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A JOURNEY TO TASHIRAK IN SOUTHERN TIBET, AND THE EASTERN APPROACHES TO MOUNT EVEREST.

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ATTENTION during the last few years has been focussed more and more upon the Himalayas; and now that the poles have been reached it is generally felt that the next and equally important task is the exploration and mapping of Mount Everest. It cannot be long before the culminating summit of the world is visited, and its ridges, valleys, and glaciers are mapped and photographed. This would perhaps have already been done, as we know, but for the war and the lamented death of General Rawling. This piece of exploration has been his life's ambition. May it yet be accomplished in his memory!

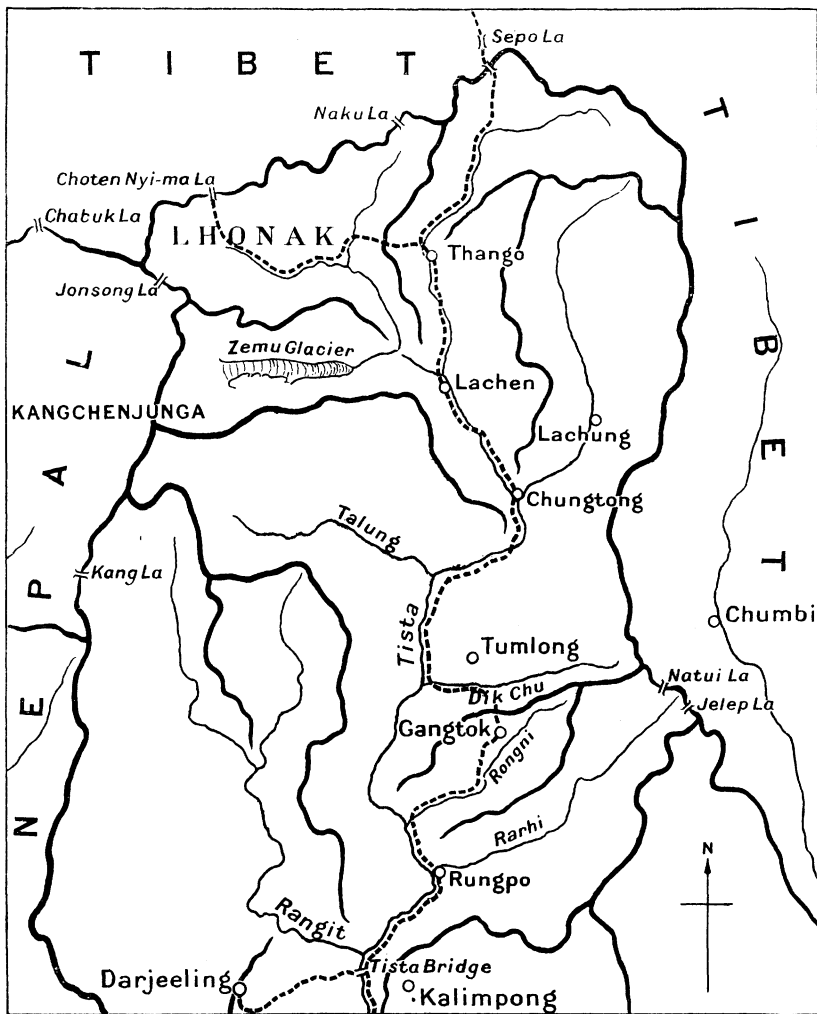
Being a member of General Rawling's proposed expedition before his death, and having studied the problem of reaching Everest, I give the following brief account of a journey to Tashirak undertaken in 1913 for the purpose of reconnoitring the approaches to Everest beyond the Sikkim frontier in Southern Tibet.

Excluding the idea of reaching the mountain through Nepal by the Kosi Valley (the shortest route) on account of the political difficulties, which are not likely to be removed, the only approach lies through Sikkim from Siliguri or Darjeeling by the Tista Valley to the Sikkim-Tibet frontier, thence from Kampa Dzong, making a right-angle turn to the west behind the main range of the Himalayas, taking Mount Everest from the east from Tashirak, or from the north from Tingri.

A photographic survey by aeroplane is also possible, because a direct flight and return could be made from the plains of India without the necessity of landing in the mountains. The difficulty of landing urged against the aeroplane does not in the case of Mount Everest exist, since the mountain is so very close to the plains. A greater difficulty is found in the high winds of Tibet. A development of air work in connection with Tibetan travel that suggests itself is the use of man-lifting kites. These are portable, and with the strong steady winds of Tibet could raise

an observer 500 feet in the air, a height which would give good observation over the plains.

The line of approach for an expedition through Sikkim is comparatively easy. The distance to the snows is short compared with other parts of



Sketch-map to illustrate the first part of Major Noel's paper: the principal mountain ranges are shown by heavy black lines

the Himalayas, where the mountains have much greater depth. A road, practicable part of the way for bullock carts and the rest for pack-animals, leads from the foothills through the entire length of the country to Kampa in Tibet,

The excessively heavy rainfall turns many travellers away from Sikkim, but this disadvantage does not apply to the northern districts of the country, which enjoy the typical dry climate of Tibet. The monsoon clouds have generally deposited their moisture after passing the line of the Zemu glacier—Pawhunri—Chumalhari.

Transport and supplies are a somewhat difficult problem unless the conditions of travel in Sikkim are known by previous experience. More than one expedition led by competent travellers has come to grief in that country. The difficulties can be diminished firstly by avoiding Darjeeling and its officialdom at all costs and taking the Siliguri—Tista valley road, and secondly by purchasing and owning one's transport animals instead of relying upon coolie hire from stage to stage. Bullock carts can be used as far as Gangtok, and ponies or mules from Gangtok to Kampa Dzong. Thence onwards in Tibet the road is good everywhere for yaks.

The entry into Tibet can be made either from the upper Lachen Valley by the Sepo La, 16,500 feet, the easiest but longest route, or from Lhonak by the Choten Nyima La, 18,500 feet, or the Jongsong La, 20,000 feet, through the corner of Nepal to Tashirak: the shorter and far more interesting although the more difficult route.

The approach to Everest from the north would be best made from Tingri, a route practicable for yaks but requiring, of course, the sanction and co-operation of the Tibetans. The approach from the east would lie through Lhonak by Tashirak and the Arun valley. An intricate mass of lofty mountains, hitherto unmapped, intervenes between Lhonak and the Arun valley; and it is the geography of these mountains that is the subject of special interest to the explorer who wishes to approach Everest from the east.

Lhonak, that country that Hooker had never been able to reach, and that he had left blank on his map, was first visited by Mr. White in 1897, who entered it by The La, 17,400 feet, from the Zemu glacier. Lhonak, so different from the rest of Sikkim, is indeed a delightful and beautiful valley. To feel the charm of Lhonak, to become imbued with that wish to return again and again that it particularly inspires, one must have first undergone the discomfort of the long journey through the heat and steam and torrential rains of the jungles of the foothills; one must have felt the disappointment of the views of the snows hidden so persistently in cloud and mist; one must have scrambled through the deep ravines of Sikkim with their dense forests and rampant leech-infested bamboo thickets. Then, after these days of hard travelling are over, one crosses the pass over the dividing range and steps in one moment into a totally different land. A high plateau-land of broad open valleys and rounded snow-capped hills, a land of luxuriant pasturages, of yaks and sheep and perpetual sunshine—that is Lhonak.

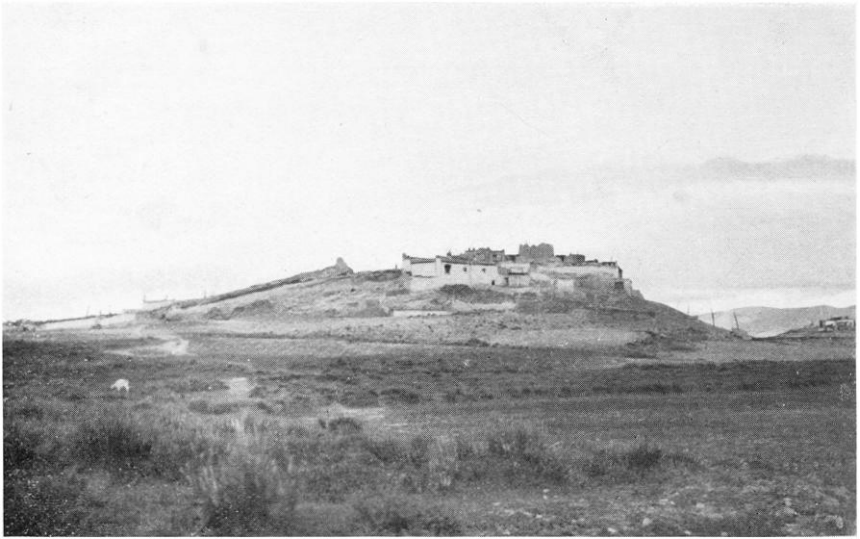
Lhonak can also be reached by the ravine of the Zemu river from

Lachen, some two days' march up a rough path; and it is only on reaching Teble, where the two main valleys of the Langpu and Naku join, that the typical Lhonak scenery of open broad valleys and rounded hills is first met. From Teble, generally the site of a Tibetan encampment, one can survey both valleys. In the Naku valley one looks over beautiful pasture land, where most of the yaks are to be found, up to the broad, bare saddle of the Naku La. On the right rise the fine snow peaks of Chumiomo and Lackenkang, throwing some large broken glaciers down into the valley below. The Langpu branch leads up to the horseshoe of giant mountains of Kangchen and Jongsong. At the head of the valley lies Zanak, the furthest point to which the Tibetan encampments extend at the threshold of the snows beneath the Jongsong Pass. The pass, the only link between Lhonak and Nepal, looks a stiff proposition indeed; and one can well sympathize with Sarat Chandra Das, the first explorer to have crossed this way, in his difficulties described quaintly and delightfully in the volume of travels: 'A Journey to Lhasa and Central Tibet.'

From the Jongsong peak a high range branches off in a westerly direction, sending south the spur that separates the Tambar from the Arun Valley. Little is known of these mountains, and only one pass and a difficult one, the Chabuk La, is known to cross them. The Nepalese traders use only the Jongsong-Choten-Nyima or Jongsong-Naku La routes to reach Kampa Dzong in Tibet, which adds to the belief in the height and difficulty of crossing this branch range and frontier barrier between Nepal and Tibet. Several travellers, including Sir Joseph Hooker, have thought Mount Everest was visible from the tops of the hills in the upper Lachen Valley, but this is not so, because the lofty peaks beyond the Jongsong effectively mask the view of Everest.

Beyond the point where the Kanglachen Tipta La spur is detached to the south the range was crossed by Sarat Chandra Das in 1881 by the Langbu La. He reported the general direction of the range to be north-west to south-east, the hills only low, and the Langbu La to be free from snow in the summer. But the Langbu La is a long way west of the Jongsong La, and a great barrier of mountains intervenes. Sarat Chandra Das, giving unfortunately only a rather vague account of his journey, described seeing "the lofty Pherugh mountains" from the summit of the Langbu La, and Pherugh is the district of Mount Everest.

Thus it would appear that in order to reconnoitre the eastern approaches to Everest, the best plan would be to make for the Langbu La from Lhonak. Then, according to the Indian Government map of Nepal, one could proceed by Tashirak down into the Arun Valley, and crossing the Arun, proceed directly west up the valleys leading to the foot of Everest. But these surmises, based on Sarat Chandra Das's account and also on the map of Nepal, proved quite wrong. Instead of the Langbu La giving access to the Arun Valley, I found that it was separated from that valley



MUGK VILLAGE, TIBET



CAMP AT MUGK

by yet another mountain barrier. Our knowledge of the country further west is even more scanty, because such Pandit travellers as have been there journeyed only up the two valleys of the Arun and the Kosi, and were unable to ascend any of the branch valleys that lead up to the glaciers of Everest.

The country north of Everest is drained by the Tingri River, which flows for a considerable distance east until it empties into the winding Arun. The Arun itself appears to occupy a narrow defile at the Tibet-Nepal frontier, when it cuts through the main chain of the Himalayas between Everest and Kangchenjunga.

The valley of Tingri and Shekar Dzong had been traversed in 1708 by the Capuchin Friars, who had established a mission at Lhasa and who communicated with that place from their Nepalese headquarters at Katmandu by Nilam, crossing the mountains by the Thung La. However, no mention has been made by any of them of their having seen Mount Everest. Even the explorer M. H., who came through Nepal by the Dudh Kosi Valley and the Pangu La, 20,000 feet, and followed a line along the limit of habitation, did not approach near enough to observe even the glaciers of Mount Everest.

At the conclusion of the Lhasa expedition, Rawling and Ryder passed by Shigatse and surveyed the Tsampo Valley and the mountains forming the watershed between the Tsampo and the Tingri rivers. But owing to the lateness of the season and the length of the journey they had to accomplish to Rudok, they were unable to deviate sufficiently far to the south to reconnoitre the Tingri plain and the northern approaches to Mount Everest.

Owing to the impossibility of obtaining permission to travel by the open, easy road *viâ* Kampa Dzong, I decided to enter Tibet from Lhonak *viâ* the Choten Nyima Pass, and to march unobserved as far as possible, avoiding the villages by a high-level route to the Langbu La and Tashirak. The spring of 1913 was spent in arranging plans with my two Bhutia servants, Adhu and Achum Bhutia, and learning something of the Tibetan language. I started from Siliguri, where I was met on July 5 by Adhu, who had come down from Gangtok with two mules. We packed the kit on the mules and set off the same day for Sivook, a hot march through the Terai forests at the foot of the Himalayas. We carried two small A-shaped tents, blankets and bedding, a small tin box of necessary instruments, a camera, a few medicines and arms and ammunition for the party. Otherwise we were entirely free of impedimenta, obtaining supplies locally.

Gangtok is reached after a six days' hot and tiring trek through the steaming forest of Lower Sikkim. Nor can one enjoy the beautiful scenery during this monsoon period, when the clouds and mists hang low and the rain pours incessantly. After resting two days at Gangtok we pushed on rapidly for the pleasant and healthy elevations of Lachen in

Upper Sikkim. The plan was now to continue the journey with yaks. The yak caravan would carry a month's supply of *satu* (barley meal) and tea, etc., for the party, and had orders to proceed to Tebong in the Taya Sampo Valley in Tibet, which, according to Sarat Chandra Das's account, lay near the exit from the Choten Nyima Pass. It was to wait there without attracting the attention of the Tibetans while I crossed with a few coolies by the Choten Nyima Pass to Tebong, thus avoiding Kampa and Tinki Dzong, where the Tibetan officials resided. The mules accordingly were sent back to Gangtok, and we started for Thango. Here two men with the yaks and supplies struck out for the Sepo La at the head of the Lachen Valley, while I branched off to the west, crossing the Lugnak La into Lhonak.

The ascent to the pass is easy, although snow covered except in the months of August and September; and one is cheered on the ascent by the prospect of crossing the mountains into the delightful Lhonak Valley. A rapid descent down a stony couloir from the bleak windy crest of the pass brought us to a pretty little emerald lake, whose banks were overgrown with luxurious grass on which a number of yaks were grazing. A short way beyond we reached the camping-ground of Chabru, where a cave formed by a huge overhanging rock made a comfortable shelter for the night. Next morning we proceeded down the valley, fording the Naku Chu and camping at Teble, a delightful spot commanding unequalled views of the broad open valleys, walled by rounded snow-capped summits. The sky is ever a clear blue and the air is cold and crisp and dry.

The road hence up the Langpu Branch of the Lhonak Valley reveals particularly grand scenery. Soon after leaving Teble and traversing the extensive plain that stretches some miles to the west, a defile is passed where an ancient moraine from the south encroaches and forces the river to impinge against the northern hillsides. Then a bend to the north-west immediately brings to view a remarkable panorama of the Zemu mountains and the high peaks that rise at the head of the valley and form the central knot where the Tibetan, Sikkim, and Nepalese watersheds meet.

The countryside is broad, open and sandy, and the stream trickles over a wide bed, breaking up into small channels with many boulder-strewn islands between. The elevation is some 15,000 feet. The vegetation is scanty, while the hillsides are bare and smooth. A peculiar charm pervades the scenery. All is so different from one's accepted ideas of mountain landscape, different from that idea of crags and pine forest-clad ravines that the words "the Alps" instinctively suggest. Here is a vast stretch of open basin and undulating hills, with the distant peaks forming a broken rim to the bowl. It is like some lofty secluded plateau surrounded and guarded by great walls of snow, or it might be some hidden nook deep in the heart of undiscovered lands. The monotonous, featureless hills, the breadth and distance, the absence of life, strike a feeling of awe and sometimes of depression, but yet they attract. One

can feel here the majesty of giant mountains, and at the same time the particular power and fascination of Tibetan scenery, that every traveller in Tibet has felt and described in the same way; an horizon of vast rolling plains, silent, bleak and inhospitable, with ever a cloudless sky above and a wonderful sunshine that sparkles and burns in the thin, crisp, freezing air.

From Zanak, 16,200 feet, to the Choten Nyima La is a long march, and it is best to make a preliminary camp on the shelf below the pass before crossing it. Our camp at this point commanded a superb view to the south of the giant mountains of Kangchenjunga. From here also a part of the Nepalese side of the mountain could be seen. Next morning the camp was astir early as the night had been intensely cold, and also there was a long way to go over unmapped ground on the Tibetan side of the pass. The ascent is tiresome and difficult unless the snow is firm, on account of the slippery loose rock and shingle underfoot. After crossing the pass we scrambled down the rocks on the north side over the névé down to the glacier below. There were some crevasses, but we kept well to the right and avoided them.

The valley, which takes a direction about due north, is barren, desolate and forbidding. A glacier, clinging closely to the western precipitous wall, is itself smooth with no visible crevasses below its névé. It would make a fine ski run if one had skis. At its end, however, the glacier breaks into seracs and terminates in an ice wall at whose foot lies a frozen lake 150 yards broad and 300 yards long. We passed along a shelf high up on the right side of the valley, and after some hours came to the junction of this and the next valley to the east. We now descended to the stream and camped—a long march, but necessarily so, as here was the first firewood to be met. We passed just before this point a stone hut, I expect the identical one mentioned by Sarat Chandra Das as the Tibetan guard-post in the old days of the rigid exclusion of foreigners.

The site of the camp, about 15,600 feet, was particularly desolate, surrounded by bare red gravel and sand slopes, covered in places with the thinnest grass. A few *Ovis ammon* were about. Next morning we set out to discover the position of Choten Nyim, which we had been unable to locate the day before. As it happened we were only three-quarters of a mile away; and we came on the place unexpectedly, as it is hidden beside the banks of a stream which flows between steeply escarped hillsides. Choten Nyim is a collection of cattle enclosures with a temple where three ani (nuns) reside. The temple, dark and gloomy inside, contains a number of idols arranged in rows on shelves round the walls. The place is deemed very sacred, and is visited by Nepalese, Chinese, and pilgrims from Turkestan who travel many hundreds of miles. It is perhaps the weird desolation of these barren plains at the foot of the snows which strikes awe and veneration into the minds of the simple Tibetans.

Here we got the bad news that the yaks had been discovered and stopped at Tonglung, and their advance to the prearranged meeting-place at Tebong had been prevented. We had therefore to set out in a north-easterly direction for Tonglung, which was of course losing ground, since our correct route lay north-west and west.

The country on the north side of the Lhonak mountains is a lofty undulating sandy plain at an elevation of about 15,000 feet, with a slight slope to the north-west. A violent wind sweeps the plain from day to night. On the road about 5 miles from Choten Nyim a magnificent view opened of the lofty snow-peaks of Pherugh, one of the highest being in a bearing 278° . But the Everest group itself is not yet visible because it lies farther south. A high peak was observed at a bearing 322° in distant Central Tibet, 100 or perhaps 150 miles away.

Tonglung village stands on the banks of the stream flowing from the Naku La. Our approach over the satu fields surrounding the village caused much excitement, and the first people we met fled precipitately on seeing us. After an excited discussion in the village, a dwelling was finally prepared for us; and this after further cleaning made a comfortable and warm quarter. The baggage had been seized and locked up, while the yak driver had fled back to Sikkim. Adhu, however, outwitted the Tibetans and got the supplies back. To increase difficulties, the coolies were unwilling to proceed further, with the exception of Tebdoo, a most excellent and stout fellow from Lachen; and they left the next day for Sikkim.

After two days' waiting, the Dzungpen arrived from Kampa Dzong, and an interview was arranged in some yak-hair tents, which had been erected for the purpose outside the village. The Dzungpen was a small man with an effeminate face. He was well dressed in Chinese costume, but wearing a European felt hat. After an exchange of compliments and presents, a discussion ensued lasting about an hour. The Dzungpen was on the whole friendly, and even invited me to visit him at Kampa. He explained as regards the journey to Tashirak that he would facilitate the journey anywhere within his province, but that he could not provide a guide or transport beyond Tebong, which was the boundary of his province. Beyond Tebong the road to Tashirak passes through the province of Tinki.

Some pack-animals having been procured, we started the same day for Mugk. From Tonglung the road crosses the plashy marshes to the hamlet on the far side, and then, bearing to the right along the foot of the hill, enters the broad open Taya Sampo Valley. Proceeding over sandy plains for some hours we passed a low hill, guarded by a fort on its summit, and eventually arrived at Tebong, a ramshackle and deserted place surrounded by the usual walled enclosures. There were ruins of former dwellings. Evidently the place has declined since the days of Sarat Chandra Das's visit.

Tebong is the frontier post of the Shigatse province ruled by the Shigatse Lama. The province is undergoverned by the Dzongpen of Tinki, a small town on the opposite side of the Taya Sampo Valley and visible from Tebong. The Taya Sampo Valley is a remarkable stretch of country 6 to 7 miles broad, but narrowing to the west till beyond Saar the river is said to pass through a defile. The ground is sandy and stony and covered with a low-growing bush which when dried makes excellent firewood. The middle of the valley is marshy.

We changed ponies at Tebong and completed the tiring march over the stony plains to Mugk, a little fort-like village perched on a low hill and surrounded by marshes and barley-fields. Our approach caused intense excitement, and was the signal for barricading the village; not that we wished to enter, for we pitched our tents outside. The pony driver, however, entered the village to stable his ponies, and we learned next day that he and his ponies had been locked up. That evening two horsemen were observed leaving the village and trotting off in the direction of Tinki, evidently to report us. Next day the assistant Dzongpen arrived with his party, the Dzongpen himself being away at the time. This man was very different in his manner from the Dzongpen of Kampa, and he would give neither transport nor supplies. He would only repeat again and again the same old formula: "For what reason have you come to Tibet? You must return immediately by the way you came."

As a result of the interview I saw that it would be impossible to continue the journey under the present conditions of total dependency upon the natives for transport from stage to stage, and against the stubborn resistance of the Dzongpen. I decided therefore to abandon the attempt. I would return to Sikkim, reorganize the caravan, and make a fresh attempt with half a dozen selected men, carrying nothing but a tent and a few blankets and food for as many days as possible. We should then be independent of the officials and natives, and could travel where we wished as long as our rations lasted. After a search through the village Adhu seized four small donkeys, and packing our kit on them, we set off back to Tonglung. From Tonglung by a long and dreary march we retired back to Sikkim by the Naku La into the Lhonak Valley.

Lhonak is a hospitable and delightful land after the bleak plains of Tibet; and at Muguthang on the green swards by the banks of the stream I fixed up a permanent camp, retaining Achum while sending Adhu and Tebdoo back to Lachen to get six men and supplies for a fresh attempt to reach Tashirak. After six days the men came back over the Lugnak Pass from Lachen; and, breaking up the pleasant rest camp at Muguthang, we started again on August 4 for Tibet. Crossing the Choten Nyima Pass once more we arrived at Choten Nyim on the third day. We did not show ourselves this time, but camped in a concealed nullah near by.

From Choten Nyim we made in a north-westerly direction for Mugk,

about 14 miles distant. One cannot strike a direct line, but one is obliged to travel round the arc of a circle bearing always to the left on account of some peculiar sunken watercourses which form an impassable barrier. We encountered one of these, and found ourselves on the edge of a cliff at the bottom of which lay the bed of a glacier stream, dry at this season. We descended to the bottom of the gully by sliding down a conical inclined tunnel about 200 feet long and filled with loose stones, which slid down with us in rather an alarming fashion, raising much dust and noise. In order to avoid these gullies one must go due north almost as far as Tebong before turning west to Mugk.

We camped that night near Mugk at a spot where there was water and firewood. The great difficulty in concealing oneself in these regions is the lack of water and fuel, which obliges one to keep down in the flats of the valley where the villages are situated. Next day we passed Mugk but took no notice of the villagers, who, surprised to see us again, tried to interfere with our advance. We followed the track down the valley, travelling in a westerly direction till we reached the village of Eunah near the mouth of the valley coming down from the Chabuk La. The Taya Sampo valley had here narrowed down considerably. The hillsides had become steeper; and there was some difficulty in locating our position in relation to the Langbu Pass. Two youths, however, who were quite friendly, visited the camp in the evening; and Adhu, by bribing them, obtained some useful information concerning the road to the pass. They said, "Go to Changmu to-morrow—bridge to cross. Go a short way down the river and you will see three chortens. Then, looking up between high stones, go up, and a short way you will find yak paths."

Next day, about 2 miles beyond Eunah we entered a broad, flat valley, flanked by rounded red hills; and, crossing the plain in a diagonal direction, we reached the curious rock-hewn village of Changmu, consisting of about a hundred cave dwellings cut in the face of the cliff. Remembering the boys' directions, which proved quite correct, we crossed a bridge, followed down-stream, and found the chortens and the yak paths among the rocks leading up into the hills.

Continuing to climb we followed good tracks, until, after about 2 miles of ascent, we breasted the spurs and found ourselves looking down into the narrow valley of the Gye River. We were relieved to see a well-marked track winding along the valley, for this showed we were evidently on the right road to the pass. After having marched in all some 11 miles from Eunah we reached a sheep dok, uninhabited, and camped at a height of about 15,000 feet.

A short way above the camp the valley branched, the right branch leading to the Langbu La and the left into the snow mountains to the south and south-west. Next morning, by climbing about 1500 feet up the hillsides, I observed an easy-looking snow col at the head of the valley. It would be interesting to cross this pass, because it would

probably give direct access to the Knagbachen valley in Nepal somewhere near the foot of the great Kangchen glacier. Thus a back door would open to Tibet from Lhonak by the Jongsong Pass, which would be easier than the Chabuk La route described by the natives as being extremely difficult and seldom used. Again, by descending this valley and skirting the foot of the Langbu La direct access could be obtained to Saar village in the Taya Sampo valley. The ascent to the Langbu La is gentle and easy over the barren boulder-strewn ground. In the final climb to the pass, however, the track zigzags steeply 300 feet up a rock wall.

The all-important question was, "Could Everest be seen from the pass?" What were the "lofty Pherugh mountains" that Sarat Chandra Das had described? Were they the Everest group or not? The day was bright and clear, and on breasting the pass a splendid view was revealed. In front towered a magnificent chain of lofty snow-peaks. The centre peak of the range rose a glittering spire of rock, its flanks streaked with snow; and a fine tumbling glacier lay beneath. Behind the sharper and nearer summit rose a higher peak twisted like a hooked tooth, a precipice on the north side and a *névé* on the south. To the left of this again was a long ridged peak, whose winding crest was fantastically corniced—one of the finest specimens of mountain architecture to be seen. The mountains would be about 23,000 feet in height. I have named the peaks, one Taringban (long knife), and the other Guma Raichu (Guma's tooth).*

Presently, while watching the panorama, the shifting of the distant clouds revealed other mountain masses in the background; and directly over the crest of the peak Taringban appeared a glittering spire top of rock fluted with snow, which, according to its magnetic bearing, could be none other than Everest itself. Some 1000 to 1500 feet of the summit was visible.

Although this panorama was in itself a fitting reward for the efforts of the journey, still it was in a sense a disappointment. That wall of mountains was an impassable barrier. Tashirak was near, one had only to descend the valley to reach it; but it was plain that Tashirak offered no open road to Mount Everest. The map upon which the hopes and plans of the journey had been based was incorrect. This mountain range was not shown. The Tashirak River rising in the Langbu La did not flow west into the Arun, but almost due south, while this high mountain range divided the Arun from the Tashirak River.

After remaining an hour on the summit of the pass, during which time the men said copious prayers and built a chorten to which they attached strips of coloured cloth taken from their clothing, we descended into the

* It is to be regretted that the photographs of these mountains were not very successful owing to the high wind blowing over the Langbu pass, which prevented proper exposures being made.

broad desolate valley below. Bearing always to the left we followed the track which brought us to Guma Shara village, where we camped for the night.

Sitting out that evening, admiring the panorama of mountains that dominate Guma from the west, we were visited by two lamas who were friendly and who volunteered some interesting information. The lamas said the only way to reach the Pherugh and Tingri district from Tashirak was by the Nila La and Saar. There was, however, a high-level yak road from Tashirak to the Arun Valley, passing a certain monastery situated on the crest of the dividing range between the two valleys. This monastery was connected with the worship of the mountain "Kangchen-Lembu-Geudyong," of which it commanded an open view. From their account Kangchen-Lembu-Geudyong appears to be the Tibetan name of Mount Everest. They recognized two sacred mountains, Kanchenjunga and Kangchen-Lembu, the former being the more sacred owing to its five heads, while the latter (Everest) has only one head. (The Tibetans would be obviously unaware that Everest was actually the higher peak, owing to the small difference in height, while Kanchenjunga is probably more massive and therefore has the more imposing aspect.) Kangchen-Lembu signifies Kangchen's minister. The mountain is said to contain an interior lake, the word Geudyong being used to signify its crater formation. Pilgrimages are made from Tingri to the neighbourhood of Kangchen-Lembu, where there are a number of shrines dedicated to the worship of the mountain.

The Tibetan pronunciation of Kanchenjunga is Kangchenzeungar.

These details are interesting as regards the native names of Everest, but how far they are correct, or if there are other names, I cannot say because, owing to the hostility to my journey, I was unable to speak with many of the Tibetans whose information could be considered reliable. The Tibetans whom I questioned did not seem to know the name "Makalu," which I believe is a Nepalese name. Makalu, which can be well observed from Indian territory, is known to hold a curious glacier-filled basin on its summit, and so it is quite possible that the Tibetan name I have given may refer to Makalu and not Everest. On this account the information concerning the native names of the mountain should not be accepted as anything more than a report until such time as the complete exploration of Everest is undertaken and this information verified.

From Guma Shara we followed the valley next day to Tashirak. We passed several caravans on the road, mainly Nepalese traders coming from the Kanglechen Pass and proceeding to Saar and Shigatse. There are some small villages in the valley. Tashirak is the frontier guard post, and a fortified wall blocks the valley. The Dalai Lama's rice-tax collector with a guard of soldiers resides there. The officials console themselves with innumerable wives, but besides that there are no other residents.

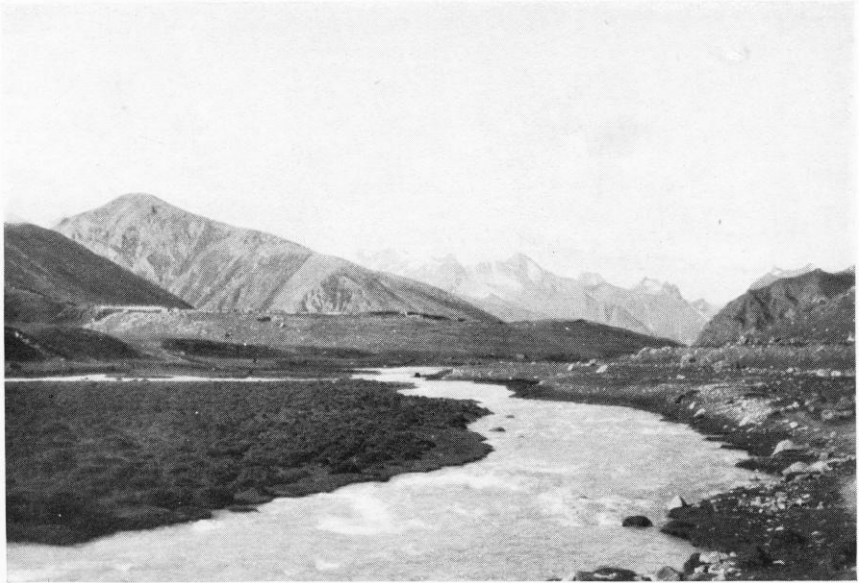
The Tibetan officials were hostile and wished us to return immediately



THE ROCK-HEWN VILLAGE OF CHANGMU, TIBET



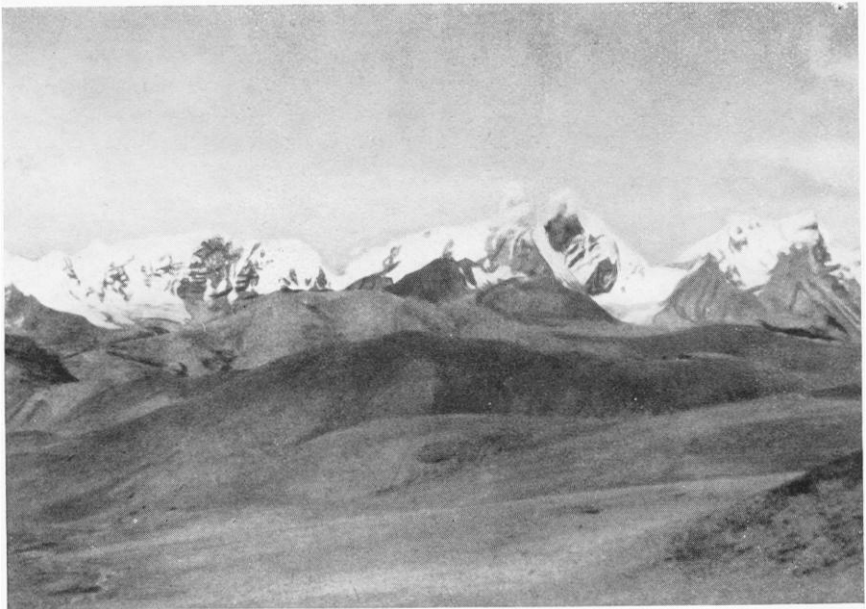
CHOTEN NYIM MONASTERY, TIBET



TASHIRAK, SHOWING FRONTIER WALL. VALLEY ON LEFT LEADS TO KANGLACHEN LA

Taringban.

Guma Raichu.



VIEW FROM LANGBU LA LOOKING WEST TOWARDS PEAKS (22-23,000 feet) BETWEEN TASHIRAK AND EVEREST, DISCOVERED AND NAMED BY MAJOR NOEL 1913

the way we had come. We were confronted also with supply difficulties, because our *satu* and tea had almost given out, and our meat supply had been exhausted some days back. We, however, managed to get a little from the Nepalese caravans who were encamped also at Tashirak and who were quite friendly, and so we were enabled to continue our journey next morning. We struck camp in the early dawn, and, by fording the river, we avoided the bridge and thus passed by Tashirak before the officials had wind of our departure.

Below Tashirak the valley narrows and the scenery becomes alpine with trees and pretty green meadows of moss and luxurious grass. The valley is enclosed by high mountains, and the summits of snow-peaks show themselves high above the mists and clouds. We proceeded as far as the large Nepalese-Tibetan village of Quodo, a short distance beyond which is the Nepalese frontier post and Nepalese guard.

The Tashirak River took a direction almost due south and showed no signs of turning west to join the Arun. A Nepalese, moreover, at Quodo informed us that the Tashirak river joins the Arun at Hatia another two marches down. It was thus useless to proceed further, so we retraced our steps and camped in a side valley about 3 miles below Tashirak. Here we were situated behind the Taringban mountain, and could see the south face of the peak. A ruined fortified wall blocked the valley mouth, and this spot is said to have been the site of a battle in the Tibetan-Nepalese war. It is up this valley that the yak path lay to Pherugh and the monastery, as explained by the lamas of Guma Shara. Therefore it would be interesting to proceed up the valley next day.

An unpleasant surprise, however, came to interfere with our plans, for we had scarcely pitched camp and settled down for the evening when a mounted party of six men rode towards the camp. This was none other than the Tinki Dzongpen himself and his followers. They rode shaggy Tibetan ponies bridled in shining brass and silver-ornamented bridles, and saddled in coloured numdahs. Each pony carried on either side a bulky leather sack and blankets, and, from the general appearance of the party, it was obvious that they had travelled far. We learnt later that the Dzongpen, hearing of our presence, had ridden about 150 miles to meet us, covering the distance in three days.

An interview was arranged which lasted fully two hours and was carried on for some time in rather a heated manner. The Dzongpen, afraid of incurring the displeasure of his superiors lest he should be accused by them of allowing a possible spy (for they mistrust all foreigners) to enter the sacred Lama land, continuously urged that we must return immediately by the road we came. He would listen to no argument and was suspicious of every reason, saying, "No foreigners ever come to Tibet. For what reason do you come?" I complained that I had received only discourtesy and opposition while in Tibet, whereas all Tibetans coming to India were free to travel where they wished, and

were always received as welcome visitors. This was a disgrace to the Tibetan civilization and the Tibetan culture. The whole party became very excited at this juncture, and all started to talk and shout together. The Dzongpen said, "Show me the man who has crossed you?" I answered that it was not any particular man, but that all the villages had been ordered to shun us and refuse us food. At length, after many discussions, I informed the Dzongpen that I would return to India; and finally he and his party took their leave and rode off to Tashirak.

Next morning Adhu came to the tent to say that the Tibetan captain and guard were outside. They said they had been sent to prevent us following the upper road to Pherugh. I went down with my men and, forcing the captain to dismount, we asked him what he meant by posting soldiers on us as if we were common thieves. His soldiers, standing some distance away, were armed with long smooth-bore guns, with rough wooden stocks and folding bipod legs to support the weapon when taking aim. This was the old pattern of arm, totally inaccurate and useless, and very different from the new Lhasa rifles with which the Tibetans fought the Chinese. The soldiers started to crowd round in an insolent manner, but when we made pretence of taking to our arms the captain jumped on his pony, and with him the whole party fled. From a distance behind some rocks they fired two shots. We immediately fired back, aiming over their heads, and finally they cleared the field.

Being discouraged by continuous opposition and having almost come to the end of our food supplies, I decided to discontinue the journey and return to Sikkim. The journey had revealed that there was no open approach to Everest from Tashirak. High snow-peaks and the deep and difficult valley of the Arun intervened and rendered approach from the east very difficult. It would have been interesting to reconnoitre the upper road to Pherugh and visit the reported monastery which was said to command a view of Kangchen-Lembu, but we were at the end of our tether. We had no proper food to eat. The coolies, moreover, on account of their long marches and hardships had been grumbling, and it was only by doubling their pay that I had been able to keep them in hand during the last few days and get them on as far as Tashirak. Accordingly I gave orders to pack up the camp. Slipping by Tashirak without meeting the Tibetans again, we set out for home.

For the return journey we followed the route Langbu La, Mugk to Choten Nyim, where we rested two days; thence to Gyabra camping ground, the Naku Pass into Lhonak, and over the Lugnak Pass once more back to the pleasant and comfortable bungalow at Thango in Sikkim on August 24, there to enjoy four days' rest after the fatigues and hardships of travel in Tibet.

In order to profit by the splendid September weather I refitted the caravan, and, taking fresh coolies, set out on August 29 to visit Kangchenjunga and the Zemu glacier, travelling by the Lugnak Pass to Teble

in Lhonak, thence by the The La, 17,400 feet, and Tangchung La, 16,000 feet, to the Zemu glacier, camping at Green Lake at the foot of Kangchenjunga on September 2. That wonderful and gorgeous mountain panorama at the head of Zemu glacier has already been so well described by Mr. Freshfield and Dr. Kellas that no description of mine can add anything. After securing a most fortunate set of photographs of these unique mountains, I returned down the glacier and the forests of the Zemu glen back to Lachen, thence down through Sikkim to Darjeeling and India.

Some day the political difficulties will be overcome, and a fully equipped expedition must explore and map Mount Everest. The journey must be undertaken from the Tingri or northern side, proceeding by Kampa Dzong and the Taya Sampo Valley. While at Saar it would be most profitable to send a detached party by the Nila La to Tashirak to climb the Taringban peak, and so get a direct panorama of the eastern slopes of Everest and Makalu rising from the deep Arun Valley.

NOTE ON THE SPELLING OF NATIVE NAMES.

In this paper and in the sketch-map the spelling of names is made to conform with the Survey of India. Though I have not made a special study of the pronunciation of Bhutia and Tibetan words, still I have noticed a marked difference between certain names given by the Survey and the native pronunciation of them.

<i>Survey Name.</i>	<i>Native Pronunciation.</i>
Kinchinjunga	Kangchenzunga
Kampa Dzong	Kamba Jong
Choten Nyim	Chorten Nyim
Tingri	Dingri
Thango	Tangu
Jongsong	Jonsong
Tista (river)	Teesta

Before the paper the PRESIDENT said: A good many of you, no doubt, like myself, will be very pleased to be back again in the old happy hunting-grounds of the Himalayas. To me it will be a great pleasure to re-visit that historic country, even if it is only for one evening. It is many years since a project was formed for approaching the highest peak of the Himalayas, Mount Everest, with a scientific expedition, and it is six years since the lecturer of this evening, Major Noel, made an adventurous journey over the borders of Tibet in an attempt to reach Mount Everest from the north-east. Apropos of that scientific expedition, which we now hope to see realized, what Major Noel has to tell us ought to be of the very greatest interest. There may be divided views as to which really is the best method of approaching Mount Everest, but we shall hear all that there is to be said about one of them to-night. I will ask Major Noel to begin his address.

Major Noel then read the paper printed above, and a discussion followed.

Mr. DOUGLAS FRESHFIELD: I hoped we might have had an interesting discussion, but the hour, I am afraid, is against it. I may perhaps shorten my

remarks if I put them under heads. First, with regard to Western Himalayan exploration in general. Is it realized that Darjeeling is only a night's journey from Calcutta ; that people go up there for a week-end ; that within that very short distance of what was lately the capital and still is the greatest city in India we have a playground of unrivalled beauty? Yet in order to travel but a few miles north of Darjeeling into "independent Sikkim" a special permit is required. There were good reasons in the past for such restrictions, but there are now stronger reasons for their abolishment. I hope that the district will soon be thrown open to all travellers. But I would ask for something more positive. If a few more horse-roads were made in Sikkim, if, for instance, one was made from Jongri to Pemionchi, visitors to the snows would be able in a fortnight's round tour to approach the great peaks, camp among the native shrines at the base of Kangchenjunga, and return by the Singalela ridge, after having seen what is certainly, as far as I know, the most magnificent scenery in the world. The other path I plead for is one through the few miles of jungle from Lachen to the great Zemu Glacier and the Green Lake Plain. Here and also at Jongri stone huts or bungalows might be built, similar to those erected in the Alps for the shelter of travellers. In that way the Western Himalayas might be made a playground for India. I was personally interested in the very vivid and truthful description that we were given of Lhonak, where the Tista has its sources. The features of this upland district offer a singular contrast to that of the lower valleys and gorges of Sikkim. They exhibit in the most striking fashion the protective power of a cloak of ice as contrasted with the erosive action of water, of rain and torrents. The traveller moves among smooth hillspurs and shallow valleys, in which he can trace the relatively recent retreat of the glaciers by the remains of the moraines they have left behind them. In our days geologists may wonder how de Saussure failed to realize that erratic blocks had been carried not by floods but by glaciers. A hundred years hence physical geographers will, I believe, equally wonder at those among us who allege that glaciers have done more in erosion than in conservation. This is, however, I am well aware, for the moment a controversial forecast.

Next as to climate. I am afraid Major Noel may have led his hearers to believe that the climate of Lhonak is like that of Homer's Islands of the Blest, that it never rains or snows there. I can show you photographs taken by my companion Signor Sella that will prove that it can snow in Lhonak even more heavily than last week in Derbyshire.

With regard to the character of the scenery I venture to differ from Major Noel. I admit that when one comes up from the depressing atmosphere of Sikkim, from the heat and rain of the outer hills into this dry frosty climate, it is like going up to the Engadine from the Lake of Como. One feels so exhilarated that one is ready to admire everything. But so far as my own feelings go I cannot say I thought the Lhonak scenery either really beautiful, or fantastic, or sublime. The bare shallow valleys, the rounded slopes and moderate peaks and glaciers contrast poorly, to my mind, with the forests, the ravines, and the majestic towers, spires, and precipices of the Outer Himalayan range.

With regard to the main subject of the lecture, the eastern approaches to Mount Everest, I think we have got thus much forwarder to-night ; we realize that there are two routes to the mountain, one from the east, and one from the north-east, and that the eastern route, through Tashirak, is the more direct. The best route, however, is doubtless the more northern one from Kampa



VALLEY BELOW TASHIRAK LEADING TO SOUTH SIDE OF
PEAK "TARINGBAN," TIBET



THE CHOTEN NYI-MA LA



NORTH-EAST GLACIER FLOWING FROM MOUNT EVEREST



MOUNTAINS NORTH OF MAKALU (27,790) TO SNOUT OF NORTH-EAST MOUNT EVEREST GLACIER

From photographs lent by Dr. A. M. Kellas

Dzong through Tibet, and then south along the track which is known to exist and has been crossed by a pundit, which leads over the western spurs of Mount Everest. A party would not need to cross the frontier of Nepal, and therefore need not get leave from Katmandu. I do not know that there is anything more that I can add in the time allowed me. I must leave Dr. Kellas, who has been far on the same track as Major Noel, to supply any further details with regard to the main subject of the lecture. Dr. Kellas has photographs which I hope he will show, for they seem to represent the view Major Noel describes of two rock peaks with a spire behind. If this is so, the peaks are probably all parts of the Makalu group.

Dr. KELLAS: I have listened with very great interest to Major Noel's account of his adventurous expedition and have admired his magnificent photographs. The problem of the approaches to Mount Everest attracted me when I first visited the Himalayas about twelve years ago, and since then I have studied the matter rather closely, and come to the conclusion that the route described by Major Noel is one of the best from many points of view. The distance from Siliguri to the foot of Mount Everest is probably nearly 300 miles, about 170 miles to Kampa Dzong, and thence about 120 to Mount Everest. The best route is certainly along the Tista Valley, then to Kampa Dzong* and westwards to near the village of Saar, which is on the direct north and south route between Tinki Dzong and Nepal. From Saar this route leads to Tashirak, over the Nila La, a little to the west of the direction taken by Major Noel, who crossed the Langbu Pass. From Tashirak there is a good track to Hatia (or Hatiya) which is just within the Nepalese border, and I believe that boats can be obtained near the village to cross the Arun River. From Hatia the distance to Mount Everest is about 25 miles direct. The route leads northwards up the Arun River, and then to the west. I have been able to get one or two photographs of it not taken by myself. When I first started to study the problem I tried to keep along the side of the dividing range between Nepal and Tibet near the snow-line so as to avoid disturbing the equanimity of the Tibetans or the Nepalese, and a few slides give an idea of the nature of the problem. I tried to go as far as possible along the glacier leading westwards, but the route was not so easy as it at first appeared. There is a great gap a few miles on, the glacier being projected against another with which it has no real connection. The phenomenon is common in photographs of Himalayan scenery and a good example was shown this evening. The peak in Mr. Freshfield's last photograph, which seemed to form the northern part of Mount Everest, is really about 10 miles to the north-east of Everest. These photographs show that the scenery of the Mount Everest group is of a very high order.

There are variations of the route which might be advisable under certain conditions. For example, if one were not allowed to get into Nepal at all, one could not go by Hatia, which is within the Nepalese frontier, and I do not know of any bridge near Tashirak to the west, or any means of getting across the river, which is somewhat difficult at that part. But one could from Kampa Dzong follow a route to the north-west and pass near Tinki Dzong to the north of the Phungtu Chu, which is the name given to the west branch of the Arun River, which rises west of Tingri. The Phungtu Chu is crossed by a hide-rope bridge, and the road then proceeds south along the Arun River to Kharta, whence there are various routes to Mount Everest.

* In discussing routes with the late General Rawling, that *via* the Tista and Sepo La had been provisionally agreed upon as far as Kampa Dzong.

There is another variation of the route described by Major Noel which might be useful. It is more direct than that *via* the Phungtu Chu. One could proceed from Kampa Dzong almost due west to Saar. If one keeps straight to the west from Saar one can cross the mountains, which Major Noel found barred his way, by an easy pass called the Tok-Tok La. Proceeding west from this pass one can reach the village of Kharta previously mentioned on the west side of the river. From Kharta there is a route which leads west for about 10 miles to the Langma La, and that takes one out to the foot of the north-east glacier flowing from Mount Everest. I think that would be the shortest route of the three so far mentioned.

I might add notes of other two routes. There is a route which could be followed from Siliguri or Darjeeling* to the north-west. Instead of going due north along the Tista one could proceed north-west by various routes into the Tambar Valley. At the top of the Tambar Valley there is a good route which was followed by Sir Joseph Hooker in 1849, when he reached the Wallanchoon Pass, a few miles to the south of Tashirak, which is, so far as I can learn, 45 miles in a straight line from Mount Everest, the Wallanchoon Pass being about 50 miles.

There is a third route. One could proceed from Khanwa Ghat on the Kosi River due north along the Arun to Hatia. The direct distance from Khanwa Ghat to Mount Everest is only 110 miles, and the length of this route would be much less than that of the others, approximately 160 to 170 miles in all. It would also be possible, starting from Khanwa Ghat, to attain the south side of Mount Everest: the Hatia route takes one to the north side. About 30 miles north of Khanwa Ghat one can turn to the north-west along the Sun-Kosi River, and then about 40 miles further on, proceed northwards up the Dudh-Kosi River. Part of the eastern headwaters of the latter stream drain the south side of Everest.

Those are the chief routes as far as I have been able to work them out, but there are several other variations of these routes which are of interest, but need not be described.

Captain J. P. FARRAR (President of the Alpine Club): The Alpine Club naturally views with the keenest interest this proposal to attempt the ascent of Mount Everest. Moreover, it seems to me that this attempt now commands chances of success not previously available. The main difficulty hitherto has been transport of equipment and provisions, requiring unmanageable relays of native porters. This has led to great delay, aggravating the unavoidable discomfort and exposure to the European leaders, upon whom the final victory depends, tending to lower their enterprise and powers of work. You have in the modern airship a means of supply which ought to eliminate in a great degree the difficulties that have balked previous travellers. I think, therefore, that the expedition has every chance of success, and the Alpine Club is prepared not only to lend such financial aid as is in its power, but also to recommend two or three young mountaineers quite capable of dealing with any purely mountaineering difficulties as are likely to be met with on Mount Everest.

Sir FRANCIS YOUNGHUSBAND: It is now twenty-six years ago since our

* I must venture to dissociate myself from Major Noel's remark regarding officials at Darjeeling, as I have invariably found them courteous and obliging. The coolies I have obtained there have always been satisfactory, and some, especially the Sherpa-Nepalese, have been of exceptional merit (cf. *Geog. Journ.*, September 1912, p. 257).

old friend Captain Bruce—now General Bruce—made the proposition to me that we should go up Mount Everest. It did not come to anything then, but years afterwards, in 1903, when I was in Kampa Dzong in Tibet, I had for three months a magnificent view of Mount Everest and Makalu right across the great plain of Tibet. The lecturer hoped that it would be an Englishman, or at any rate a Scotchman, who would first climb Mount Everest. I need only say I think we are all determined that it shall be a British expedition. Our own Society is interested in the project, and we have heard the President of the Alpine Club say he has magnificent young mountaineers ready to undertake it, and it must be done. I dare say there will be one or two attempts before we are successful; and the first thing we shall have to do is to get over the trouble with our own Government. When I went to Tibet in 1903 to 1904 I did get permission for travellers to go to certain places in Tibet. I also got a thing which the Government threw away, and that was the right for an officer to go to Lhasa. Our Government itself has prevented English travellers from going into Tibet and have refused to make use of the privileges which we have obtained. Not only English travellers but others as well have been prevented from going into Tibet. I know French travellers, especially, who wanted to go to a place to which we had a permit for Europeans to go. It is not the Indian Government who are to blame; it is the home Government. But after all, our Government are reasonable if they are approached properly and by societies like this and the Alpine Club. If a reasonable scheme is put before them, and it is proved to them that we mean serious business, then they are reasonable and will do what one wants. But this is a big business, and it must be undertaken in a big way. Most excellent reconnoitring work has been done by our lecturer, Major Noel. We know something of how Mount Everest may be approached from outside Tibet. I suggest that it would be a good thing if, instead of going from the outside, from the Indian side into Tibet, it would be better if we went from inside Tibet itself towards the frontier. I think it better if the head of the expedition made up his mind to go to Gyantse, where we have a permanent official, and get in touch with the big Tibetan officials, and then from the interior proceed towards Mount Everest on the frontier. There are some arguments we can easily put forward. We can point out that the Tibetans are allowed to travel about India as they like, and that this Society itself has a certain claim upon them, because it was Mr. Reeves of this Society who trained a young Tibetan sent over by the Dalai Lama to learn survey work. It would be a graceful act on the part of the Tibetans if they allowed us to make use of their country for climbing Mount Everest.

The lecturer has referred to aeroplane work. I think the Survey of India might be approached to take this up seriously and from the aeroplane get a good photographic survey of the country round Mount Everest. As I say, I am pretty certain that the Government, if they are approached properly by societies such as this, and if a reasonable scheme is put before them, would be quite ready to take it up, so I hope something really serious will come of this meeting. I should like it to be an Englishman who gets to the top of Mount Everest first.

THE PRESIDENT: I am afraid it is time to close the discussion. The interesting paper we have heard read contains a great many points for discussion, but unfortunately we cannot continue it now. I have admired more than I can say the wonderful series of photographs which Major Noel has shown us, and I have followed his most adventurous and plucky journey with

the deepest interest. But I venture to think that when any expedition succeeds in reaching Mount Everest it will not be either from the east or north. My own impression is that far the simplest and shortest way is through Nepal. I am quite well aware that if political authorities were asked as to whether it was possible to go through Nepal we should hear at once that it was frankly impossible. I believe myself that this is the way in which finally Mount Everest will be reached.

I have only to ask you now to join in a vote of thanks to Major Noel for his very interesting and attractive lecture, and I hope at some time not very remote we shall be able to hear more about the proposed expedition to Mount Everest.

THE ADMIRALTY TIDE TABLES AND NORTH SEA TIDAL PREDICTIONS

Commander H. D. Warburg, R.N.

Superintendent of Tidal Work, Hydrographic Department, Admiralty.

Read at the Afternoon Meeting of the Society, 17 February 1919.

THE Admiralty Tide Tables were first published for the year 1833, and then contained the times of high water only for the four principal ports in the United Kingdom. By the year 1912 the information had increased to predictions for 54 ports, 26 in the British Islands and 28 in foreign countries and the Colonies: times and heights of both high and low water were predicted at 28 ports, 7 of which were in the British Islands, the times and heights of high water only being given at the remaining 26 ports. The Hydrographic Department does not undertake the calculation of all predictions given in the Admiralty Tide Tables, the present general rule being that predictions for ports in the British Islands and foreign countries are calculated in the Department, those for colonial ports being supplied by the authorities concerned.

The aim of the Tide Tables is to supply, by means of tidal predictions for standard ports and tidal differences for secondary ports on the standard ports, information which will enable seamen to make use of any port in the world independently of information obtained locally.

This aim was far from adequately fulfilled in the tables for 1912, the greater portion of the world being entirely unrepresented in the standard and secondary ports.

Although there had, between the years 1833 and 1912, been a great increase in information, there had been no corresponding increase in accuracy, so far at least as the ports predicted in the Hydrographic Department were concerned, the method of calculation being the same in the latter year as in the former; predictions for colonial ports, however, supplied by the colonial authorities, were in 1912 mostly calculated by the harmonic method. The method used in the Hydrographic Department was that introduced by the late Sir John Lubbock in about the