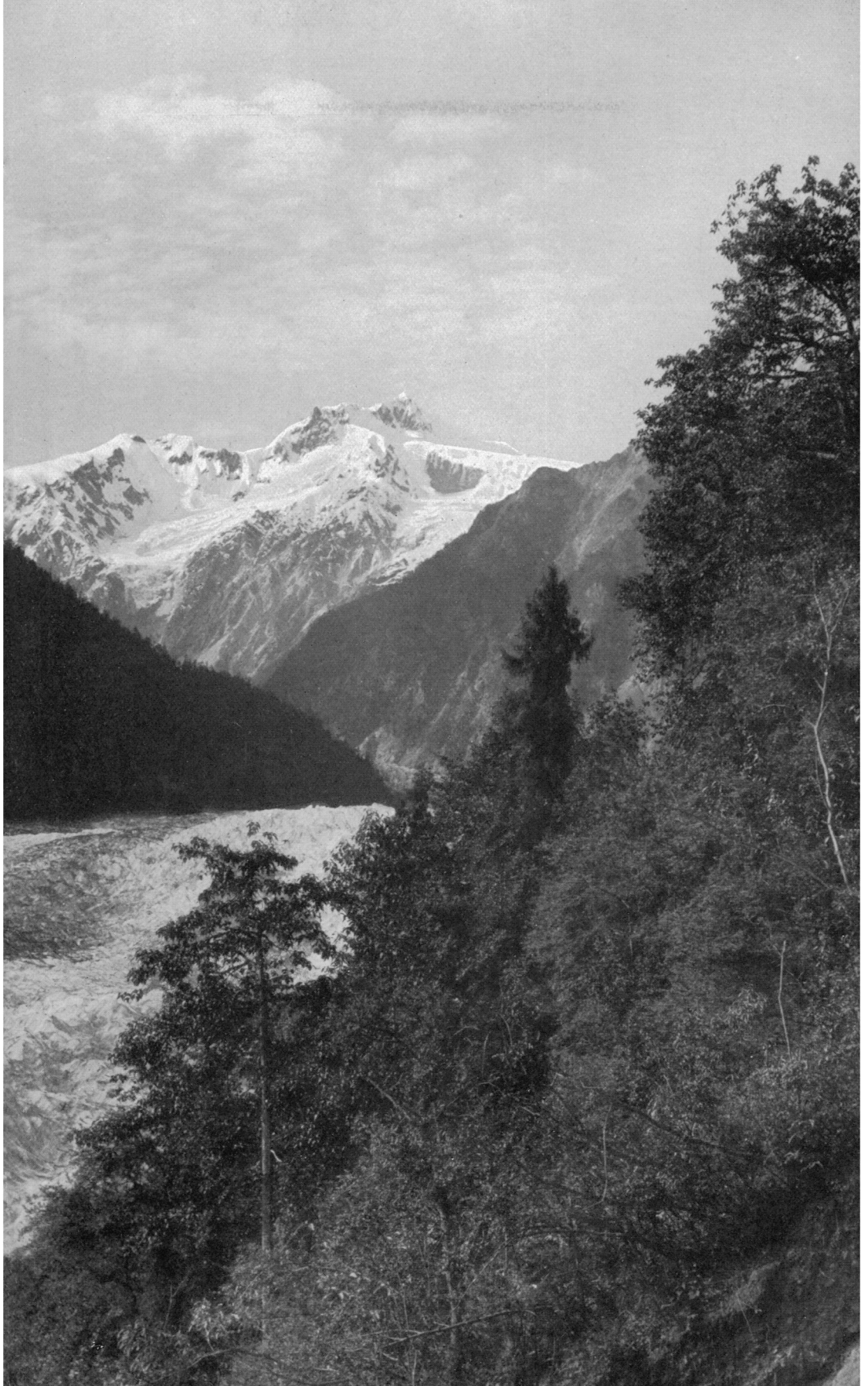
On the third day we camped in alpine meadow at a height of about 12,000 feet. For the last 2 miles the valley was level; then came a "riser" of large boulders, and above that another wide level marsh. Beyond that again the valley narrowed rapidly to the foot of a small glacier. There was no exit in this direction. The mountains flanking the valley rise steeply for several thousand feet, and snow beds, all that remains of the glaciers, were visible here and there. Immediately above our camp, to the west, was a hanging valley, from which a stream, encased in ice, cascaded down the cliff. The cliff however was covered with Fir forest, and snow lay under the trees. A steep path zigzagged up, 1500 feet to the lip of the valley, just over which lay a beautiful glacier lake, surrounded by steep stony slopes covered with snow. Skirting the lake, scrambling over boulders, and trudging up a long steep snow slope, we reached the Jara La four hours after leaving camp—but this included halts to collect seeds of many alpine plants I observed. The day was gloriously fine, and we had a wonderful view into Assam, though it would hardly sort with one's preconceived ideas of that country! Immediately below us a small stream flowed through an alpine valley, clothed with turf and scattered bushes: it was the source of the Tangon river. A short distance to the south the Silver Fir forest began. There was no snow at the bottom, but

ridge beyond ridge rose in the west, all snow covered. We were looking across a great grid of mountains from amongst which rise the sources of the Dibang; these valleys also had been filled with glaciers. The Jara La is about 14,000 feet high, and is surrounded by rocky peaks of 16,000–17,000 feet.

It was easy now to appreciate how completely the Rong Tö valley and all western Zayul is cut off from Tibet proper, and from India as well as from China. Ever since the disappearance of the glaciers, and the deepening of the valleys by water, they have been separated by lofty barriers. For the greater part of the year the passes are closed; implacable jungle completes their isolation. It may be that during an interglacial period all this country which lies to the south-west of the Salween divide was inhabited by a fairly homogeneous race, driven steadily southwards during a previous advance of the ice. Conditions then may have been more uniform: the valleys were broader and higher; there may even have been more arable land. But since the deepening of the valleys and the cutting away of the great gravel beds which accumulated, isolation and differentiation became inevitable. Where people can only communicate with each other with difficulty and at certain seasons of the year, one society stabilizes into the visited, the other develops into the visitors. The aboriginal pygmy race of the Rong Tö probably sprang from the same stock as the Bebejiya of the Dibang valley and the Daru of the Irrawaddy; but they have now segregated into three distinct tribes, speaking different languages, and with different customs. Fundamentally no doubt the resemblances are greater than the differences; but the only obvious resemblance is that they are all pygmies, averaging perhaps 58 inches in height, with remarkably round faces.

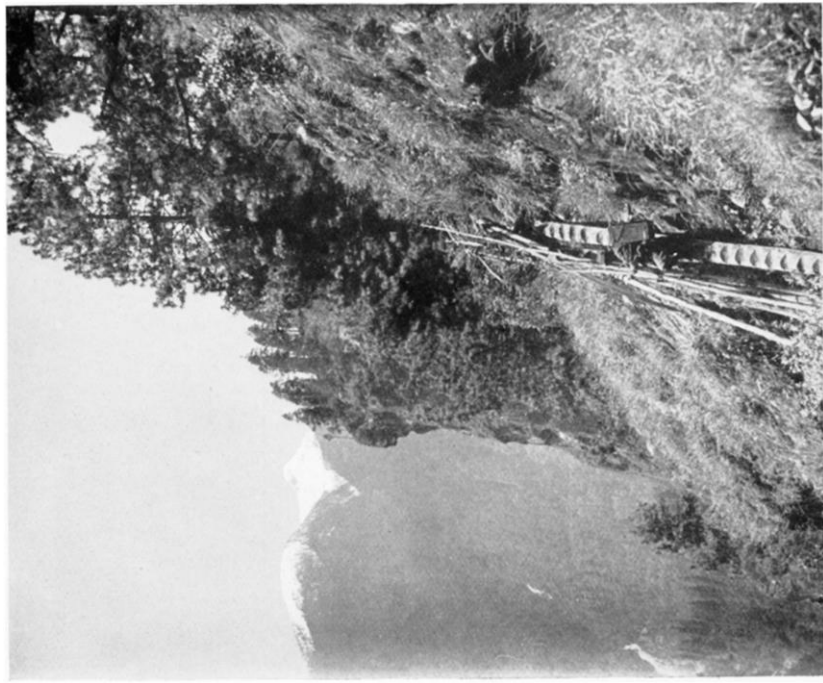
Meanwhile, Zayul being more accessible from the Tibetan plateau than it is from Assam or Burma, the Tibetans have to some extent absorbed the Zayul aborigines, and developed their own civilization in the Rong Tö valley. Their outposts are to be found still farther south, in Assam and Burma, but it is improbable that they will advance beyond the limit of Pine trees, which are to them what bamboos are to the real jungle dwellers. With a higher civilization developing in Zayul, the tribes outside have become the visitors. Every autumn, Darus from the sources of the Irrawaddy, Bebjiyas and Chulikatas from the Dibang, Mijus and Taroans from the Lohit, come into Zayul to work, or to buy salt and cloth; all these tribes are included in the comprehensive term "Lhopa" by the Tibetans. Similarly, Abors visit the Tibetan villages on the Tsangpo above the great gorge. Thus there comes about an inevitable backwards and forwards surge of the tribes trapped in the hills between the plateau and the plains; those living just under the plateau ascending annually to the plateau, and those on the fringe of the plains descending to the plains, the two parties mingling at other seasons. Zayul, with a climate intermediate between the hills and the plateau, cleaves definitely to the latter. It is permissible to speculate whether, during an interglacial period, when the Rong Tö valley stood at a higher level, it supported a larger population; but there is no evidence that it did. The aboriginal population may even have been smaller than it is to-day, if it lived mainly by hunting. From the report written by A. K. we may conclude that the population has hardly changed in the last fifty years; and so terrifically steep are the mountains, it is certain that the valley could not support a much larger population than it does now.







*Hut-building in the Delei valley of the Mishmi Hills*



*Ladders in the Ata River gorge*

The population is mainly agricultural, but partly pastoral. In a few villages hunting plays an important part in the lives of the people. Above Rongyul, yak are kept. But the greater part of Zayul is uninhabited and uninhabitable; the same is even more true of the Dibang basin, and of the region at the headwaters of the Irrawaddy. The total superficial area of this hilly country, lying within the triangle Sadiya-Fort Hertz-Shugden Gompa, is about 25,000 square miles—actually it must be vastly greater; the total population is certainly less than one person per square mile. After climbing to the Jara La, I explored the head of the valley, and on November 29 reached the Rong Tö again. I noticed that the glaciated upper portion of this, as of other valleys on the Mishmi range, trended more or less north and south; it is the glacier torrents which swing round to the east, to reach the main river. That is to say, the main glaciers lay in longitudinal valleys; the torrents have cut transverse valleys.

I will now return to our journey up the Ata chu from its confluence with the Rong Tö. On May 25 we reached the confluence. This Ata chu emerges through a remarkable gorge, descending from the glaciated upper valley at Modung down a very steep gradient. It was originally a hanging valley, but the active glacier river has cut out a channel for itself so rapidly that it now reaches the Rong Tö chu without any vertical drop. The side streams however still fall over cliffs into the Ata chu, just as the smaller tributaries cascade into the Rong Tö chu. When the Ata glacier reached Modung, a few miles below its present snout, at no very remote date, the gorge did not exist, and the Ata chu must have fallen over a cliff 1000 feet high. There was no glacier in the Rong Tö valley then, and the river from the Kangri Karpo La was steadily deepening its valley. The passage of the gorge is not easy, as the river, 40 yards wide, fills it from wall to wall. After scrambling along the water's edge for half a mile, one ascends the cliff by a series of rough ladders, and gains the upper valley by a high-level path, consisting partly of wooden galleries clamped to the cliff, partly of rock ledges, and partly of mud. The gorge of the Ata chu is cut through granite, but above Modung the rock changes to gneiss.

Above Modung, and scarcely 2 miles from the foot of the glacier, is the last village, called Ata. The living glacier system comprises the main Ata glacier, length 10 miles, thus making it the longest known glacier east of the Tsangpo; the Chömbö south glacier, length about 6 miles; and the Cheti glacier, length about 4 miles; together with a number of much smaller hanging glaciers. The Chömbö south and Cheti glaciers almost, but not quite, unite with the main Ata glacier. This last ends at an altitude of 8000 feet, very much lower than most Himalayan glaciers.<sup>1</sup>

At Ata there still lives a craftsman who makes "elegant wooden cups," as observed by A. K. These cups, or *tsamba* bowls, are turned on a crude reciprocating lathe from the wood of *Acer stachyophyllum*, a small tree which grows scattered in the temperate forest with *Magnolia globosa*, *Rhododendron fulvoides*,

<sup>1</sup> According to Wadia, the Sikkim glaciers do not descend below 13,000 feet. Only in Kashmir does a glacier descend so low as 8000 feet ('Geology of India,' by D. N. Wadia).

*Taxus Wallichiana*, *Pinus excelsa*, and many other trees. In the undergrowth of this temperate mixed forest are *Podophyllum versipelle*, *Primula chungensis*, *Vaccinium modestum*, and several species of *Arisaema*.

Early in June we went into camp in the forest at nearly 9000 feet, up the Chömbö glacier, with a fine view of the snow-peak itself. Chömbö,<sup>1</sup> which I estimated to be 22,000 feet, is said to be the highest peak on this section of the range, at any rate visible from the south. It does not however give origin to the largest (Ata) glacier. It is well seen from the foot of the Ata glacier; from a few miles up the side valley, and from near the Ata Kang La itself; but I could not see it from the other side of the range owing to numerous intervening peaks. As seen from the south, Chömbö is a perfect dome; actually there are two peaks, one due north of the other.

The Ata glacier has three concentric moraines on the ice near its snout, derived from the subdividing of the two lateral moraines. Each lateral moraine divides into three, and each pair curves round to meet at the snout, thus forming concentric ridges, the apex pointing downstream. Probably each marks a stage in the shrinking of the glacier. The glacier foot is covered with rubble for a mile, and dirt bands are very conspicuous in the ice-cliff at the foot. Big longitudinal troughs, filled with roaring torrents, occur in the ice; the crevasses are mostly wrinkles, and not conspicuous. On the right bank of the Chömbö glacier, and on the left bank of the Ata glacier, are stranded moraines above the present ice-level. They are covered with forest trees, the largest of which near the summit may be two or three hundred years old.

In June we followed the path up the left bank of the main (Ata) glacier, camping the first night in the forest at a spot called Shukdam. On the second day we bore away from the glacier, which now filled the gorge, and ascended very steeply up the granite face of the range which, as seen from below Ata, fills the horizon. On the tree-line, at about 13,000 feet, we reached a camping-ground called Chutong. Here we spent a fortnight, waiting for the snow to melt. I found here an alpine flora similar to that on the mountains of far northern Burma to the south-east. There is no water supply at Chutong, and we were dependent on snow: there was plenty of it. Sedimentary rocks outcrop. Above Chutong a band of hard limestone and slate forms a savage escarpment overlooking the Cheti glacier. This escarpment is crossed by the Cheti La at 14,000 feet altitude, whence the Cheti glacier is reached. The ascent to the Cheti La from the Chutong side is easy, but the descent of the scarp face is difficult. The shaft down which the trail goes is almost a chimney, and owing to a snow cornice overhanging the pass, it was hardly possible to get into the chimney, or, having got into it by descending the even more precipitous cliffs on either side, to get out again, before the cornice had disappeared. Thus, although Kaulback and I managed to descend the chimney so early as June 28, our coolies could not cross the Cheti La until July 10.

Near the Cheti La I saw monal pheasants (*Lophophorus sclateri*) and snow pigeons (*Columba leuconota*); while in the Fir forest birds in considerable variety were seen. Of plants endemic to the mountains of Tibet, western China, and the Himalaya, I may mention three species of *Nomocharis* and two of *Cremanthodium*; *Meconopsis horridula* (a form with pale blue flowers),

<sup>1</sup> A. K. called the whole snowy massif by the name Nimbutchumburi.



*Paraquilegia microphylla*, *Rhododendron repens*, and other species, *Primula dryadifolia* var. *congestifolia*, and others, *Cassiope myosuroides*, and *Anemone rupicola*.

The core of the range consists of a white granite with green chlorite and dark fine-grained pegmatite inclusions. But in addition to igneous rocks—granite and gneiss, there are altered sedimentary rocks on the flanks. Near Chutong a belt of these sedimentaries, slates, limestones, and shales has been caught up between masses of igneous rock and pushed this way and that. The strike of these sedimentary rocks is always about north-west to south-west: they dip at angles of  $45^{\circ}$ – $85^{\circ}$  to the southwest. After crossing the Ata Kang La the granite soon gives place to slates, then limestone again, still dipping southwest. On July 10 we crossed the Cheti La (14,268 feet), descended the shaft towards the tributary glacier from the Ata Kang La, and traversed along the base of the cliffs, heading up the glacier valley. Crossing several snow chutes, and climbing up and down the cliffs, we reached a lateral moraine, and presently camped on a gravel platform on the side of the glacier. Here we spent five days.

On July 15 I parted from my companions, who returned to Rima and thence crossed the Diphuk La into Burma, a route I knew well, having crossed the Diphuk La three times. I crossed the Ata Kang La, and on the following day reached Lhagu, the first village in Nagong. The ascent to the pass is toilsome, but not difficult at this season. The glacier was well covered with snow, and only one steep and broken part was at all troublesome. We kept well over to the east wall, in spite of the fact that many small avalanches from the steep snowfields and hanging glaciers pour down on this side. The Ata Kang La, about 16,000 feet, is a broad gently sloping saddle, with high rocky peaks all round. Ronald Kaulback accompanied me to the summit, where I parted from him with regret. Six months later I learnt that the two of them reached Fort Hertz safely.

From the saddle the ice flows in three directions, south towards the Ata glacier, north towards Lhagu, and eastwards. The glacier originates on a high peak immediately to the south-east of the pass, and descends in a crevassed and seraced cascade on to the saddle, which is nearly a mile wide. To the immediate west is another fine peak, from which an independent glacier flows, to join the northern foot of the Ata Kang glacier. The descent to the north is gradual at first. Presently we got on to very slushy ice, sinking in over our ankles at every step. After about 2 miles the glacier descended steeply to the snout, and we stepped off on to a terminal moraine. The other glacier from the west also ended abruptly here, the two torrents uniting and flowing down a broad stony valley. The altitude of the glacier foot was 14,367 feet, as compared with 8000 feet on the Zayul side!

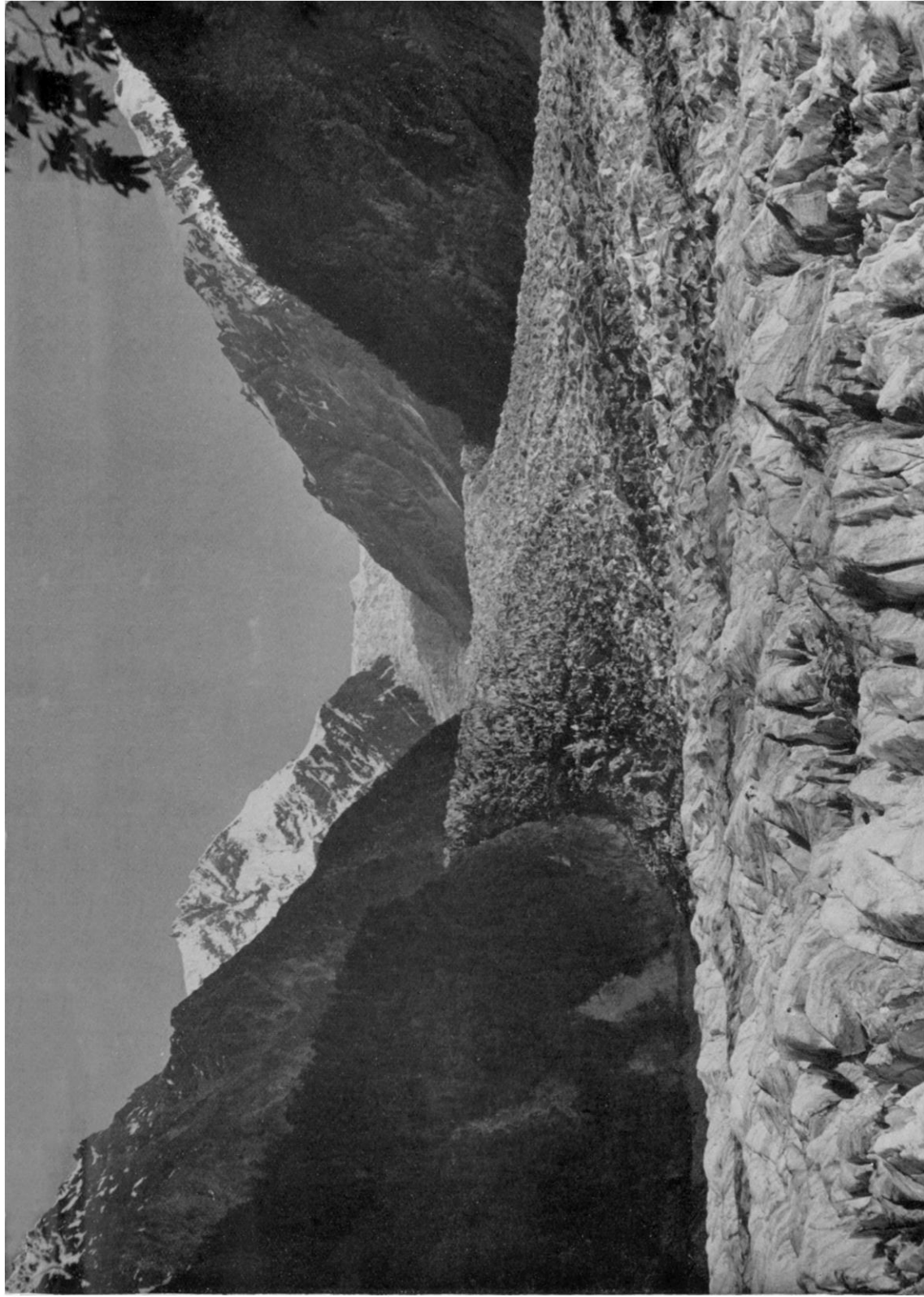
After crossing the pass everything changed abruptly: scenery, people, vegetation, birds, and mammals. As to the vegetation, there is no forest, and the only big tree is a Fir—*Picea lichiangensis*. Small Poplars and Birch trees appear down the gorge of the Nagong chu, shrubs occur in fair variety, but essentially the flora of Nagong and the country to the north of Shugden Gomba is alpine. It differs considerably from the alpine flora we had met with in Zayul. Amongst birds, choughs and magpies appeared for the first

time, and many species familiar in Zayul were no longer seen. There were several kinds of babbler, besides larks and rose finches. Amongst mammals, the familiar squirrels and the marten and flying squirrel of the Zayul forests were replaced by hares and marmots. The butterflies of Nagong are entirely Palaearctic: those of Zayul are closely related to south China species.

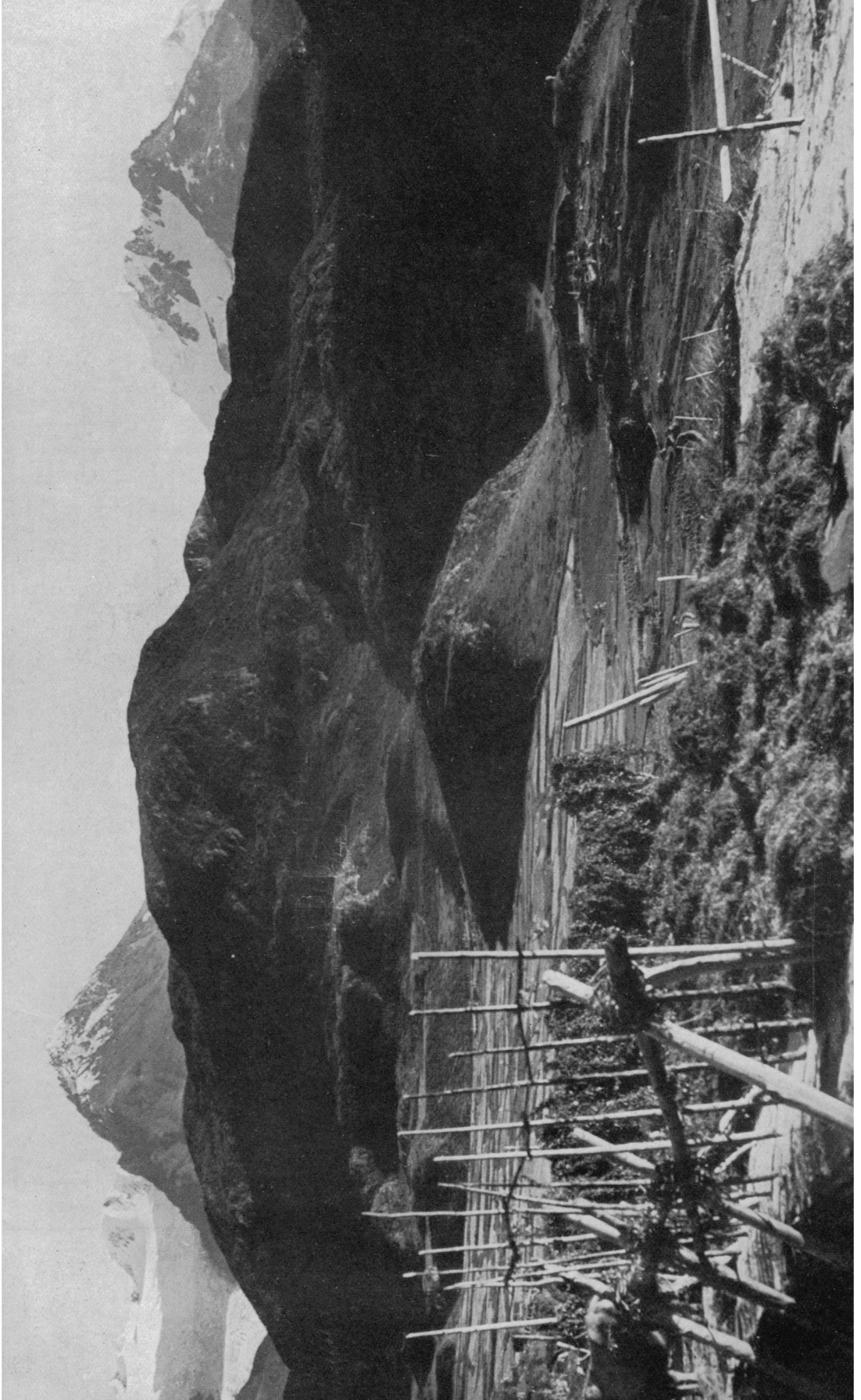
On the second day after crossing the Ata Kang La we reached a small scattered village called Lhagu, at an altitude of 13,207 feet. The houses, built chiefly of mud and stone, are half underground, being built against the side of the hill. Just before Lhagu is reached the torrent plunges into a gorge, but through a band of slate (strike N.W.-S.E.); it then flows through a small silted-up lake basin, and cutting through another band of slate enters the Lhagu lake, the upper end of which is also rapidly silting up. A steep glacier almost reaches the silted-up lake from the eastern range, and six other glaciers may be seen aloft. To the west, up the broad glacier above the lake, three high isolated pyramidal snow-peaks are visible. A little farther to the south, amongst ice-rounded hills, is a group of lakes, all connected with one another. The uppermost is fed by four hanging glaciers, forming an icy curtain. Beyond the lake is another large valley-glacier. It is obvious that the whole of this region has been intensely glaciated. The Lhagu lake is held up by a glacier from the west; but the stream breaks out along its foot, and enters a broader valley, at the far end of which is the lake of Shugden Gompa. The snow-peaks in the south-west, seen through the wide gap caused by the Lhagu glacier, are very striking objects; and the glacier itself is some miles in length. The glacier ends in a blue ice-cliff owing to the undercutting of the lake stream; every now and then a large splinter of ice breaks off and falls into the torrent. This ice-cliff is visible from Shugden Gompa.

From Lhagu to Shugden Gompa<sup>1</sup> is a long march, following a path cut out of the cliff high up on the right bank. Only at Yatsa, where a big torrent descends from the Zo La, does it touch the valley bottom, until the lake at Shugden itself is reached. The bridge described by A. K., which was still there when Colonel Bailey visited Shugden Gompa in 1911, no longer exists. The lake has been supposed to be about 4 miles long and more or less round. One of the first things I did was to measure a base at Shugden Gompa on a level grass plain (an old lake basin) north-east of the monastery, and make a plane-table sketch of the district. I found the lake to be about 10 miles long, shaped like a Norwegian fjord, with an arm to the west where the Nagong river flows out. Just below the monastery a considerable river, called Tzengu chu, rushes through a limestone gorge into the lake. This is the third source-stream of the Nagong river. The fourth source-stream comes in from the north. All four sources rise in small hanging glaciers. Immediately opposite to Shugden Gompa, crowning the opposite limestone cliff across the Tzengu gorge, is a small temple called Tzongjo, containing a famous image of Buddha. The west side of the lake is very precipitous, as the snowy range practically overhangs the water. There is a very conspicuous sugar-loaf limestone peak here, called Dorjetzenga, with glaciers on its northern face. This peak is visible from the Zo La, halfway to Sangachu Dzong: from the foot of the Ata

<sup>1</sup> Spelt Shiuden on maps. The Tibetan spelling however is ལུག་ལྷན་རྒྱལ་གྱི་མཆོད་པོ་: Shugden Gon (Gompa); the *g* in Shugden is not pronounced.



*The great Ata  
Glacier from  
the south*



Kang glacier just above Lhagu, and from a spur to the north, where the lake makes its bend to the west. Thus it is extremely useful to the surveyor, in a district where outstanding peaks are rather remote. More than that, the peak is the top of a broken syncline, the strata having the same strike as the limestone outcrops near the monastery, that is to say, north-east to south-west. Taken together with what I saw later of the rocks farther north, this was indisputable evidence for a fold chain continuing the Himalayan alignment.

The climate of Shugden Gompa is dry and cold: the winters are severe, and the lake freezes, so that ponies can cross the narrow part. There is no forest, but trees—*Picea lichiangensis*—grow in the more sheltered valleys. Descending the valley of the Nagong river one quickly comes to real forest; but in no other direction. There are shrubs in considerable variety, wherever there is shelter from the perpetual tearing wind that blows down the valley of lakes. But the real glory of the country is the wealth of alpine flowers which carpet the crisp crumbling soil. From 14,000 to 17,000 feet they cover hill and dale, between June and October, Anemones, species of *Oxytropis* and *Astragalus*, Primulas, Saxifrages, aromatic *Salvias*, *Cremanthodiums*, prickly blue Poppies, *Incarvillea*, *Dracocephalum*, *Geranium*, *Trollius*, and many others; but the finest of all are the autumn flowering *Gentians*, which carpet the earth with millions of vivid blue cups. There are at least five species. Needless to say, in so dry a country, there are few *Rhododendrons*, but those few are decidedly interesting.

Having been well received at Shugden Gompa and comfortably installed in the fort, I decided to go to the Salween. I had crossed a great range of mountains, and there appeared to be another range ahead of me—at least I had to cross a pass in order to reach the Salween.

In 1924 Lord Cawdor and I had seen a magnificent range of snow-peaks north of the Tsangpo trending more or less east and west. What was the relation of that range to the range on which I stood? Was it the Tsangpo-Salween divide, and did the Salween cut through it? If the Salween cut through this range north or east of Shugden Gompa, then on Burrard's argument that the Tibetan rivers cut through the Himalaya at the point of maximum elevation, not only might it flow in a deep gorge, but the gorge might be flanked by peaks of outstanding height, and the river would follow a course much less straight than that tentatively assigned to it on our maps.<sup>1</sup> On the other hand, if that great snowy range curved round to the south between the Salween and Tsangpo rivers (as depicted on small-scale maps), then by travelling northwards I ought to reach it.

I left Shugden Gompa on July 30, following in A. K.'s footsteps for the first three days. The road goes north, to join the highway between Chamdo and Lhasa. As far as Shugden I had found A. K. pretty accurate in his statements; but he seems to have fallen off after this, and neither his map nor his diary were of much help to me.

After passing the north end of the lake we climbed a spur above the fourth and last source stream of the Nagong river, and saw several big snow-peaks to the west, continuing the great range into Pome. These peaks were probably

<sup>1</sup> See 'A Sketch of the Geography and Geology of the Himalaya Mountains and Tibet,' by S. G. Burrard and H. H. Hayden. (First Edition.)

close to those Lord Cawdor and I had seen from the west ten years previously. On the second day we crossed the Poyü Tsonge La just below which is a small lake, the Poyü Tso, with no visible exit. It owes its origin to an earth fan which has blocked the flat valley below.

There were several herds' tents here, with large flocks of sheep and goats, besides yak. Legend says that when the water in the lake is low, the Dalai Lama is unwell; when it is high he is in good health. At present the water-level was high, and when I passed this way again in October it was still high. Once, rumour says, the water disappeared entirely, with what dire results I did not learn. After crossing the pass, and counting numerous glaciers on both sides of the road, we descended a stony valley, and came to a wretched village called Guba. A mile farther on however the valley opened out, where another big stream came in from the Pome mountains. There was plenty of cultivation here, and excellent grazing. Conspicuous at the junction of the two streams was a magnificent mediaeval fortress-like building, which was actually the monastery of Rambu. Beside it was a smaller building, the *dzong* or fort officially called Shoshi Dzong but known locally as Drongsa Dzong, after the village close by.

Up the western valley were several small villages, a nunnery called Mani Labrang, and another monastery called Autakpag. The *dzong* was deserted: apparently no one coveted the job. The monastery was almost deserted; and considering that there must have been at least fifty houses in the neighbourhood, one might say that the village was deserted too, so few people did we see about.

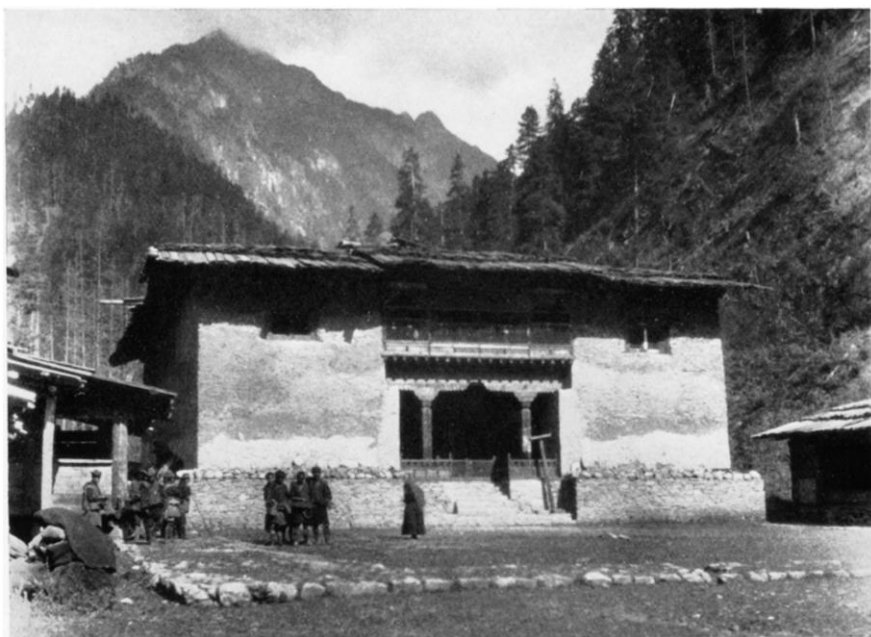
Next day we marched down a rather arid rocky valley, following the stream called Tsa chu, which by next day had become a river. We passed a number of small villages and monasteries, and towards evening reached a dingy monastic fort, or fortified monastery, called Trashitze Dzong. A friendly aged monk, who was also the civil magistrate, put me up for the night, and arranged for fresh transport. He said I would have to change transport many times on the next stage: it was the custom. However he promised to let me off a few changes, at the less conspicuous villages through which we should pass. The road to Pashu and Lhodzong continues northwards from Trashitze Dzong, leaving the valley and crossing a high mountain; our road turned off to the east, still following the valley of the Tsa chu, so at this point I parted company with A. K.

There is a special type of *mani* pyramid found here. The inscribed stones are laid flat on a large coffin-shaped platform contained by a low stone wall. The platform has a definite slope from head to foot, and the inscriptions all face down the slope and are easily read. The whole resembles a large, slightly decrepit grave. Nagong and the *dzong* districts in this valley are all under Pashu. A *Dzongpön* does three years' service and then goes back to Pashu, and is sent elsewhere. Nagong was formerly under Sangachu Dzong, but was at its own request transferred to Pashu. Zayul however includes territory to the north-east of Shugden, as far as the Salween river. The Tibetans reckon little of what we call "natural" frontiers.

On the following day I should have reached Gongsar Gumpa, that being the full Tibetan stage; but owing to the frequent delays of changing transport

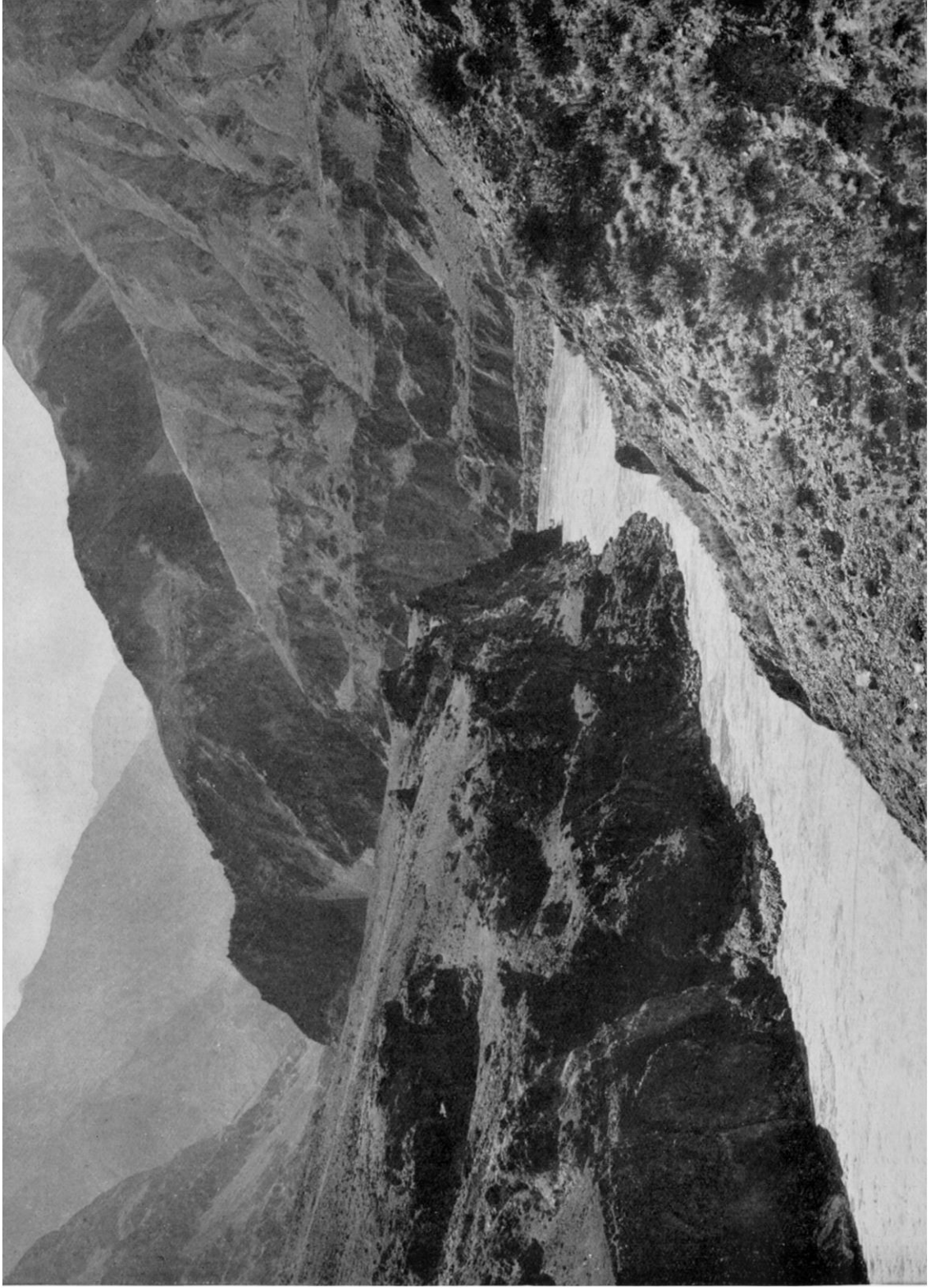


*Chorten at Shugden Gompa*



*Monastery near Putsang, the last village in the Rong Tö chu*





*The Saltween  
River at Puti*



and to a violent storm towards dusk which flooded a stream we had to cross, we halted at a village some way short of our destination. There were villages on both sides of the river, which was spanned by frequent bridges: the total population in these few miles could not have been less than five hundred, and the valley seemed to be interminable. In the villages were a few small trees, otherwise the valley was treeless. On August 3 we marched eight hours, but owing to a long delay at Gongsar, could not make up the distance lost the previous day. There is a fine monastery at Gongsar, with sixty or seventy monks, and the village contains about forty houses. It was a real oasis in the bare valley, with fruit trees, and familiar garden flowers in tubs and boxes, and a lot of cultivation. I was shown the skins of three snow leopards.

The country from Trashitze Dzong to the Salween is composed of alternating bands of bright red sandstone, similar in appearance to that met with on the Mekong in north-west Yunnan, limestone, and slate. The rocks have been thrown into great north-and-south folds, the dip varying from  $45^{\circ}$  to  $90^{\circ}$ . Owing to the sharp colour contrast where snow-white limestone meets cinnabar red sandstone, the arches are very conspicuous. If these rocks are of the same age as those of north-west Yunnan, then clearly the Indo-Malayan mountains were involved in the Himalayan earth movements, and must belong to the Himalayan range. If, on the other hand, they should prove to be of Eocene age, then they are a direct extension of the Himalayan uplift itself.

After passing the well-to-do villages of Aule and Watak, we found the river burying itself deeper and deeper into a narrow gorge, and there being no longer a path below, we had to climb to a considerable height up the arid cliff. The scenery and vegetation were those of Tsarong. The heat became stifling, as we descended to lower and lower levels; it was difficult to believe that we were still 10,000 or 11,000 feet above sea-level. Myriads of flies in the hot dark houses were the only real discomfort. After climbing by a rugged path till we were more than 1000 feet above the river we crossed a spur and saw below us another river flowing from the south almost as large as the Tsa chu; the two joined below, and flowed northwards in a deep impassable gorge to join the Salween. On the right bank of the new river, called the Zigar chu, and far above us, was the road to the Salween; obviously it would take us some time to reach it. The rest of the journey was a succession of terrific ascents and descents. The general level of the plateau through which the Salween has carved its valley is about 15,000 feet, and the river can only be reached from the edge of its valley at plateau-level, since all tributaries bury themselves in impassable gorges. As the Salween flows at 9000-10,000 feet, this involves a big descent.

I spent the night at Puti, a small village halfway down the side of the Salween gorge; on the following morning I went down into the river-bed to get a boiling-point, and other data. The Salween<sup>1</sup> was in flood, a swift turbid mass

<sup>1</sup> Gyama Ngu chu; also called Dza chu or Dza Khog Ngu chu, the last two names probably confined to the headwater streams north of Lhasa. According to some Tibetans, ngu = རྩལ་ལྷོ་, and means "sweat." Dza means earth or clay, and the idea is that the water is sweated out of the earth. The name would have no meaning in the gorge country, and it is difficult to see why the Rong Tō chu should be called Zayul Ngu chu.

of yellow water flowing at about 10 knots. There were no falls: such rapids as there were were caused by boulders in the river-bed. The uniform level of the plateau was remarkable. From the top I could see many small glaciers and snow-peaks on the range behind me, but I could see no snow to the east or north.

It was now clear to me that since leaving Ata I had crossed, not two ranges, but one, the Tsangpo-Salween divide, which is the Himalayan extension. After crossing the Ata Kang La I had descended no more than 3000 feet, to the lake at Shugden; then I had ascended 2000 feet and crossed the Poyü Tsonge La, whence I descended to the Salween. The Nagong river, rising on the Tsangpo-Salween divide, has followed the strike of the rocks for some distance to the north-west; then it probably crosses the range northwards, and before joining the Tsangpo cuts across it again, southwards. This crossing of the range accounts for the gorge at its lower end, above its junction with the Tsangpo. As for the Salween: it cuts across no mountain range here, but 100 miles to the south it flows in a great gorge between Menkong and Chamutong. I explored this gorge in 1913 and again in 1922. The snow-range is here trending south-east, and the Salween flowing due south crosses it between Ka-Karpo to the east and a snow mass to the west.

After leaving the Salween I returned to the Zigar chu, called Yindru chu, higher up, and followed it southwards through a well-populated valley. Reaching the alpine region I once again saw glaciers and snow-peaks in front of me. On August 11 we crossed the Traki La, 18,487 feet, over a rocky range with many small corry glaciers and hanging glaciers. This brought us into the valley of the Tzengu chu, which we followed back to Shugden Gompa. The peaks on either side of the Traki La rise to 20,000-21,000 feet, the rock being granite; near Shugden Gompa we got back on to limestone and slates. There is a considerable alpine flora even as high as 17,000-18,000 feet. A species of *Lagotis*, *Draba alpina*, *Primula macrophylla* (in fine bloom), a *Sassurea* and an *Allium* are amongst the highest species.

Towards the end of August I went two days' journey to the west, down the lake to its exit as the Nagong river. This is as far as ponies can go, the path then becoming bad. After turning west from the north end of the lake, the valley is filled with Fir forest. We passed two villages on the north bank of the lake, and saw a log raft being broken up and many poles being carried by yak to Shugden Gompa. There was no doubt where the lake ended, for the silence was shattered by a roar as the Nagong river plunged into a profound gorge; at the same time the rock changed once more from limestone to granite, though farther west is a high limestone range, forming the backbone of Pome. Up a valley on the left bank of the river I could see the peaks of the great snow range.

We camped at the boundary of Nagong with the semi-independent Pome country: it was said to be two days' march to the next village. The Pobas bring their herds up as far as this, but do not come to Shugden Gompa, neither do the Tibetans go down the Nagong river. Pilgrims from the Tsangpo valley (Chimdrü district) however use this route annually. Starting from Shingki Dzong on the Chimdrü chu, they descend to Kapu, on the Tsangpo, ascend the left bank, following the route taken by Bailey and Morshead in 1913,

cross the Sü La, and ascend the Nagong chu to Shugden Gomba. Thence they travel by the Zo La to Sangachu Dzong and Rima, returning north by the Rong Tö river, which they follow to its source, crossing the Kangri Karpo La, and so back to Shingki Gomba. The round trip takes anything up to two or three months, and is only possible between July and September; but pilgrims often take a year, crossing one snow pass the first year, spending the winter in Zayul, and crossing the second snow pass the following year. By this pilgrimage a considerable slice of the snow range is circumambulated. But Chömbö is not really an important place of pilgrimage, it has no more than a local reputation. The three most famous peaks in Tibet are, according to the head lama of Shugden Gomba: Tö Kang Ri,<sup>1</sup> Lho Tsa Ri<sup>2</sup> in southern Tibet; Ka-Karpo ("Kagurpu") in Tsarong.<sup>3</sup> I give them in order of altitude, according to my informant.

One of the lamas of Shugden had brought me a fine *Primula* in July, telling me he had picked it on a hill not far from the monastery. I paid several visits to the hill, but was unable to locate it. However when I asked if he might accompany me to the spot the head lama said that he could not let him off his studies at present: term would not end for several weeks. I repeated my request at intervals, and at last the lama said that if I would send to the monastery three *trankas* to provide a substitute he would give my friend a half-holiday. The money was sent, with a scarf, ponies provided, and we rode off to the hill. The lama went straight to the spot, and though he had only my description of the flower to go by, and it was long since over, he showed me the plants ripening their seed. The whole incident left me with a very agreeable impression of these monks.

Though there was no forest round Shugden Gomba there was a certain amount of scrub, and here birds and also hares were plentiful. I frequently put up coveys of small partridges at 14,000–15,000 feet. There were several species of babbler, red-beaked choughs, rose finches, larks, hoopoes, and pigeons. But I saw no larger animals. In the ponds there were toads (*Bufo viridis*).

On September 6 I set out for Sangachu Dzong on the main road to Zayul and the south, camping the first night in a wide gently sloping glaciated valley. The stream, which flows to the south end of the lake, has cut a deep trench through the gravel floor of the valley, and is invisible until you are almost on top of it. Small glaciers are seen on the flanking ranges to east and west. Next day we ascended the valley, crossed the flat, almost imperceptible watershed,

<sup>1</sup> Tö Kang Ri—probably Kailas, usually called Kang Rim-Po-Che. Tö Kang Ri might mean any sacred peak in upper (*i.e.* western) Tibet, towards Ladakh. There is one near Mount Everest in Nepal.

<sup>2</sup> Lho Tsa Ri. On the older maps of Tibet, Tsa Ri is marked as a peak, close to the intersection of 93° E. and 29° N. According to Bailey and Morsehead, Tsari is a *district*, in which there is a sacred mountain called Takpo Shiri. There can be no doubt however that there is a sacred peak called Lho Tsa Ri, as I am assured by that distinguished Oriental scholar, Dr. Van Marnen, "Lho" means south (ལོ་); "tsa" is grass, but by extension, any green vegetation. Lho Tsa Ri is a forested mountain, near the headwaters of the Subansiri.

<sup>3</sup> Ka-Karpo is probably the highest peak of the three. It might be 22,000 or 23,000 feet high. I have marched round it.

and following the source-stream of the eastern Zayul river till it entered a ravine, climbed up to the Zo La (Jo La) which crosses a spur of the range. Down the ravine where the torrent flowed I could see several snow-peaks and glaciers of the great range. From the Zo La I looked down the wooded valley of the east Zayul chu, and saw Sangachu Dzong, perched on a spur. A steep descent brought us to the edge of the forest, where we camped. Next day we reached the main river again, and shortly after, Sangachu Dzong. As usual the *dzong* was deserted, the monastery almost so, but there were a number of people harvesting their crops in the fields. Colonel Bailey spent a day here in 1911, and apparently he is the only other white man who has visited Sangachu Dzong. Since his visit the old *dzong* has been rebuilt, and it is now quite a fine structure.

A large torrent flows in from the south-west, and up the valley the snow-range can be seen. There is a path to Lhopa, and to Suku, on the Ata stream, the only direct communication between the two branches of the Lohit river. From Sangachu Dzong also a road goes over the mountains eastwards to the Salween, and thence northwards to Chamdo. The monastery and fort stand cheek-by-jowl on a shoulder, high above the cultivation and many hundred feet above the river, which flows in a deep trench. There are four villages below, which take it in turn to supply services to the *Dzongpön*, each village doing three days' work. I took a latitude observation here and found the map position to be several miles in error. Above the monastery there is a great limestone cliff on which I found many interesting plants. On the return journey I went back to Lhagu, and thence to the foot of the Ata Kang glacier; I also explored the lake district here, and the big glaciers to the north-west which feed the lakes.

I now realized (i) that the eastern Zayul river, like the Nagong river, rises on the Salween-Tsangpo divide; (ii) that the Zo La crosses a spur, not the main divide; (iii) that the flat watershed between the Sangachu Dzong river and the stream flowing to Shugden is in the interior of the Tsangpo-Salween divide; it does not cross it. Both streams rise on, and flow some distance along, the watershed. In other words, the main watershed is not crossed between Shugden Gumpa and Sangachu Dzong; it lies to the east and north-east along the high rocky divide which overlooks the valley of the Salween. The Traki La, which I had crossed in August however, does lie on this high sierra, and therefore crosses the divide. The average width of this great range for a distance of about 100 miles in this region, between the Tsangpo and the Salween, is 40-50 miles, which is considerably less than the width of the Himalaya west of the Tsangpo bend.

On September 20 I returned to Shugden Gumpa, and a week later set out to cross the Salween divide, if possible, by another pass. We followed up the Tzengu chu as though going to the Traki La, but turned off just below the pass up one of the wide-mouthed valleys towards the hanging glaciers. My guide had never been here before, but thought we might reach a pass. However when we reached the foot of the sierra at about 17,000 feet he gave up, and said there was no pass. Some of us then went off to look for one, and reached the top of a saddle, finding a snowfield on the other side. Below we could see yak grazing. With some difficulty the ponies and yak reached this

pass, just as a heavy snow flurry blotted out the view. We descended the snow slope, the ponies sinking deeply into the soft snow. Presently we reached an unsuspected glacier, luckily not much crevassed. Eventually we reached the pasture below, where there is a small lake at the foot of the glacier. Looking back at the glaciers which now filled the head of the valley, one would have said that there was no pass, and that we could not possibly have crossed with our baggage animals. While descending the glacier we saw a herd of Tibetan gazelle (*Gazella picticaudata*) ascending the snow slope in single file. When they saw us they began to leap and run. There were eleven of them, three being very young, the rest full grown.<sup>1</sup>

On the following day we discovered that we had reached the source of the Yindru river, and were back in the valley we had ascended from Zigar in August. Shortly afterwards we passed the mouth of the valley leading to the Traki La and came to some herds' tents. As I did not wish to descend to Zigar, we turned off here up a wide valley, whence we could descend to Shoshi Dzong, taking one of the herds to show us the pass. We crossed the pass, a wide saddle flanked by a glacier, next day, and descending a long valley eventually emerged close to Shoshi Dzong. From there we returned *via* the Po Yü La to Shugden.

On October 20 I recrossed the Ata Kang La. Considerable changes had taken place in the glacier since July, and we followed a different route from the summit, keeping well over to the right side, and at one point, owing to crevasses and seracs, leaving the glacier altogether, and scaling the cliffs. Eventually we crossed the glacier below the ice-fall, near our old July camp. Though there was a good deal of fresh snow on the surface, partially filling some of the crevasses, a very fair trail showed us the way, and we met coolies from Ata on their way to Nagong, carrying heavy loads of wooden articles, such as gun stocks and tea churns. There was a great deal of gravel on the lower portion of the glacier and stones were continually dropping into the crevasses. This had been going on all the summer. After a few days' halt at Modung, I went down to the Rong Tö chu with the object of following it up as far as possible. A long day's march from the mouth of the Ata river brought me to Putsang, the last village. This account of my subsequent travels in the Rong Tö valley has already been given up to the end of November.

My work was now in early December finished for the season. To vary the journey back to Assam I decided to go from the village of Dri over the Dri La into the Delei valley, and thence down to the Lohit river. We reached Dri on December 2 and spent several days here making arrangements for the journey. It was not easy to find coolies who were willing to go all the way to Sadiya, and nothing less was of any use: it is difficult to engage Mishmi coolies, particularly at this season, when they are dispersing into the country, and I had no mind to be held up indefinitely at some small village. Consequently we decided to scour the neighbouring Tibetan villages for men who were willing to go through. This meant carrying food for all for fourteen days, and increased the number of coolies.

We travelled light, sending the kit not required by coolie to Rima, whence one of my men would take it down the Lohit valley to Sadiya. Even so, I found we required fifteen coolies, though my own loads were light. For

<sup>1</sup> Tibetan རྩོག་བ་ (gowa). Perhaps the Tibetan ravine deer, *Piocapra picticaudata*.

interpreter amongst the Mishmis I engaged Wunju, headman of Giwang, himself a hunter who had several times been to Sadiya. He sold salt to the Mishmis, and acted as agent for them when they came over to the Rong Tö to buy cattle.

The weather was still beautifully fine, but it could not be trusted indefinitely. Sooner or later there would be another snowstorm in the hills, and although the Dri La is said to be crossed, even by Mishmis, right up to the end of December, a snowstorm just at the wrong moment might cause a fatal delay. We started from Dri on December 9, ascending through the Pine forest until we overlooked a big torrent which came in a couple of miles lower down the valley. The torrent flowed down a terrific forested gorge. The granite cliffs were almost vertical and the path was not easy. Dense thickets of Rhododendron, including eight or ten different species, lined the cascades. On the second day's march the path converged on to the upper glaciated part of the valley. The vegetation here was more like that of the Mishmi Hills. A short march on the third day brought us to the head of the valley, where there was a large lake, half frozen over. From the lower end of the lake the bearing of the pass was  $235^{\circ}$ , or almost due south-west, while the high peak called Parangkon bore  $187^{\circ}$ . Down the valley we faced north-eastwards to the Rong Tö, which was less than 10 miles distant. Directly above the lake rose a high snow-covered wall, at the top of which was the Dri La,<sup>1</sup> a knife-edge ridge between two rocky points. During the day a large party of Mishmis crossed the range and stopped at our camp, surprised to see me. The lake at the foot of the pass was at a height of about 10,500 feet, so we had some 2500 feet to climb next day.

We started soon after dawn, and owing to the depth and softness of the snow took five hours to reach the top. It was a gloomy day, a cold wind blowing up from the south threatening snow. From the Dri La I again looked down into Assam, a lather of cloud sweeping over the high snow-clad ridges which separate the Delei headwaters from the Dou and the Lohit. I was looking almost due east, not south. There was not nearly so much snow on the Assam side, and after crossing a belt of loose boulders we got on to firmer ground and descended rapidly towards the extreme head of the Delei valley. Towards dusk snow began to fall heavily, and we camped on the edge of the Rhododendron forest. Next day we entered the forest, near the birthplace of the Delei river. Deep snow lay everywhere, and was still falling heavily. It was obvious that we had crossed the pass only just in time, a fact brought home to us the more vividly when several shivering Mishmis, turned back by the change in the weather, joined us. However it was an unusually brief storm. That night the weather cleared up, next day the snow was melting and falling in wads from the trees, and within a day or two we were meeting parties of Mishmis on their way up to Zayul once more.

For the next four days we were marching through temperate forest, descending gradually, and crossing several large streams which flowed through wide valleys, and had their sources right back on the watershed. The Survey of India map sheet shows only two such torrents between the Dri La and

<sup>1</sup> The Dri La (from the village of Dri) is the Tibetan name for the pass called Glei Dakru on the Survey of India Sheet. Not to be confused with the Dri river, the source of the Dibang.

Tajabum, the first Mishmi village: actually there are five; but the surveyors did not go right up the valley, sketching in its head from a considerable distance. Hence these errors of detail.

On the 16th, after a long march, we camped at dusk in a strip of forest which I recognized as the very spot I had halted at in 1928 when for the last time Mr. H. M. Clutterbuck and I tried to reach the Dri pass. We were then camped on a cleared ledge overlooking a cliff called Chache, above the village of Tajabum. We had reckoned on Chache being within three or possibly four marches of the pass, making due allowance for inaccuracies in the map. But actually, descending the valley it took us five days from our camp immediately below the pass, to the bridge below Chache; it would have taken us longer going up, and still another day to cross the pass. In fact in 1928 we were not so close to the Dri La as we had supposed.

On December 17 we traversed the open precipitous face, some 3000 feet above the Delei river, and descended the frightful path to Chache and thence to Tajabum, which we found deserted. Chache, which is only a small camping-ground on the precipitous cliff side, near a stream, was cleared by a Chinaman who came from Rima to spy out the Delei valley when the Chinese occupied Zayul about 1912. The Chinaman liked the look of the Delei valley so little that he went no further, and returned whence he came: or perhaps it was the Mishmis he disliked. Having found Tajabum (three huts) empty, and having passed about fifty Mishmis making for Dri and left another fifty in the Rong Tö valley, I thought that possibly the entire population of the upper Delei migrated into Zayul during the winter. However our passage of the river was opposed by three men who tried to cut the bridge just as we arrived. Being but a flimsy bamboo structure, it did not need much tampering with to put it temporarily out of action, and we only just foiled the demolition party. It transpired that this was not done with the object of preventing us from crossing, but with the object of making us pay a ransom before being allowed to pass. The plot failed, nor were we again interfered with.

The group of villages which centres round Peti was in a flourishing condition. Every one seemed prosperous. The huts are large and well built, the permanent cultivation never looked cleaner or more fertile. There were not less than a hundred Mishmis here, so the exodus to Tibet was by no means complete. The villages at the top end of the Delei valley traffic with Zayul, those at the lower end with Sadiya. The deep ravine at the village of Meiliang, which has its sources on the peak called Polon (where Clutterbuck and I spent a hectic autumn in 1928) marks the line of division. The two sections of the valley, while not actively hostile, are emphatically not well disposed towards one another. Tibetan influence is growing here. Jackets made of Tibetan woollen cloth, prayer flags round the graves, even the jewelry worn by women, testify to it.

We left Peti on December 20. It is nominally six stages to the Lohit, nine to Theronliang: that is the time we had taken on the way up in 1928. On the return journey however I had actually reached Theronliang in six forced marches. I do not however recommend any one to try and cover the distance in six days, and certainly I had no intention of making forced marches now. Actually we took eight days to Theronliang. The path from Peti to Minutang,

up and down over the steep spurs, is bad; from Minutang to the Lohit, in the river-bed, is worse, on account of the cliffs. But the most difficult and tiring march in the whole Delei valley is unquestionably that from Peti to Tajabum.

The maize had all been plucked, and the cobs were stacked in the fields, in bamboo bins covered with roofs of matting. Two huts I noticed protected by a fence of spiked bamboo, with a gate moving in the vertical plan, raised by a counterweight in the form of a large stone. One would have surmized that this was a protection against human enemies; but more probably it was a protection against less tangible evils—the devils of sickness and misfortune. At this season the Mishmis were building new huts, or renovating old ones.

Ever since the two days' snowstorm after crossing the pass the weather had been superlative. This was lucky, for the cliffs below Minutang are hazardous at any time, and almost impassible when slippery with rain. The fine weather held till we reached the Lohit valley road on Christmas Day. That night it rained, but in the course of the following day it cleared up again, and by the time we reached Theronliang on the afternoon of the 27th the brief storm had passed. Never have I been so lucky with the weather on the North-East Frontier.

There is little to add about the vegetation of the Delei valley. Peti practically marks the boundary between the temperate forests and the Indo-Malayan hill jungle. Near Peti there grows—or did grow—the only known wild plant of *Leycesteria crocothyrsos*, which I discovered here in 1928. I looked for it again, but failed to find it: perhaps it had been cut down. However it is now in cultivation. I noticed the change to Indo-Malayan forest, birds, and mammals immediately we left Peti, and frosts were a thing of the past. Above that village, Rhododendrons, Oaks, Acers, Magnolias, Lauraceae, *Bucklandia*, *Carpinus* and similar trees abound; and above that again, Coniferae. Below Peti, Palms, *Pandanus*, species of *Ficus*, *Derris*, *Acrocarpus*, and other tree *Papilionaceae*, *Bauhinias*, *Ulmus*, *Araliaceae* *Sterculias*, *Pterospermum*, and similar trees are equally abundant, with an undergrowth of *Strobilanthes* and, on rocks, *Begonias*.

There must be a great many fish in the Delei, to judge from the number of bamboo fences built halfway across the river. At night a fire is lit on the end of the fence, and the fish are speared as they come to the light. There are many cormorants, and also such typical birds as honeysuckers, babblers, and the coppersmith are seen, or more likely heard.

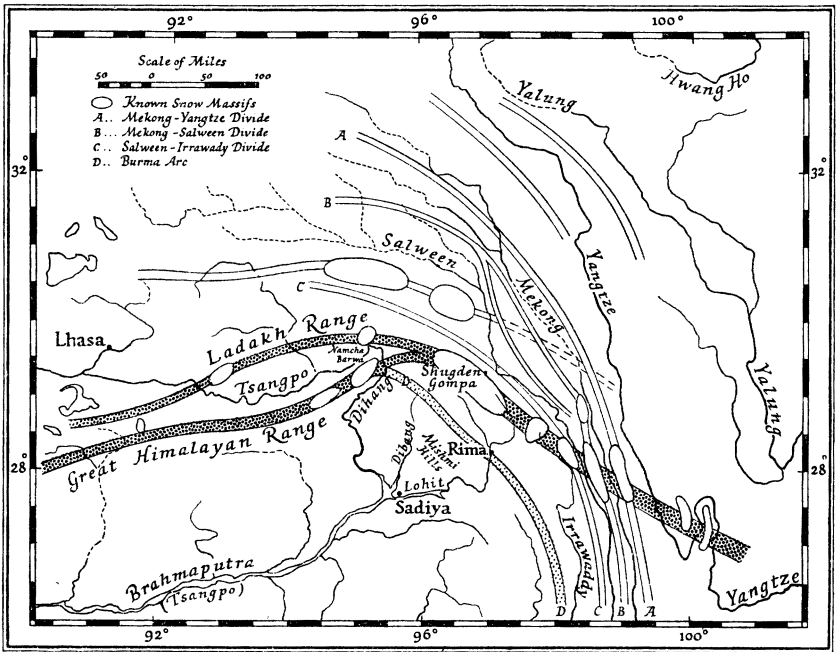
We now met Mishmis returning from Sadiya. Many of them spoke some Assamese; they were less shy, and more talkative than the suspicious natives of the upper valley. Yet even they were obviously surprised to see me: it is very rarely that a white man is seen beyond the administered frontier of Assam—more's the pity.

On the 28th I double-marched over the Tidding Saddle to Denning Post, where the Political Officer met me with his car and motored me the remaining 45 miles to Sadiya.

It will be convenient to add a few notes on the controversy of the eastern Himalayan extension. The view that the Himalayan range does extend east



of the Tsangpo gorge has been held by several authorities, notably by Prince Kropotkin and by the late Professor J. W. Gregory. It was opposed by most geologists, and by that distinguished geographer Sir Sidney Burrard, who suggested that the Ninchin Thangla range—presumably an eastward extension of Sven Hedin's Trans-Himalayan range—curved round to the south, and became the lofty Salween-Irrawaddy divide. If that was so, then farewell to the Himalayan extension: the Himalaya must end before it abutted on the Salween-Irrawaddy divide. Further, if one great meridional range was admitted, why cavil at half a dozen! But Burrard held that view a quarter of a century ago before the discovery of the Assam Himalaya, with its great peak Namcha Barwa; before Sven Hedin's work was published; and before Gregory



*Suggested alignment of the Himalayan and Ladakh Ranges*

went to Yunnan. Lately, Burrard has accepted the conclusion that the Himalayan range is prolonged eastwards.<sup>1</sup>

In spite of the resemblances between the western China and Himalayan floras, as pointed out by Hooker, there appeared to be discontinuity. Balfour rather stressed the differences between the flora of Yunnan and that of the eastern Himalaya. Further exploration has only emphasized the continuity: Yunnan plants were subsequently found in the Himalaya, and Himalayan plants found at any rate east of the Tsangpo.

A. R. Wallace, on the other hand, insisted on the connection between the eastern Himalaya and Malaya particularly in bird life. The advance of the

<sup>1</sup> 'A Sketch of the Geography and Geology of the Himalayas and Tibet,' Burrard and Hayden. (Second Edition, 1933, revised by Burrard and Heron.)

ice during the glacial epoch and the similarity of climate to-day account for that. But the main Himalayan relationships lie eastwards across China to Japan and Formosa, not southwards towards the Malay Archipelago.

Finally there was the evidence of travellers who described the great rivers flowing southwards, separated by great ranges of mountains. It would be hard for any one travelling westwards from China, south of the Tsangpo bend, to deny the evidence of his senses, and say that the great mountain ranges trended parallel to his line of march, when his days were spent in endless ascents and descents. Yet if he kept a little farther south he would have a less arduous journey, and if he kept a little farther north, a much less arduous journey.

Between the parallels of  $27^{\circ}$  and  $30^{\circ}$  he is in the river-gorge country, and that is a part of the Tibetan plateau in the third stage of demolition. The mountains are decrepit, but they have been rejuvenated, and the rivers are virile. By keeping a little farther south he reaches old country which has been mellowed; the mountains are lower, their outlines softened. By keeping farther north he finds himself on a more level plateau in the earlier stages of demolition with the mountains separated by trough valleys lying more or less parallel to his route. A great mountain range may be 100 miles *wide*. A river cutting through it will then form a gorge 100 miles *long*. A leash of rivers cutting through it close to one another will form a series of parallel gorges 100 miles long separated by spurs or ridges, which may take on the appearance of separate parallel ranges of mountains, particularly if the rivers cut through at a point of maximum elevation. This is exactly what has happened between the Tsangpo bend and the great hook bend of the Yangtze at Likiang. The celebrated naturalist, Brian Hodgson, made the same mistake about the Himalaya. He contended that the Himalayan high peaks stood at the ends of spurs projecting southwards from the edge of the Tibetan plateau and not on a continuous range. To-day no geographer doubts the continuity of the great Himalayan range. Wadia himself has shown how this appearance has come about by the cutting of transverse gorges.

The Himalayan rivers however between the Indus and the Tsangpo are of secondary importance compared with the great Tibetan rivers. They do indeed rise behind the crest-line of the Himalayan range; but they have not captured the drainage of the great Tibetan troughs as the Tsangpo and other major rivers have done. They are also comparatively far apart, so that the blocks into which they have cut the Great Himalayan range have not so much the appearance of long narrow meridional ranges between the gorges. Nevertheless the two phenomena are strictly comparable. It is only in a comparatively narrow belt of country about 120 miles wide (the thickness of a great mountain range) where the parallel rivers flow in deep narrow gorges flanked by snow-peaks, that the appearance of meridional ranges is produced. North and south of this belt the country is plateau-like. The meridional range effect is of course enhanced by the fact that the grain of the original Altaid uplift happens to be north-south. This grain is still there, but is more or less concealed in the foundations, since the Altaids must have been worn right down to the base. The Himalayan earth movement then superimpressed the alpine grain which was thenceforth the true grain of the country, going to the

very roots of the mountains. Later events again impressed a north-south grain on the country, which, corresponding more or less with the Altiid uplift, was not unnaturally taken for the true grain. It has almost completely obscured the effect of the Himalayan uplift, except at certain notable spots; and it has made the unravelling of the geology and geography of this region singularly difficult. To sum up. A great climatic barrier stretches across the country from the head of the Tsangpo gorge, eastwards or south-eastwards towards the Yangtze. A climatic barrier of the first order is necessarily also a biological, and often also a human, barrier. The fact that the original grain of the country, reinforced by the southward flowing rivers, is athwart the barrier, tends to conceal it. The truth of its existence rests upon the following evidence.

*Climatic.*—If any of the great river gorges are followed up, the climate is found to change within the course of a few miles, from moist to arid. The change takes place in the neighbourhood of snow-peaks without any great change of altitude in the river-bed. This change is most noticeable in the Tsangpo and Salween valleys, less so in the Mekong and Yangtze valleys.

*Topographical.*—All the four great rivers cut through deep gorges. If the known snow-peaks are plotted on the map they are found to fall within a belt about 50 miles wide, which runs diagonally from the top end of the Tsangpo gorge to the great bend of the Yangtze at Likiang. The river gorges are cut through this belt. North and south of this belt of high peaks the country falls away to a more uniform plateau level.

If the southern limits of the former glaciation are plotted, the ice-shore is found to extend along the southern foot of this range, and all the lesser southward-flowing rivers rise on its southern flank.

In the neighbourhood of Nagong the actual snow-range can be seen stretching for at least 50 miles in a direction approximately north-west to south-east.

*Botanical.*—Crossing the snow-range in Nagong there is a change in the flora as complete as that seen crossing the Himalaya in Sikkim. But this is equally true even when following up a river gorge, such as the Tsangpo or the Salween. No sooner is one behind the great range than one finds a totally different flora. East and west across the river gorges, and the apparent grain of the country, the flora is more uniform (according to altitude, and to which side of the range it belongs) than it is north and south along the apparent grain. The existence of so many Eastern Asiatic woody plants on the Himalayan range can only be explained by the extension of the Himalaya.

On the meridional ranges, a change occurs in the alpine flora where the great snow-peaks intervene. South of Ka-Karpo on the Mekong-Salween divide, for example, there is one alpine flora, which may be called Indo-Himalayan; north of it is a different alpine flora, related to that of the Tibetan plateau country (Sino-Himalayan). To find a continuation of the Indo-Himalayan flora one must look to the ranges west of the Salween (the Salween-Irrawaddy divide) and east of the Mekong, the Mekong-Yangtze divide. Similarly, a Sino-Himalayan flora is found east and west of the Mekong-Salween divide. The difference between the alpine flora of the Mekong-Yangtze divide, say, and the Salween-Irrawaddy divide, south of their respective snow-peaks, is

not greater than that observed in passing along the Himalayan range from Nepal to Bhutan.

*Zoological.*—There is a change in the animal life corresponding to the climate and vegetation change. Mammals found south of the barrier include the takin, goral, serow, black bear, yellow-throated marten, flying squirrel, clouded leopard, and barking deer; north of the barrier occur snow leopard, Tibetan antelope, marmot, hare, and wild ass.

*Geological.*—In Nagong the sedimentary rocks have been thrown into folds by pressure from the north or north-east. These rocks are probably identical with those observed by Gregory in Yunnan, that is to say, they are of late primary age, and have been affected by the Himalayan earth movements. According to the views here advanced, the Himalayan range stretches from the Indus to the Yangtze and probably to the Pacific coast. It consists of two parts: the main part, from the Indus to the Tsangpo, of Cretaceous age, was, at the time of the Tertiary uplift, at the bottom of the Tethys. The extension from the Tsangpo eastwards was at that time part of a plateau worn down from the Indo-Malayan mountains which had long been dry land. This plateau was uplifted and folded exactly as the bottom of the Tethys was uplifted and folded, the whole forming one great range. Lines of weakness developed at the junction, and in the rejuvenation of the ancient plateau. As a result, first glaciers, and then rivers found a way out here.<sup>1</sup>

No explanation of the eastern Tibetan ranges which fails to take account of them all will suffice. If this view explains the relationship existing between the eastern Himalaya and the high peaks between the Tsangpo bend and the Yangtze bend, it must also explain the snow-range north of the Tsangpo. In the *Geographical Journal* for February 1926 I drew attention to certain other peculiarities of the eastern Himalayan and Tibetan ranges.

Firstly: Whereas in travelling from the Chumbi valley to the Tsangpo two ranges are crossed, *viz.* the Great Himalayan range by the Tang La, and the Ladakh range by the Karo La, in the neighbourhood of the Tsangpo gorge, only *one* range separates the upper Tsangpo from the Dihang. If one crosses the Doshong La from Pe on the Tsangpo one arrives on the Dihang and eventually in Assam without crossing a second range. What then has become of the Ladakh range? I suggested then that it is continued on the north bank of the Tsangpo, which cuts across it in a gorge east of Tsetang.

Again, it was supposed that at the entrance to the great gorge the Tsangpo was cutting through the main axis of the Great Himalayan range. The two high peaks, Namcha Barwa and Gyala Peri, were cited as flanking the gorge, Gyala Peri continuing the main axis of the Himalaya. But Gyala Peri lies due

<sup>1</sup> According to Wadia ("Geology of India") "all the great Himalayan rivers are older than the mountains they traverse." This may be true of the Indus, but needs to be proved for the four eastern rivers. It does not account for their proximity and parallelism. Gregory states categorically that during Pliocene times the drainage lines of the Tibetan rivers were formed by meridional fracture at the same time that great basins were being formed by subsidence. The Mekong, for example, flows down a cracked syncline, as is proved by the rocks dipping away from the river. ("The Alps of Chinese Tibet and their Geographical Relations," by J. W. Gregory and C. J. Gregory, *Geogr. J.*, March 1923. See also *Philosophical Transactions of the Royal Society of London*, series B, vol. 213, 1924.)

north of Namcha Barwa, so that unless we imagine the Himalayan range to change direction to the north quite suddenly at this point, these two peaks cannot be on the same *crest line*, though they might indeed be on the same *range*.

Thirdly, to the north of the Tsangpo gorge Lord Cawdor and I saw a mighty range of snow-peaks. These we naturally assumed were on the Tsangpo-Salween divide. How then do they fit on to the snow-range I crossed last year? Further, what is *their* relation to the Namcha Barwa-Gyala Peri group? These questions cannot be answered yet with any certainty. A glance at the map on page 389 will however show their suggested relationship. Dr. Wadia's excellent work on the geology of Kashmir is no argument against the views here put forward. The history of the western Himalaya has not necessarily any bearing on that of the eastern Himalaya: each must be judged on its merits.

The grasshoppers of the north-western Himalaya, for example, as pointed out by B. P. Uvarov, belong to groups which have no connection with those of the eastern Himalaya. The former are related to tropical Indian species; the latter spread from the ancient Angara continent (eastern China) and are very different.<sup>1</sup>

## APPENDIX: NOTE ON THE AMPHIBIANS AND REPTILES

DR. MALCOLM SMITH

The collection of amphibians and reptiles obtained by Captain Kingdon Ward on his last two expeditions to Upper Burma, Upper Assam, and the adjacent regions of Tibet, although not large, is of considerable value and significance. The region visited is of particular interest in that it is the meeting-place of the eastern Himalayan fauna, which belongs mainly to the Indo-Chinese subregion, and the Trans-Himalayan, which is Chinese in origin. Of the 16 species collected, 7 are known from China or Yunnan, and 3 from the Himalaya; the remainder are widely distributed or are peculiar to the region visited. The Tibetan collection considerably extends the range of several species; some of these show also slight differences in morphological characters or in colour pattern from what has hitherto been recorded.

In consideration of the high altitudes at which most of the specimens were obtained it is of interest to recall the heights to which amphibians and reptiles have been known to ascend in that part of the world. In southern Tibet a toad, *Scutigera alticola*, lives at 16,500 feet; a frog, *Altirana parkeri*, at 15,000 feet; and the agamid lizard, *Phrynocephalus theobaldi* is said, in some places, to be common at between 15,000 and 17,000 feet altitude. In the Himalaya the Scink, *Leiolopisma himalayana*, ascends to 12,000, and *L. ladacense* to 14,000 feet. Wall has described a snake, *Natrix baileyi*, from Tibet which lives at 14,000 feet. Such a height however is quite exceptional for a snake, and it may have been the unusual conditions under which the species lives that enables it to survive. According to the natives who obtained them they "live in the sides of a hot spring and are never found as far as half a mile distant." Another snake of the same genus, *N. platyceps*, ascends in the Himalaya to 10,000 feet, and some of the Pit Vipers (*Trimeresurus*) live at great elevations. Captain Kingdon Ward's specimens of *Trimeresurus jerdoni* appear to be a record in altitude for the genus.

<sup>1</sup> *Annals and Magazine of Natural History*, October 1927.

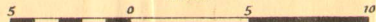


TIBET  
THE HIMALAYA EAST  
OF THE TSANGPO

by F. Kingdon Ward

Scale 1/500 000

Miles



Kilometres

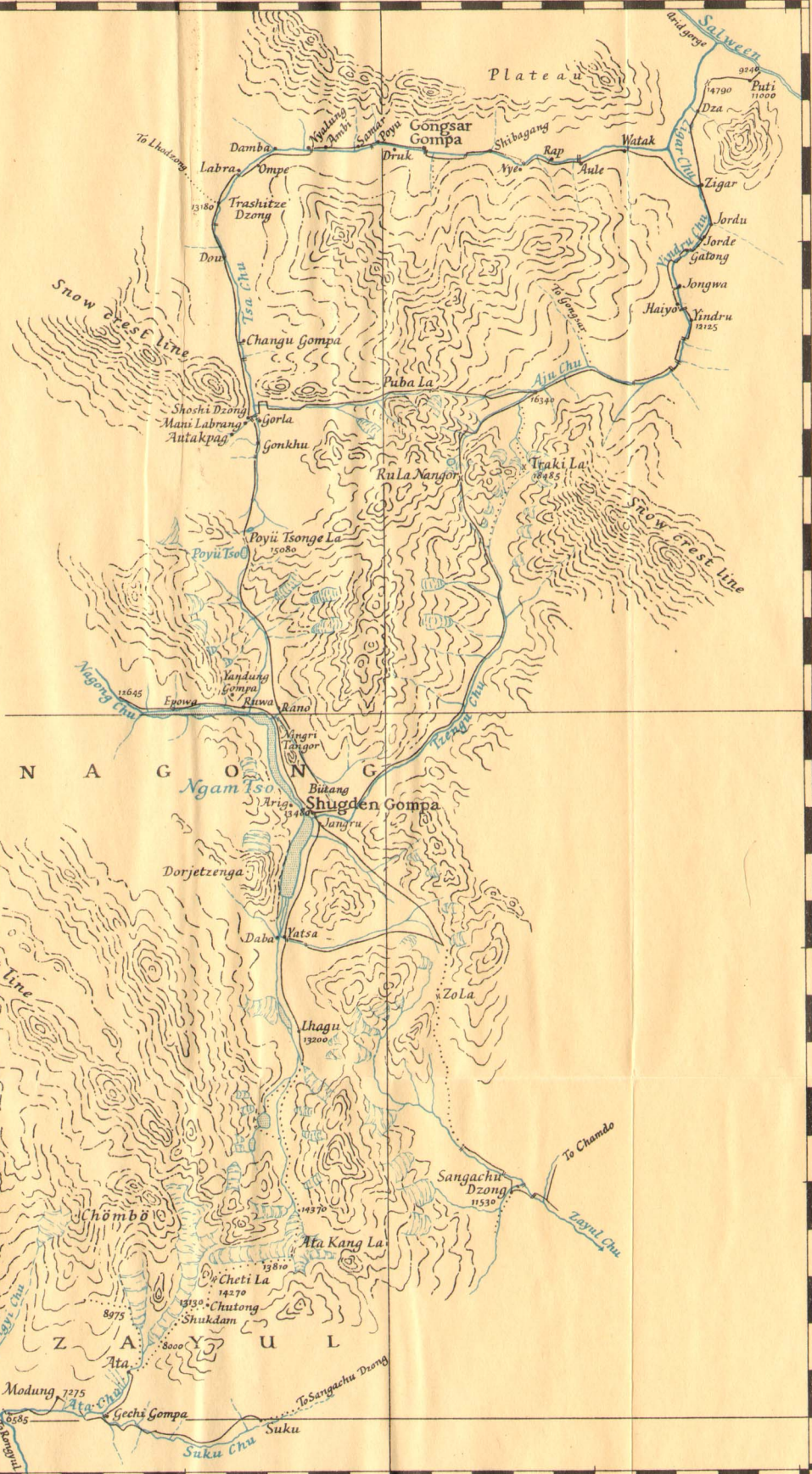


Route on foot..... Route with mules  
Bridge

This map is based on a compass traverse and plane-table sketch adjusted to the latitude observations by F. Kingdon Ward and to the longitudes from the Survey of India sheet 91C. Heights in feet from boiling point readings.

Latitudes

Aule	-----	29° 53' 20" N
Poyü Tso	-----	29° 36' 36"
Shugden Gompa	-----	29° 25' 45"
Highest point on Rong Tö Chu	-----	29° 18' 53"
Sangachu Dzong	-----	29° 9' 39"
Ata	-----	29° 1' 58"





*Amphibians*

Specimens were obtained of *Megophrys minor*, *Scutigter sikkimensis*, *Bufo viridis*, *Bufo stuarti*, and *Rhacophorus maximus*.

*Lizards*

Specimens were obtained of *Japalura splendida*, *Calotes kingdon-wardi* (new species), and *Lygosoma indicum*.

*Snakes*

Specimens were obtained of *Natrix nuchalis*, *Natrix subminiata helleri* (considerably larger than any previously recorded), *Elaphe mandarina*, *Elaphe taeniura taeniura*, *Ptyas korros*, *Zaocys nigromarginatus*, *Trimeresurus jerdoni*, and *Trimeresurus monticola*.

## DISCUSSION

Before the paper the PRESIDENT (Major-General Sir PERCY COX) said: You all know the subject of the lecture, but in repeating the title I feel a certain amount of responsibility as to the pronouncement of the name of the famous mountain-range. Since my youth I have called it Himälâyä; but I find that the pundits no longer agree to that pronunciation. They seem more or less unanimous in calling the range the Himälâyä, so I ask you to adopt the same pronunciation.

The lecture is on the Himalaya east of the Tsangpo gorge. As regards the lecturer, I feel it almost an impertinence to speak of introducing him, for he really needs no introduction. All I need say is: "Here is Kingdon Ward back again." As we all know, he has been a traveller and explorer for twenty-five years past and has repeatedly given lectures from this platform and written a great deal in the Society's *Journal*. He was a Gold Medallist in 1932. He has now returned to England from another interesting trip, and I am sure, if he has his own way, it will not be his last in that fascinating region.

*Mr. Kingdon Ward then read the paper printed above, and a discussion followed.*

Colonel F. M. BAILEY: It is many years since I was in the part of the world described to-night, and I think I might tell you what took me there. I had an idea that some one might get into the country round the bend of the Brahmaputra from the Chinese side. The problem of that river had been talked of a good deal. There had been somewhat feeble efforts to approach it from the Assam side, and there had been discussion in 1904 as to approaching it from Lhasa, and I had an idea that somebody might get into this part of the world from China, especially if they knew Tibetan and could travel among Tibetans and were independent of Chinese official help which always involved Tibetan opposition. That was what took me to Shugden Gompa.

Kingdon Ward was prevented from going down the valley to the west. So was I. I had no intention of stopping at Shugden, but when I got there I was unable to move. Down the valley there was a war, and the natives claimed that they had killed 3000 Chinese. I went back into that country two years afterwards and was told that I had been misinformed, the figure was 1700. Whatever the number, it was impossible for me to proceed. No one would help me or carry my loads. I was told it would be certain death to go on; that the Chinese might take me for one of the enemy and the enemy might take me for a Chinese! That was what stopped me in Shugden and made me return along the same route, against my will.

I do not want to enter into a discussion as to the way in which the Himalaya run because that seems a somewhat controversial topic, but when on the part