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EXPLORATIONS IN THE NEPAL HIMALAYAS

H. W. TILMAN

BEFORE LEAVING KATMANDU in 1949 I asked permission for a party to visit the Annapurna Himal. The Himalayan Committee followed this with a formal application to which a favourable reply came rather late. It was the end of February 1950 before I could begin collecting a party and stores, and with difficulty secure passages for early April. My notion was to take a small party such as explored the Langtang,[1] collecting plants, battering rocks, amending the existing map, and attempting no great peaks. But the Himalayan Committee preferred a larger party in order to begin building up a nucleus of experienced Himalayan climbers such as existed between the two wars.

My party finally included Colonel D. G. Lowndes, our botanist; Major J. O. M. Roberts, a Gurkha officer with experience of Himalayan climbing; Dr. C. H. Evans; J. H. Emlyn Jones; and W. P. Packard, a New Zealand Rhodes Scholar studying geography at Oxford. The last four were climbers but Packard had also a scientific role. I had hoped to survey the north-west corner of our area which is very sketchily mapped, but the only suitable photo-theodolite in England had been earmarked for the Shaksgam party, so that instead of survey work Packard was to inquire into soil erosion and land utilization. Owing to their remoteness Himalayan villages are not likely to reap any practical benefit from this inquiry in our time, but on that account it will be none the less gratifying to our long-term world planners.

As the ship carrying the party and stores was billed to sail on Good Friday I was not surprised when some defect delayed her for a week. Nor was this the only rub. Travelling across India in April is hot, but our party found it hotter than usual by reason of the compartment and some of our kit going up in flames. This meant more delay, so that it was not until May 10, ten days later than we hoped, that we left Katmandu with four Sherpas and fifty local coolies.

When after ten days' marching we entered the Marsyandi valley, we had lost height and were down to 2000 feet; and three days later, at Thonje where the valley turns westwards behind the Annapurna range, the height was only 6000 feet. Like many Nepal rivers the Marsyandi rises north of the main Himalayan crest-line (but not north of the Ladakh range) and cuts through by a deep gorge. Below Thonje the valley is flanked on the east by a great spur projecting 20 miles southwards, carrying Himal Chuli (25,801 feet), another peak of 25,705 and Manaslu (26,658). We had had some frightening glimpses of these peaks but before dismissing them we halted at Thonje for four days while we went to look at the north side of Manaslu. The north ridge of this magnificent mountain is its only approach, but my interest in it soon died for after leading airily over a 25,000-foot bump it dropped a

[1] P. Lloyd, "New British exploration in Nepal," *Geogr. J.* 116 (1950) 172–82.

thousand feet before rising sharply again to the summit plateau in the remotest corner of which stood the summit pyramid. Anyway I was loth to pit an untried party against so great a mountain and yet hoped to find one high enough to test our acclimitization powers and easy enough to offer some hope of success.

We therefore left the peaks of this great spur for better men and went on to seek an objective in the Annapurna Himal which offered several great and

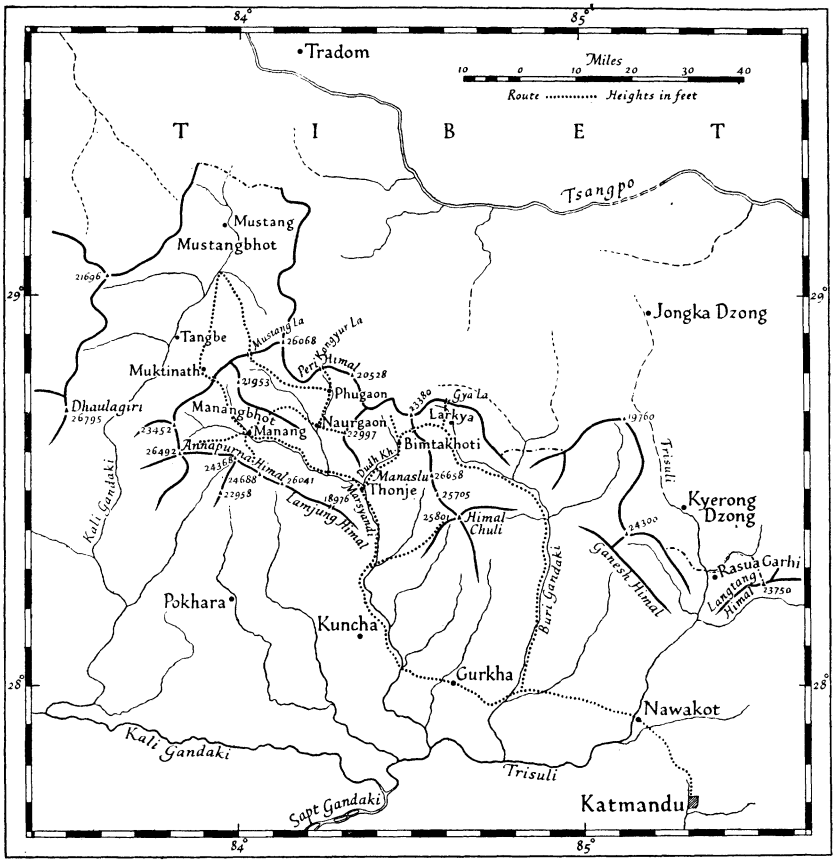


Fig. 1. Western Nepal

glittering prizes. This Himal consists of an east–west ridge over 25 miles long, nowhere lower than 20,000 feet, and with Annapurna I (26,492) at the west end, Annapurna II (26,041) at the east, two peaks of 24,000 odd in between, and others of 22,000 and 23,000 in attendance on the two giants. Nor is this all. There is a southern outlier called Mocha Pochare, or the "fishtail" (22,958) and several good peaks on the north side of the Marsyandi valley; and beyond them is the Ladakh range on the Nepal–Tibet border.

After rounding the corner above Thonje and drawing under the shadow

of the Annapurna massif we noticed a change of climate. Mindful of our dank experiences in the Langtang in 1949 I rejoiced to see the deciduous rain forest, draped in lichen and moss, giving place to pines and juniper, sparsely set on bare earth or gravel slopes. Terraced fields of wheat and buckwheat under irrigation confirmed the lightness of the monsoon rainfall. The appearance of this semi-desert did not please our botanist who had come prepared to be wet but happy amid a wealth of flowers. But above 14,000 feet, where clouds lay constantly during the monsoon, he found an ample variety.

We put our base in a pine-set glade a few hundred feet up on the north side of the valley close to the group of villages which constitute Manangbhot. Most of the range was in view except Annapurna I which the French, though we were unaware of it, were then climbing. We never had a good view of Annapurna I, but two of the French party who crossed from the Kali valley to Manangbhot reported it to be unclimbable from the Manangbhot side.

These villages, lying at about 11,500 feet, are like Tibetan villages—flat-roofed stone houses huddled together and an abundance of *mani* walls and *chortens*. The people are of course of Tibetan race and speak a Tibetan dialect, but they are an unusual kind of Himalayan community. They are great traders who spend the winter months in cities like Delhi and Calcutta, or as far afield as Singapore and Rangoon. They are familiar with boat, train and even air travel; and with the pale-face and some of his less commendable ways. They speak Hindustani garnished with American and wear wrist-watches and Army boots without laces. One of them whom we attempted to photograph retorted by whipping out a camera himself. On the whole they were not pleased to see us and I was not delighted with them. The traveller to remote parts wishes, indeed expects, to find the natives unsophisticated enough to treat him with the respect which he seldom gets at home. At Manangbhot he will be disappointed. Apart from that, they were not eager to sell us food or transport. Our money was little inducement for their winter trading ventures seemed to be lucrative enough for them to devote the summer months to drinking beer and *raksi*. Thrice happy mortals! On these forays into civilization their stock in trade consists of musk pods, *salajit* (literally "rock-sweat," an exudation from rocks used as a sovereign remedy and also in dyeing, printing, and tanning), medicinal herbs, skins and, I imagine, a great deal of impudence.

After prolonged scrutiny we took for our objective Annapurna IV (24,688) which stands on the ridge about two miles west of Annapurna II. In my opinion it was sufficiently lofty, but if the party proved unexpectedly strong it would be possible to carry a camp along the ridge to the foot of the final steep 1000-foot pitch of Annapurna II (26,041).

Cutting out all tedious climbing details, it is sufficient to say that after ten days' work four Europeans and four Sherpas were established in a camp at about 22,500 feet. This was within striking distance of the summit of Annapurna IV which was now the objective. All hopes of going on to Annapurna II had been tacitly relinquished.

We made three attempts. On the first, Evans and Packard turned back after climbing about a thousand feet on account of threatening weather—a threat which was amply fulfilled by a storm which raged until evening. For

the second all of us, less two Sherpas, started rather too early on a cold sunless morning. Within ten minutes Roberts and a Sherpa turned back from numbed feet and an hour later, when neither the sun seemed likely to shine nor the wind to drop, we too retreated. Evans, Packard, and I made the third and last effort, but at 23,500 feet age and altitude brought my faltering footsteps to a halt. I hoped the others would then move faster, but at 24,000 feet or thereabouts Evans too came to the end of his tether. Packard, who was going well, could I think have reached the top had he had a second man.

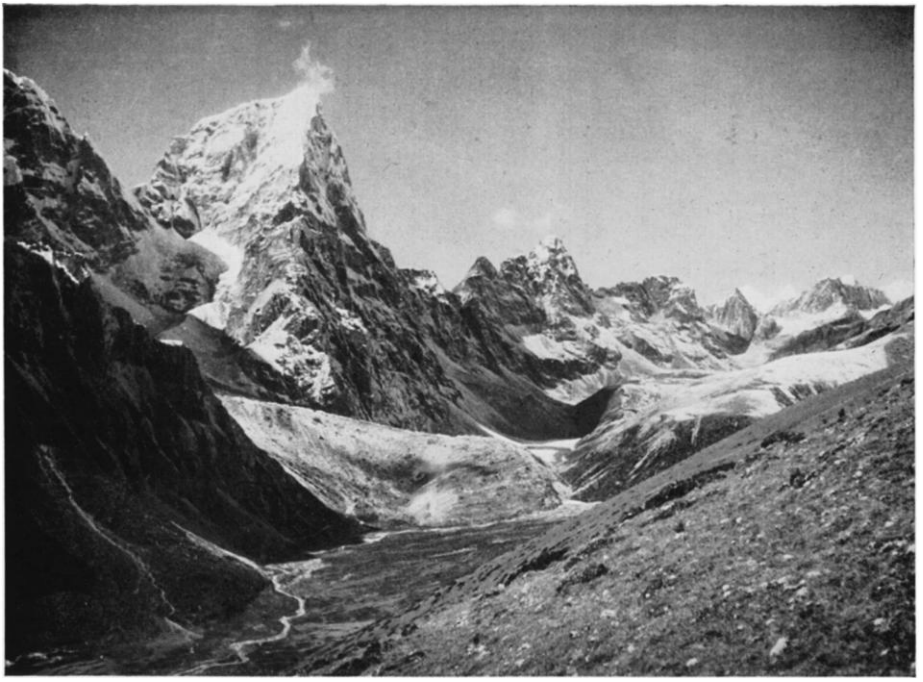
After a few days rest, four of us set out for an unnamed peak of 22,997 feet which from the top of the Annapurna ridge had looked like a mountain intended for climbing. Roberts, whose feet were troubling him, remained to take over the bird collecting, ably assisted by Lieutenant S. B. Malla of the Nepalese Army who had been detailed to escort us. This new venture was a shot in the dark for we had seen only the upper part of the peak and in the prevailing conditions of mist and drizzle we were not likely to see more. The monsoon had set in about mid-June, when we were on the Annapurna ridge, bringing with it plenty of mist and cloud but not much rain.

We reached the foot of our peak after crossing a 17,000-foot pass to the north, to the village of Naurgaon in the Naur Khola. Through a cloud vista we had seen a way up to about the 15,000-foot level but what lay between that and the summit was anyone's guess. But all went well and after four wet and blind days—one in a rock gully where success hung in the balance—we camped on the edge of a dry glacier above the cloud canopy. Our last camp was at about 20,000 feet and unless we were to be stopped by very soft snow we thought the peak was in the bag. In fact we were foiled by a 1500-foot slope of ice, from which I concluded that the predicting of snow conditions during the monsoon is a task that would puzzle Old Moore.

It was now mid-July and three of the climbers had to go home, barren of achievement but rich, one hoped, in experience. Leaving the botanist and ornithologists busy after their kind I returned with two Sherpas to the Naur valley which we had just left, where I had heard of a pass over to Mustangbhot, an interesting region in the upper basin of the Kali river. This pass, known as the Mustang La, is not shown on the map which hereabouts is extremely vague. At Naurgaon they affirmed, correctly, that the river which the route to the pass crosses would not be fordable until late September; so we went on up the valley to the ultimate Nepal village of Phugaon whence we hoped to force a route along the north side of the offending river to the Mustang La. Under extreme pressure from the headman two Phugaon men volunteered to come, but before setting out we visited another unmarked pass to Tibet over the Ladakh [1] range two days' march to the north. Flocks of sheep and goats carrying salt and rice cross this pass, the Kongyur La, which is over 19,000 feet and even in high summer crowned with half a mile of snow field. On the Tibet side there is said to be no village for five marches. It is a cruel

[1] Professor Kenneth Mason deprecates the use of this name for what he calls "a speculative invention"; and it is certainly confusing to find a Ladakh range cropping up in Nepal. The alternative, "northern crest-zone" as opposed to the "main Himalayan crest-zone," is cumbersome and inconvenient for a range which for some hundreds of miles is the frontier between Tibet and Nepal.

The main Annapurna ridge, Annapurna II in the background



Looking towards the Nup La from near Phalong Karpa

Tangbe village in the upper Kali

pass for animals. Before reaching the comparative oasis of flat snow the track climbs for a thousand feet at the base of a huge cliff from which stones fall with alarming frequency and appalling velocity. The locals who were with us tackled this stretch in short sharp rushes, pausing to draw much-needed breath crouched as close as possible to the foot of the cliff. The foolish flock, meanwhile, took its chance well out in the beaten zone. Those who traffic over such a route by land are surely as worthy of the proud title of Merchant Adventurer as those who traffic by sea.

We found and crossed the Mustang La (18,000) four days out from Phugaon. Having reached its vicinity by our own unaided efforts we turned to our two locals for guidance to the pass itself, only to learn that never in their lives had they been there. At length we spotted a faint trail beyond the river which, now that we were less than a mile from its glacier source, we were able to ford. The pass is crowned with a slab of ice, like spilt icing, such as one meets with in Sinkiang. On the west side we got into trouble in the deep-cut Tangbe nallah which the path, unnoticed by us, had wisely quitted long before, but we finally reached the village of Tangbe a mile from the Kali river. The upper basin of this river occupies the curious salient of Mustangbhot where the Nepal frontier juts north into Tibet. The Kali cuts through the main Himalaya at the great gorge between Annapurna I and Dhaulagiri; and probably through the Ladakh range too, which hereabouts appears to have dwindled to nothing. Looking north to Tibet I could see no hint of a snow mountain across a twenty-mile wide breach. On the map, the river (indicated only by a dotted line) rises not far from the Tsangpo valley; the only explorer to have followed the valley northwards is Hari Ram (1873) one of the Survey of India pundits, but his account of the country between Mustang and Tradom in Tibet is vague.

At Tangbe the river flows in a wide gravel bed flanked by high vertical gravel cliffs carved out of old river terraces; behind rise wildly eroded and weirdly coloured hills, cobalt, slate grey, mauve, chrome, and orange. In this desolate waste, relieved only by the infrequent oasis of some village irrigated by a side nallah, there is never a tree, hardly a shrub or a blade of grass. A day's march north of Tangbe on the west side of the Kali, which is apparently fordable, is Mustang village, the exchange mart for Tibetan salt. The salt is carried by sheep and goats down the left side of this arid valley to Muktinath and thence to Tukucha below Dhaulagiri, whence they return with rice.

We followed this broad highway two or three thousand feet above the river, passing many hundreds of sheep and goats with their little saddle-bags, until in two days we reached the celebrated Hindu pilgrim resort of Muktinath. It lies at about 12,000 feet on the west side of the range which runs north from Annapurna I to articulate with the Ladakh range. It is green and well-watered by springs and there is some pine forest. The wheat had just been cut (at Manangbhot it was not ripe until September) and threshing with flails was—literally—in full swing. Across the Kali, and a little south, Dhaulagiri rises grandly but Annapurna I, the twin bastion on the hither side of the gorge, is hidden. During the few days we had it in view Dhaulagiri seemed singularly free from cloud; and this, together with the early harvest and the treeless aridity of the valley farther north, makes it appear that the

monsoon is of less weight here than at Manangbhot. Each day we were in the valley a thunderstorm brewed over Tibet and swept southwards down the Muktinath range, no rain falling below 14,000 feet. Near our camp I found a rich deposit of the so-called *shaligram*, sacred to Hindus; these are ammonite fossils of the Jurassic *Tethys* sea.

The Muktinath shrine is dedicated to Narayan, an incarnation of Vishnu. Behind it in a courtyard are the 108 spouts from which the pilgrims successively drink of the sacred water; but a more curious thing can be seen hard by in a dilapidated *gompa*. (Muktinath is also sacred for Buddhists.) At one end the usual gilt Buddha sits on a rock shelf, but beneath this natural altar are three small curtained apertures in each of which burns a lambent blue flame, presumably of natural gas. A small stream flows through the centre hole and the flames issues from the rock close enough to the water to justify the native accounts of "burning water." Having taken off their boots the Sherpas prostrated themselves before the altar and examined the flames at their ease. My examination was only perfunctory, for the old crone in charge (a nun) withdrew the curtain with some reluctance for one who so obviously was not seeking The Way. The Sherpas took earth from the floor and a bottle of this holiest of water for their Darjeeling friends.

A pass of 17,000 feet leads to Manangbhot whence, having returned, we all moved up to the head of the Dudh Khola north of Manaslu. This river drains the northern slopes of Manaslu and three glaciers which descend from the Ladakh range. (At this point the two crest zones are in contact.) These three were the only real glaciers we had seen—I mean glaciers with high moraines and several miles of debris-covered ice. Those which descend from Manaslu and from the Annapurna are mere ice-falls which peter out at about 14,000 feet before reaching the valley floor. True, the snout of one almost touches the Marsyandi river opposite Manang village, but except for its last few feet it is an ice cataract. That a 25 mile long range with an average height of perhaps 23,000 feet should have no true glacier on its north side implies little precipitation and a high angle of slope.

Tucked away in the grassy ablation valley of the Dudh Khola glacier at a height of 12,000 feet is Bimtakhoti, a few stone living houses and a rice store. During the summer a constant stream of coolies from lower Nepal bring their 80 lb. loads of rice to exchange for salt at the rate (variable) of 16 measures of rice for 25 of salt. The salt is brought from Tibet by an easy pass over the Ladakh range to Larkya in the next valley to the east, the Buri Gandaki, whence *zos* or sheep carry it over another 17,000-foot pass to Bimtakhoti. We were told that 3000 animal loads are dealt with in a season. What economists call the price mechanism is supposed to govern the rate of exchange, but when Roberts visited Larkya he found the Tibetan merchants trying to enforce a planned economy—planned, that is, in their favour.

Roberts who had now collected enough birds promised to help me to collect a mountain, but while searching for one suited to our moderate powers and dwindling ambitions I carelessly slipped on a boulder and fell a few feet. For five days I had to lie very still until I felt equal to being carried down by the Sherpas to Bimtakhoti where a fortnight more had to be spent recuperating. What with this and the short time left, we had to abandon the climb and

undertook instead the sort of journey the Tibetans call *neko* (a journey undertaken for cleansing from sin and sloth) of which Roberts and I felt the need. We went down the Marsyandi to the Khudi (2500) and then up a long ridge to a lake at the foot of Himal Chuli. To this lovely turquoise lake lying at about 15,000 feet, many pilgrims resort in the summer to bathe ceremonially; in particular those who are desirous of fertility. I bathed unceremonially in its deeper water and thought I was more likely to incur permanent frigidity. We had a good view of the west side of Himal Chuli which looked a difficult and dangerous mountain. On September 20, the monsoon having just stopped, we began the walk back to Katmandu in perfect weather.

The expedition cost roughly the estimated £1800 of which the members found £1050. For the balance we were indebted to the Himalayan Committee, the Percy Sladen Trust, the Godman Fund, the British Museum, the R.G.S., and the R.H.S. We must also record our great gratitude to the Nepal Durbar for their permission and help; and to Sir George and Lady Falconer and Colonel R. R. Proud, who looked after us all in Katmandu. The British Museum reported favourably on the collection of plants and birds which arrived home in good condition thanks to the skill and care of Colonel Lowndes, Major Roberts and, not least, Lieutenant Malla.

The southern approach to Everest

Upon returning to Katmandu early in October I was asked by Mr. Oscar Houston to join him in a journey to Solu-Khumbu for which he had the permission of the Nepal Durbar. This is the district on the Nepal side of Everest from which the Sherpas come. I had had a bellyful of "bummeling" along the valleys of Nepal and this journey would mean a fortnight more each way of valley travel and only a week in the mountains. But the lure was not to be withstood. Mr. Houston's son, Dr. Charles Houston, who had been with me on Nanda Devi and had led a very successful reconnaissance climb on K2, was flying from New York to join us; there was also a well-known American climber Mrs. Betsy Cowles; and another American, Anderson Bakewell, from the Jesuit College at Kurseong near Darjeeling. With a doctor to heal us, a woman to feed us and a priest to pray for us, we could face the future with confidence. Prayer and Provender, says the proverb, hinder no man's journey.

On October 29 we assembled at Jogbani, the Indian railhead which serves the industries of Biratnagar just over the Nepal border where there are jute, cotton, and sugar mills, a sawmill and a match factory, mostly owned and managed by Indians and run with Indian labour. We made another 40 miles through the *terai* on a fair road before having to take to our feet for the long climb to Dharan, down into the Tamur valley, and up again to Dhankuta at 4500 feet. This is the capital of Dhankuta district and the residence of the Governor, one of the Rana family, who very courteously provided us with an escort and an itinerary. Both are needed; for though in remoter Nepal they are not opposed to strangers, they are not used to them. As for the route, it was seldom that indicated on the map which is in need of revision.

From Dhankuta we dropped to 1000 feet in the Arun valley, which we

followed for three days before crossing the river by a ferry (dug-out canoes) and turning westwards. Three passes between 10,000 and 11,000 feet had to be crossed before we reached the Dudh Kosi valley three marches below Namche Bazar. We were now in Khumbu, Solu lying west of the river, and since crossing the first pass the numerous *mani* walls and *chortens* showed that Hinduism had been left behind. It is a matter of altitude rather than region; for one seldom finds Gurkha people living above 8000 feet nor any of the Tibetan-like peoples below it. Before climbing steeply out of the valley to Namche Bazar (11,000) we crossed the Dudh Kosi several times; it seemed a remarkably small river for one that drains not only the Everest

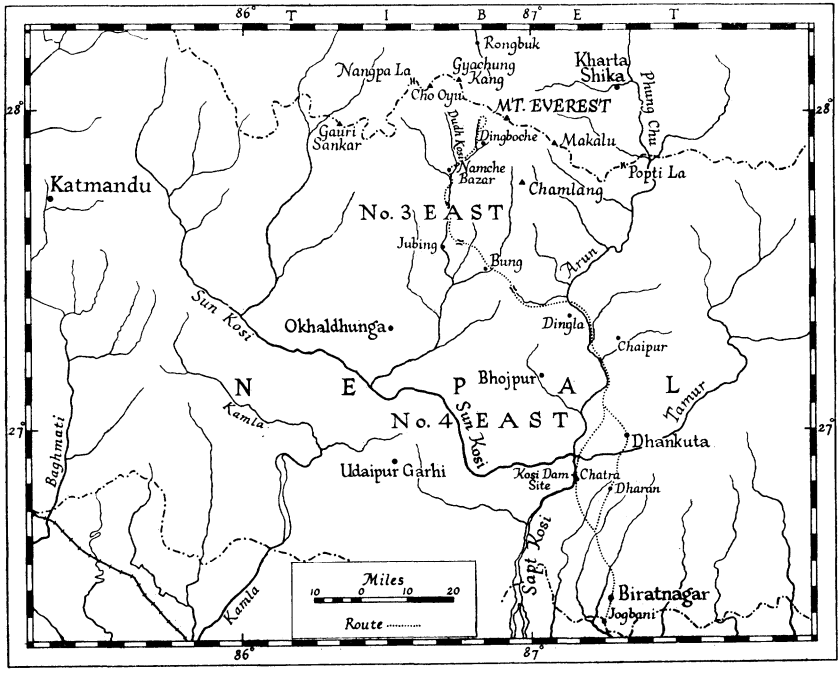


Fig. 2. Eastern Nepal

group but also that of Cho Oyu (26,750), Gyachung Kang (25,910) and an unnamed peak (25,720) between them. It is well bridged by wooden cantilever bridges which seldom need to span more than 20 yards. In November of course the rivers are low, but the summer rise of the Dudh Kosi appeared to be not much more than three or four feet.

At Namche there are about 30 neat detached houses and little cultivation. I imagine the people live by the salt and rice traffic which is carried on over the Nangpa La (19,000) to Tingri Dzong and Rongbuk. Some six miles up the valley from Namche along a rideable track is the monastery of Thyangboche, a small counterpart of Rongbuk monastery on the other side of the mountain. Everest, or rather Lhotse, which the monks call indiscriminately Chomo-lungma, fills the head of the valley. Sited on a grassy

saddle, surrounded by birch and firs, and commanding glorious mountain views in all directions, the white-washed monastery appears far less austere than stony Rongbuk. Within too it is less austere, for at Thyangboche they fortify their guests with "lama's milk" (*raksi* flavoured with cloves) before breakfast.

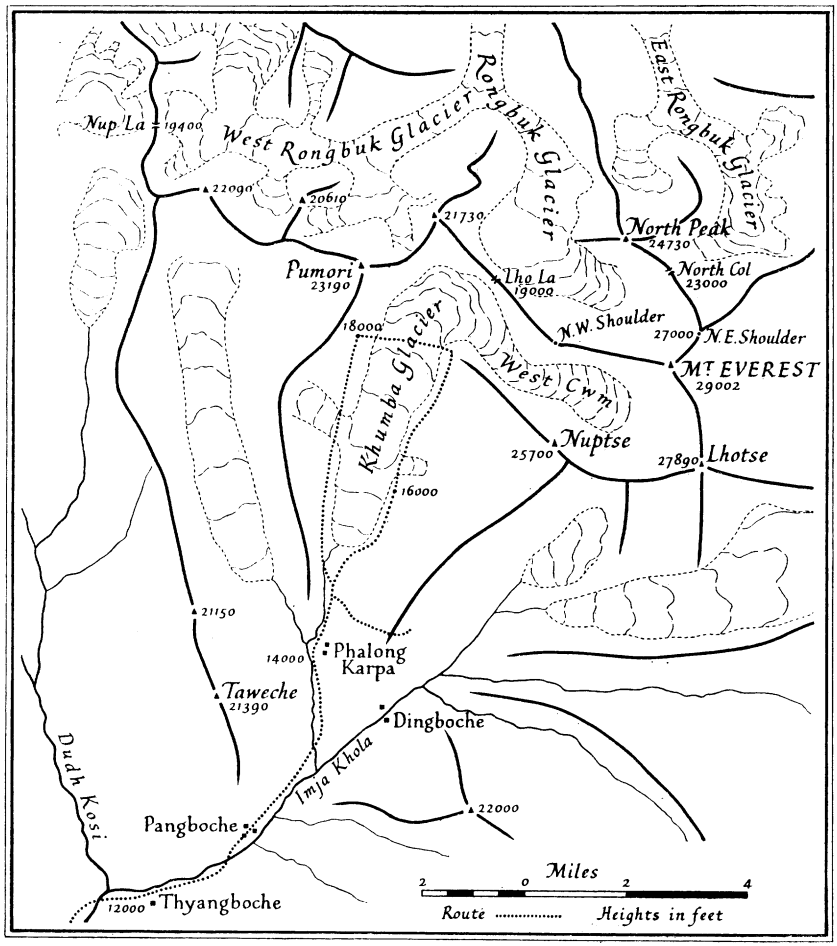


Fig. 3. The southern approach to Everest

Leaving the others at this extremely congenial sanctuary, Charles Houston and I went on up the valley and then northwards up the Khumbu glacier to within four miles of the Lho La where we camped. There are two main glacier valleys, one which begins east of Lhotse (Pethangtse, like Makalu, lies in the Arun basin), and this Khumbu glacier which is fed from the West Cwm and the ridge running from the Lho La to Pumori. The glacier, which has pinnacles like the Rongbuk, is about a mile wide and possibly six miles

long. According to the locals the monsoon is as heavy as in Sikkim [1] and the lichen-draped trees lower down bear this out. Yet the glaciers, like the river, seem small for their parent mountains; and to the inexpert eye there is no sign of glaciation having ever extended more than four miles below the present snout. The glaciers are half the size of those on the Tibet side, one reason being that they start 2000 feet lower down. Both the south face of Everest and the long Nuptse-Lhotse ridge running parallel to it are too steep to hold snow; and the high summer temperatures, increased no doubt by this great mass of south-facing rock, give any snow which falls little chance of turning into glacier ice.

The West Cwm, into which we should have gone but did not, is a mere slit which terminates in an ice-fall close to the Lho La. Even from a hummock of about 18,000 feet on the west side of the Khumbu glacier we could not see the head of the Cwm formed by the airy col between Lhotse and Everest, the lowest point of which is at 25,850 feet. Seen from due west across a precipitous face, the rock of the south ridge looked so steep that we dismissed the hope of there being a route. But were we looking at the true edge of the ridge or merely at some protruding buttress of the south face? For pictures taken in 1921 from the Kama glacier to the east show the south ridge to be broad, snow covered, and lying at a less formidable angle. There is no reaching this high col from the east, so there remains the one small possibility of reaching it from the head of the still unseen West Cwm. Personally, I think the chances are all against finding an easy snow ramp leading from this comparatively low glacier to this appallingly high col; and the Cwm would be an unpleasant and dangerous place for an advanced base. Thus, although I should not like to write off the south side of Everest [2] without looking into the West Cwm, I think it is safe to say that there is no route comparable in ease and safety, at any rate up to 28,000 feet, to that which we already know so well.

It is idle to discuss the approach via Nepal if there is no route on that side; nor is it of any use as a means of approach to Rongbuk, for there is still the political barrier in addition to the 19,000-foot physical barrier of the Nangpa La. Until 1949 the Nepal Himalayas were more difficult of access than Tibet and the present freedom of access may be withdrawn. In that year the Himalayan Committee applied for permission to send a party to the south side of Everest, but the Nepal Durbar suggested the Langtang which was accepted thankfully. The Nepal route to the mountain is a week shorter than the Tibetan; but instead of mules one would have to employ large numbers of coolies for whom food en route is not readily obtainable. No acclimatization would be acquired by the party; and against the colds and sore throats due to Tibetan dust and wind there is the more unpleasant risk of malaria.

[1] Precise figures should soon be available from the snow and rain gauges left by Dr. Bannerjee, of the Indian Meteorological Service, at Namche Bazar and Chaunrikharka, a village lower down, in 1948.

[2] The possibility of an assault on Everest from the south is the object of the Everest Reconnaissance Expedition 1951, led by Eric Shipton and sponsored by the Himalayan Committee of the R.G.S. and the Alpine Club.

DISCUSSION

Evening Meeting, 19 March 1951

Before the paper the PRESIDENT (SIR HARRY LINDSAY) said: Ladies and gentlemen, I have very great pleasure in introducing to you this evening Mr. H. W. Tilman. He is not only an old friend of the Society, having been a Fellow since 1935, but he has been making expeditions and exploring in the Himalayas since, I think, 1934. He has, in all, made something like ten expeditions there and he is going to talk to us this evening about the Nepal Himalayas.

Mr. Tilman then read his paper

The PRESIDENT: Thank you very much indeed. I may say that I myself spent five or six of the most exacting months of my life on the lower reaches of the Gandak river, but many thousands of feet below where Mr. Tilman was. We have present with us this evening both Colonel Lowndes and Mr. Packard.

Colonel D. G. LOWNDES: As Major Tilman has told you I had the great good fortune to be asked to accompany his expedition to Nepal; to collect plants and specimens for the British Museum and, if possible, seeds for the Royal Horticultural Society. I was also asked to supervise the collecting of birds by an Indian collector who was to join the expedition, but that was a secondary responsibility. In fact, the bird collector failed to materialize, and it was with great relief that I found that Major Roberts would take over.

We reached Manangbhot, the area in which I was to work, at the end of May and the first view of the promised land was a great disappointment to me. It was arid in the extreme. There was hardly a blade of grass to be seen on the lower slopes and the few birch trees on the higher slopes were not even in leaf. This fact was however a blessing in disguise for me, because I had no skilled help of any kind and had it been an area with a normally heavy monsoon rainfall and more luxuriant vegetation I should have been unable to cope with the material available.

Our base camp was at about 12,000 feet and it was not until about the end of June that any considerable quantity of flowers became apparent. Then, at a height of 14,000 feet, I found flowers in quantity and, in July and August, there was a wealth of flowers in the side valleys above that level. Those of you who have been in high mountains will know what a wonderful sight alpine flowers are.

The collections I was able to bring back have not of course been worked out yet or fully named at the British Museum. The few that have been examined have not revealed any species new to science, but one *Primula* had not been seen for 60 or 70 years, and then it had been collected several hundreds of miles farther east in the Himalayas. An interesting point brought out by this expedition and the one of the previous year is that some of the plants found in Nepal by collectors sent out between the wars at the instigation of Lord Wigram, by arrangement with the Maharaja, have a very circumscribed area. Certain of the flowers we know as Blue Poppies (*Meconopsis*) are apparently very local in distribution.

I was also able to collect a small number of seeds. They are now just getting to the interesting stage, the people who are trying to grow them have masses of seed pans full of small seedlings that should, with luck, introduce a number of new flowers into our garden and reintroduce some others.

Major Roberts was able to make a very satisfactory small collection of birds and brought back nearly 200 bird skins to the British Museum, where they are being studied. There again I believe there is nothing of startling interest but valuable knowledge will be obtained about the distribution of species. I also

managed to collect a small number of butterflies for the Museum but found that chasing butterflies at over 10,000 feet was not at all in my line! However I had with me as factotum a Gurkha youth aged about 16 or 17 and, after he had passed the stage of attempting to drive butterflies into the net, he became seized with enthusiasm to catch them himself; and that just suited me.

Mr. W. P. PACKARD: I had a double function, both mountaineer and geographer, and luckily the monsoon arranged my time for me. The first part was spent in climbing and the second in geographical studies, more especially on Himalayan land use and soil erosion.

I would almost put soil erosion in inverted commas, for the literature on Himalayan landscapes has suggested this as a considerable problem and to my delight it was not so in Nepal. Villages seemed indeed to have a considerable amount of uncultivated land, not apparently because of accelerated erosion but, as far as I could see, from indifference. Possibly it resulted from a change in climate, though I think this doubtful, or possibly from a change in local population by war or disease.

My journey into the Himalaya had been in itself a reconnaissance of land use and soil erosion problems and I therefore decided to occupy myself in the Marsyandi valley on a comparative study of that area and the effects of physical environment on man's activities. Yet even within the upper Marsyandi valley I found great contrasts and a progression along the valley which was extremely interesting. At Tangbe I found the climate and rainfall of Tibetan Nepal sufficiently mild for two crops in the year; an early crop of wheat or barley, planted generally around February, and one of maize, buckwheat or potatoes planted at the end of the monsoon. Ten miles farther up, where the monsoon apparently penetrated to a less degree, the rainfall was sufficient for only one crop, generally barley or wheat, the altitude and temperature being unsuitable for maize.

There was a marked progression in house styles within the valley. At Tangbe houses were roofed with pinewood, indicative I felt of the much higher rainfall and the lack of suitable materials for flat roofs. Elsewhere, perhaps because of the availability of clay, most of the roofs were flat in the Tibetan style. The head man in Tangbe also had a house almost as big as the other houses put together; in lower Nepal the difference is less marked. Here too the people were concerned not only with agriculture but with the transport of rice to the Tibetan frontier and with a considerable trade in wool, medicinal herbs and, though we did not see it, in minerals such as borax.

Illness compelled me to come back about a month and a half before I had meant to, but I was able to observe the more striking contrasts between Nepal at about 2000 to 4000 feet and the more Himalayan sections I had visited, between 6000 and 12,000 feet. Not only were the people different, being more of Gurkha or almost Indian stock, but the houses and agricultural methods were different too. Rice predominates over the wheat and barley of Himalayan Nepal; and wheat, or sometimes barley or unirrigated rice, is grown before the monsoon. Unexpectedly, the villager of lower Nepal is much more a subsistence farmer, and many of them have travelled widely. I, who had not flown in an aeroplane, was confronted with three people who had done so. The people here are largely concerned with growing rice to pay their taxes or to buy a little cotton cloth; they exchange rice or money for the salt from the more Tibetan areas.

The PRESIDENT: We have had a wonderfully interesting lecture from Mr. Tilman and I am going to ask you to join me in a very hearty vote of thanks to him, not only for his address and for the humour with which he gave it, but for the very beautiful slides, which were his own.