CHAPTER XIX

LESSONS OF THE EXPEDITION

Before the War little was known of the peculiar mountaineering problems presented by the greatest peaks of the Himalayas. Peaks of 22,000 feet and 23,000 feet had been conquered by such pioneers as Dr. Longstaff and Dr. Kellas, the Duke of the Abruzzi had reached a height of 24,000 feet in a bold but unsuccessful attempt on the Bride Peak in the Karakorams, and two of the giants, Kangchenjunga and Nanga Parbat, had been also vainly attempted. In the light of subsequent experience, however, these attempts can only be regarded as tentative, if valuable, reconnaissances into altitudes formerly deemed impossible of access. The lack of knowledge as to the special equipment, and the elaborate camping and transport organisation necessary, and the absence of real information of the effect of altitude on the bodily functions made attempts on the greater peaks in those days foredoomed to failure.

After the War, however, a new era of mountaineering was inaugurated by the three assaults on Mount Everest, in which Colonel Norton and Mr. Somervell, by reaching a height of 28,000 feet, showed that man's body is capable of acclimatising itself to pressures of air as low as those into which Everest thrusts its crest. Curiously enough, Everest is the only great Himalayan peak which can definitely be said to be accessible to mountaineers. Other great peaks

may defy all comers for many generations, and among these I would number Kangchenjunga.

Our attack on Kangchenjunga from the Nepal side was largely based on Mr. Douglas Freshfield's analysis of the most likely lines of attack in his book " Round Kangchenjunga." Photographs of Kangchenjunga from the Kangchenjunga Glacier appear to indicate a mountain face of reasonable angle. Actually, they give an entirely false impression of this huge face. Distortion and foreshortening misrepresent the scale and steepness of the rock and ice slopes, while in place of the rocky shelves, which Mr. Freshfield thought might form the head of the Eastern Tributary of the Kangchenjunga Glacier leading easily upwards to the col in the North Ridge separating Kangchenjunga from the Twins, there is instead a rock and ice slope 4,000 feet high set at an impossible angle.

Considering that, with the exception of Colonel Tobin and Wood Johnson, not one of the party had had previous Himalayan experience, the project of approaching the Base Camp site through Nepal by way of two high passes, the Kang La (16,373 feet), and the Mirgin La (14,853 feet), was ambitious. Had we known what difficulties confronted us, in particular the lateness of the winter and consequent lowness of the snow-line, we should certainly have preferred the alternative route by way of the Teesta and Lhonak valleys and the 20,200 feet pass of the Jonsong La. The Jonsong La would have been much less difficult in spite of its height, and, as we proved later, we could have worked our transport in relays of trustworthy porters.

There are two types of Himalayan expeditions, the large expedition with its correspondingly elaborate bandobast,

and the small expedition burdened only with a light transport. The present expedition was probably the largest climbing expedition that has ever visited the Himalayas, and in its transport was unwieldy and top-heavy. The chief advantage that a small expedition has over a large one is that it can live more on the country. Had it not been for the generous help of the Maharajah of Nepal our expedition would have been impossible, as not enough supplies could have been obtained from the sparsely populated valleys through which the expedition passed. The large expedition has, of course, several advantages over the small expedition. In the case of illness there is a reserve of climbers to carry on with the work, and the climbing party can be split up into two or more groups, one group undertaking the work of establishing high camps, leaving the others free to rest before their attempt on the summit.

But provided its members keep fit the small expedition has other advantages besides those of easier provisioning. It is mobile, it needs comparatively few porters, and it can take its pick from first-rate men, thus making its plans secure and free from labour troubles. The ascent of the Jonsong Peak proved that four men backed up by good porters are capable of overcoming a great peak. The greater giants of the Himalayas, such as Everest and Kangchenjunga, demand the large expedition, if only on grounds of health, for altitude will surely weed out the climbing party, leaving perhaps from eight or ten men not more than two or three fit to make the final attempt on the summit.

Himalayan mountaineering only resembles Alpine mountaineering so far as the actual technique of climbing

is concerned. In scale, snow and weather conditions, route finding, and general organisation, it is so different that only by experience can the Alpine-trained mountaineer learn safely to tackle its manifold problems—and this experience is gained all too frequently at the cost of valuable lives.

Kangchenjunga is not merely a mountain built on a greater scale than an Alpine peak. It is a mountain that is a law unto itself. Its northern and western faces are among the most desperately dangerous mountainsides in the world. Had we realised how dangerous the western side of Kangchenjunga was we should have abandoned any attempt on it at the outset. But, not unnaturally, it was some time before we were able to accustom ourselves to conditions entirely different from those which any of us had previously experienced, and it was not until the mountain discharged an avalanche upon us of almost cataclysmic dimensions did we realise how utterly different was the work compared to that of the Alps. This, at least, was a bitter lesson, for it cost the life of Chettan, a porter of almost unparalleled Himalayan experience.

In the Alps the risk of being overwhelmed by an avalanche is sometimes taken, but such a risk is usually incurred only for a few minutes when passing beneath a hanging glacier or under unstable ice pinnacles in an ice face. On Kangchenjunga the risk lasts as long as the party is on the mountain. Communications must be maintained, and parties go to and fro between camps. Thus, one short stretch of ground exposed to avalanches may have to be traversed not once, but many times, and the probability of accident is greatly increased. Himalayan porters do not appreciate danger, they place implicit trust in their sahibs,

whom they are prepared to follow anywhere. Thus the sahib incurs a grave responsibility by risking the lives of his porters and cannot afford to betray such magnificent confidence.

Ice avalanches are Kangchenjunga's deadliest weapon. Ice walls, forming the edge of hanging glaciers 1,000 feet thick and running for miles across the face of the mountain bar approach. These hanging glaciers are in a constant state of downward movement. They break off in masses weighing millions of tons, which fall for thousands of feet down the granite precipices.

The avalanche that on May 9 ended our attempt to reach the North Ridge of Kangchenjunga covered about a square mile of snowfield with débris several feet thick, which weighed at a rough estimate about 1,000,000 tons. Other and greater avalanches fell later, in particular one that completely swept the route between Lower and Upper Camp Two, and, not content with this, the site of Lower Camp Two, fortunately evacuated a few days before, nearly a mile from the foot of the mountain face. It is difficult to appreciate the scale of such monstrous falls, and I shall always remember the period spent on Kangchenjunga as the most continually nerve-racking that I have ever experienced. In several of the camps one never felt secure, although everything possible was done to pitch them in protected sites. It is easy to be wise after the event, but even such a great mountaineer as Mummery was deceived by the " scale of things " and perished on Nanga Parbat, together with his two Gurkha followers.

The second attempt on Kangchenjunga by the North-west Ridge a week later taught lessons of a different kind.

Owing to scale and deceptive foreshortening, the difficulty of this route was under-estimated, for its length alone militated against any attempt. Yet an attempt *was* made more as a forlorn hope than anything else and, as we expected, failed. Even if the knife edges of ice and rock, carved and split into icy towers, had proved practicable to the expert climbers of the expedition, the impossibility of establishing camps on the crest and of getting up laden porters would have made it a hopeless proposition. To tackle routes of advanced Alpine difficulty on such peaks as Kangchenjunga is a mere waste of time.

Curiously enough, we seldom met with dangerous snow conditions and saw only a few snow avalanches. Generally speaking, conditions were similar to those of the Alps during late winter and early spring. Most of the party were expert winter mountaineers and ski runners, so that the danger of being involved in a snow avalanche was slight. As regards weather, Kangchenjunga is great enough to make its own local conditions and these are not favourable to the mountaineer. Sudden storms of wind and snow are liable to strike with but little warning. Wind, in particular, will ever be the climber's bitter enemy, and on the upper ridges blows for days on end with paralysing intensity. Porters will face most things but wind demoralises them completely. Perhaps in its fury they recognise the wrath of the gods.

Himalayan ice is frequently unusually tough, and cutting steps in it is a more gruelling task than in the Alps. This toughness or plasticity is probably due to rapid evaporation, combined with a great range of temperature, varying from an almost tropical sun heat during the day to zero

temperature at night. It is this capacity for bending that is partly due to the size of ice avalanches. Where Alpine ice would break away in small quantities at a time, Himalayan ice does not fall until large overhanging masses of it are no longer able to resist the tug of gravity.[1] The ice ridge encountered on the Ramthang Peak afforded an interesting example of this peculiar tenaciousness. Though appearing to be precariously poised on the crest of the ridge, it was found possible to traverse edges and masses of ice that could not exist in Alpine ridges. It is undoubtedly this quality of elasticity and tenaciousness that results in the extraordinary ice ridges of many Himalayan peaks such as Siniolchum and the Wedge Peak.

Will Kangchenjunga be climbed? The answer is, Yes, but most likely not in this generation and not by present-day mountaineering methods. The only route offering any hope would appear to be that attempted in 1929 by the Munich Expedition. But the difficulties are likely to be so great on the final rock pyramid that, taken together with the effects of altitude and the inevitable wind, it is doubtful whether they can be overcome.

In an analysis of the Munich Expedition as compared with the Everest Expedition in the *Himalayan Journal*, Colonel E. F. Norton compares the respective dangers and difficulties. Progress on Everest was more than twice as fast as that on Kangchenjunga, yet, whereas on Everest a height of 28,000 feet was reached, on Kangchenjunga but 24,400 feet was reached after five and a half weeks of gruelling work before bad weather enforced retreat. The Bavarians considered that they had overcome the principal

[1] See Appendix: "Glaciology: Snow Conditions and Avalanches."

difficulties. Such, however, is far from the case. These difficulties had scarcely begun. Altitude and its effects only begin to be really serious over 24,000 feet, and being on the sheltered side of the mountain they had not yet begun to experience that terrible west wind which sweeps the upper part of the North Ridge with such merciless severity. And last, but not least, is the final pyramid—a rock pile rivalling the upper part of the Matterhorn in its steepness and technical difficulty.

Present day oxygen apparatus is too heavy for such climbing as is offered by Kangchenjunga, and it is the conviction of the present expedition that only by some medical means which will artificially acclimatise the climber so that he is able to put forth the same effort at 25,000 feet as he would at sea level, or at least on Mont Blanc, will the upper part of Kangchenjunga be justifiably assailable. The present expedition were lucky to escape from an avalanche ; the Munich Expedition were luckier still to escape with no loss of life after being overtaken by a snowstorm of great severity.

After we had abandoned the attack on Kangchenjunga, having been driven back by ice avalanches from the North Ridge, and by the sheer difficulty of the route from the North-west Ridge, we decided to cross the 20,200 feet Jonsong La. We were able to get over this pass by the efforts of Frau Dyhrenfurth and Wood Johnson, together with invaluable help in the shape of coolies from the Nepalese authorities. The number of loads far exceeded the number of porters available, so the transport had to operate in relays. Everything worked perfectly, but luck was with us. The season was well advanced and the monsoon

imminent. Had the weather broken, the expedition might have found itself in a serious predicament with some of its loads on one side and some on the other side of the pass, and faced, in addition, with a possible desertion *en masse* of the coolies. The move proved weatherwise, for shortly afterwards the monsoon broke on Kangchenjunga, covering it with new snow, while the district at the head of the Lhonak Valley remained untouched by bad weather.

In its topographical and geological work the expedition has added considerably to the previously little known country at the head of the Lhonak Valley and in North-eastern Nepal. The western and north-western glaciers of Kangchenjunga were thoroughly explored, while Schneider and Wieland found a practicable route over the Nepal Gap, thereby making a new pass between Sikkim and Nepal and solving a problem that had interested mountaineers for many years. The Dodang Nyima Range, separating the Lhonak Valley from Thibet, was also explored by Schneider and Hoerlin, who ascended its highest point, the 22,700 feet Dodang Peak, and traversed the Choten Nyima La.

Some idea of how little is known of the district to the west of the watershed at the head of the Lhonak Valley may be gained from the fact that a glacier was observed at least fifteen miles long not marked in any map. When political prejudices and difficulties have been overcome, this district of Northern and North-eastern Nepal will offer an interesting field for the explorer and mountaineer. Geologically, the district is extremely interesting, as it forms the junction of the Thibetan limestone with the granite of which Kangchenjunga and its satellites are

composed. Fossils were discovered in the limestone Dodang Nyima range at a height of about 20,000 feet.

There is indisputable evidence of a former ice age in the huge terraces of the Lhonak Valley. The topographical data collected by Kurz and the geological work of Professor Dyhrenfurth have yet to be analysed and classified. Much valuable information will be at the disposal of the topographical and geological survey authorities. The meteorology of the district is remarkable. The difference of precipitation between that of Kangchenjunga and that of the Lhonak Valley is great, and the monsoon conditions quite different. Observations and photographs were made which should prove of interest in determining the approach and extent of the monsoon on this part of the Himalaya.

In addition to Duvanel's fine cinematograph work, Professor Dyhrenfurth took the highest film yet taken from the summit of the Jonsong Peak. Probably nowhere else does the actinic value of the light vary so much as in the Himalayas, and the photographers of the expedition had much difficulty in judging the correct exposure. In the lower regions, though the sunlight is brilliant, its yellow quality demands an aperture as great as f.8. and an exposure of 1/25 second. On the snowfields, however, the ultra-violet rays demand an aperture as small as f.22. and an exposure of 1/50 second.

Much forethought was given to equipping the expedition. To guard against cold and frostbite, thick tricot suits were supplied. But these, together with the special high climbing boots, were found to be unnecessarily heavy, and to impede active movement on difficult ground. The climbing boots, weighing 6½ lbs. the pair and containing over sixty nails

each, proved extremely fatiguing, and most members climbed for preference in their ordinary Alpine boots. Incidentally, such a large number of nails is unsuitable in the Himalayas, as they conduct cold to the feet. On Everest comparatively light boots, sparsely nailed, proved effective, so long as they were large enough to hold several pairs of socks. Heavy clothing does not necessarily spell warmth, and several layers of light clothing is preferable to one layer of heavy clothing. The writer found that three or four light Shetland sweaters, weighing but a few ounces each, beneath a light water-proof jacket, withstood the coldest winds. No member suffered frostbite.

The feeding of climbers at high altitudes is a very real problem. A mountaineer climbs on his stomach even more than a soldier crawls on his. Altitude impairs the power of the stomach to assimilate food, and the strongest constitution may be laid low by gastritis and other "tummy troubles." The appetite must be kept up and the palate titillated if rapid deterioration of strength is to be prevented. At heights of over 20,000 feet light sugary foods were found most suitable, such as jams, biscuits, chocolate, sugar, tinned fish and fruit, and condensed milk. A little alcohol is a great aid to the digestion. Hot rum taken at bedtime is the best of all drinks to promote the sleep that is as essential as good feeding to the hardworked and mentally stressed mountaineer.

Owing to transport difficulties, the climbers during the early stages of the attempt on Kangchenjunga had to subsist on yak flesh and other mostly unsuitable foods. As a result a marked deterioration soon became evident, and it is practically certain that much of the subsequent illness

that weakened the party was due to this. Later, with the arrival of good food, there was a rapid pick-up, and towards the end of the expedition on the Jonsong Peak the climbers, though reduced by a stone or more in weight, were putting forth their best efforts.

The general health of the expedition was well cared for by Dr. Richter. Attempts to combat the deleterious effects of altitude were made by blood-letting, to relieve blood pressure, as it was considered that the high blood pressure relative to the low pressure of the atmosphere is responsible for headaches and mountain sickness.

Only two members, Professor Dyhrenfurth and Duvanel, submitted to having 200 cubic centimetres of blood withdrawn, and as they were both subsequently taken ill, Professor Dyhrenfurth within a few days, and Duvanel later, it is doubtful whether any good resulted from the experiment. More successful was the special liver preparation invented by Dr. Richter. This took the form of a pill, nine of which had to be swallowed daily. It is believed to have assisted the special formation of the essential hæmoglobin corpuscles, which enable the climber to acclimatise to altitude. As on Everest, it was possible to form but few conclusions from physical tests made before the expedition. The capacity to hold the breath for a long period, or to blow up mercury to great heights has little or no bearing on the subsequent fitness of the climber on the mountain, where only genuine stamina, physique, and will-power avail.

A certain amount of oxygen should always be taken by a Himalayan expedition, if only for medicinal purposes. When Wood Johnson returned ill to camp on the Jonsong

Peak, an inhalation of oxygen reduced the pulse rate from 115 to 95 in a few minutes. If oxygen could be continuously used on the upper part of a peak, its effects would be good, but used intermittently it serves only to stimulate the body for a short time, while the subsequent reaction is severe. The weight of the apparatus prohibits prolonged use and by tiring the climber neutralises the effect of the oxygen. The experience of the last Everest Expedition makes it clear that, provided the actual climbing offers no great physical difficulty, the highest summits of the earth can be reached without oxygen. The secret of high climbing is slow acclimatisation, and this is best effected by living for several weeks as comfortably as possible at a height of about 20,000 feet. At this height the appetite is unimpaired and sound sleep possible. A future Kangchenjunga or Everest expedition would do well to send its climbing party a month or so in advance of the date fixed for the attempt, build a substantial wooden hut, and make small expeditions to moderate altitudes, and thus acclimatise to their task.

Himalayan mountaineering is mental as well as physical. Nowhere is the control, conscious and subconscious, of mind over matter better demonstrated than at great altitudes, and the reaction of the body to the processes of the mind is marked. The man who dislikes the work is more likely to become ill than the man who enjoys it, and, though the greatest mountaineering enthusiast is likely to crock, the finest physique is useless without a proper mental complement. The men who will force their way to the summits of Everest and Kangchenjunga will be men capable of disciplining their minds as well as their bodies,

genuine philosophers at heart, who experience in mountaineering something far greater and finer than the mere physical joys of struggling with an inanimate opponent.

Apart from the difficulties of the country and the weather, some mistakes were made at the outset. Expeditions starting from Darjeeling should give long notice of their intended date of departure, in order that coolies may have time to come in from remote villages. Unfortunately, this was not done, and it was found necessary to recruit many coolies entirely unsuitable to the work. The best porters are Sherpas and Bhutias, and while in carrying power and endurance there is little to choose between these hardy races, the Sherpa is the better mountaineer on really difficult ground. Of those at Darjeeling, many are "rickshaw wallahs," and such was their keenness to join the expedition, that they were prepared to throw up easy and profitable work at the beginning of the season to face dangers and hardships of the nature of which they were fully aware.

To Colonel Tobin, the transport officer, who was in charge of the third party, fell the responsible task of getting the transport to the Base Camp. It is safe to say that without him and the two other British transport officers the expedition would have failed.

Owing to permission to enter Nepal coming at the last moment, a complete reorganisation had to be made. Apart from the difficulties of the route, which included two snow clad passes, numerous problems had to be solved, of which shortage of reliable porters, shortage of boots, shortage of snow goggles, and the uncertainty of obtaining even a limited number of local porters on the route were the most important. Most of these difficulties were foreseen and

emphasised by Colonel Tobin before the start, but it was not easy to obviate, or even minimise them, and the leader decided to take the responsibility of facing all the risks involved.

The first party with Wood Johnson as transport officer left on April 6, with two hundred and twenty porters, the second party with about one hundred and sixty porters under the charge of Hannah left the following day, and Colonel Tobin, chief transport officer left with eighty mule loads on April 12. Between April 7 and April 12, twenty-five other porters started with loads that had arrived late in Darjeeling.

Darjeeling had been so denuded of porters, that the only method of transporting the remaining porter loads was on mules. These loads would, of course, have to be transferred to porters for porterage over the Kang La, and it was arranged that as soon as the first two parties were over the Kang La, one hundred and fifty porters with a good sirdar should return to Dzongri. The farthest point to which mules could be taken was the bridge between Tingling and Yoksam. Colonel Tobin actually hoped that he would be able to get his loads to Dzongri by April 17 or 18, carried by local porters and the porters sent back. It was also understood that a European member of the expedition would remain at Khunza until the third party reached that place. Khunza was the most important point on the route, being the junction of the lines of supply from Darjeeling and Nepal.

If this part of the scheme had been carried out, the loads of the first two parties would have been worked from Tseram to the Base Camp with two hundred porters.

It was anticipated that supplies and equipment would thus reach the Base Camp sufficient for the work of fifteen days or more on Kangchenjunga. Had this plan been carried out the first two parties, with about three hundred loads, would have arrived at the Base Camp by about May 3. The first two hundred loads would, of course, have reached the Base Camp by about April 23. This was sufficient to start climbing operations, and it was arranged that one hundred and twenty to two hundred and fifty porters would then be available to return to Tseram for the remaining loads.

Unforeseen circumstances prevented this plan from being carried out, with the result that it was not until May 3 that any of these men returned to Tseram. Meanwhile, Colonel Tobin had succeeded in working his loads by means of a few locally raised porters to Dzongri by April 20, but these men refused to work beyond that place. After a delay, twenty men were obtained from Yoksam and Tingling, which are three and four marches respectively below Dzongri, and these agreed to lift the Dzongri loads up to the snow-line on the Kang La, but no farther. This was completed by April 28, and on that date in very foul weather Colonel Tobin crossed the Kang La with the intention of raising porters in Nepal, as it seemed that there was no prospect of getting any Darjeeling porters for an indefinite time.

He reached Tseram on April 29, with only two of the nine men he had started with fit for anything. Of the remainder, two had deserted *en route*, two had left their loads in the snow, and three were snow-blind. On April 30, seventeen coolies from Khunza arrived. They

included six women and five small boys, and they were despatched to the Kang La, but were driven back by the heavy snow and the strong winds. On the second occasion, they had to carry back four of the boys, but at the third attempt they were more successful.

Colonel Tobin sustained a fall on the Kang La. This, combined with the great physical and mental strain that he had been undergoing, made him unfit to go farther in the quest of transport. However, on May 3, seventy porters and a temporary sirdar arrived, and the clearing forward of the Kang La dump began in earnest, although the sirdar, Phuri, died on the pass.

By May 8, many of the loads began to reach Khunza, and by May 11 they were arriving at the Base Camp. Further batches of porters meanwhile became available. Messrs. Wood Johnson and Hannah were sent down the line to assist, for the food situation began to cause great anxiety. Indeed, the climbers had been on rather short commons. However, by the last named date, the situation had improved, and more local porters were being procured.

But the absence of a responsible sirdar, and the presence of certain disaffected coolies had resulted in looting on the Kang La, and on the upper route, so that many of the boxes reached the Base Camp depleted. The expedition was able to carry on, though at one time it was feared that a temporary withdrawal would be imposed on it.

The situation was greatly eased by the arrival of supplies ordered by the Maharajah of Nepal himself. Colonel Tobin gave over to Hannah at Tseram on May 12, and started back to Darjeeling down the Yalung Valley

and through Nepal. By that date the Kang La dump was well on its way to the Base Camp. It was actually cleared by May 15.

There are many lessons to be learnt from the above story, and it may be remarked that it was fortunate that the expedition, though faced with a serious situation, had only a temporary set-back.

Colonel Tobin made some interesting commentaries. He said that an expedition requiring an enormous quantity of stores and equipment should arrange for its transportation a long time beforehand. Food packed in zinc cases which have to be cut open are superior to easily opened boxes fastened with nails or insecure padlocks. For an expedition on such a large scale, it would be advisable to arrange a series of food and equipment dumps the previous autumn season. Other members of the expedition should understand the supplies and transportation arrangements. Actually, the arrangements for an attack on Kangchenjunga via the Zemu route had been put on paper, but owing to the eleventh hour change of route, the scheme of operations was not so carefully worked out, with the result that a serious situation nearly occurred.

It should have been realised at Khunza that it was an important point, and that the presence there of a European, at least until supplies were assured, was imperative. Bauer, the leader of the Bavarian Expedition in 1929, with a less vital line of communication, kept one of his members halfway between his Base Camp and Lachen arranging operations. Hard luck on the individual, no doubt, but each member of an expedition must remember that he is one of a team, and should have his definite job allotted. Large

batches of coolies must be in charge of a reliable sirdar. Failure to arrange this was not only the cause of bad work, but also of desertion and looting.

Until the expedition is concentrated, those engaged on transportation, at least, must be kept apprised of the local situation, as well as of the general position to ensure intelligent co-operation which is essential. Moreover, the work behind is dull, and men engaged on it are liable to become apathetic unless they are told what is going on at the front.

An ample supply of good boots is necessary. Owing to the excessive number of coolies requiring these they were not available. On another occasion it would be better to issue these in Darjeeling, and risk the small loss due to desertion. Shortage of goggles was also due to so many coolies not being allowed for.

After Colonel Tobin had returned to Darjeeling, the responsibility for transport devolved entirely upon Wood Johnson. Though theoretically a climbing member of the expedition, he undertook the arduous task of looking after the porters and arranging for supplies of food. No man should have been expected to shoulder the responsibility and do the work he did as well as climb, but it was entirely due to his efficient organisation that the expedition was able to carry out its programme, and it was entirely due too, to his unselfish and disinterested work on behalf of the expedition that he subsequently broke down on the Jonsong Peak.

Nor must Frau Dyhrenfurth be forgotten. There were those who had said she would be little better than a passenger on the expedition. Her management of stores and supervising of communications, especially those over the

Jonsong La, were invaluable to the expedition, and could not in its efficiency have been excelled by one well versed in the peculiar problems of commissariat in the Himalayas. And lastly, must be mentioned Naik Tikeram Thapa, who served as a valuable connecting link at Khunza and Lachen in the supply and dispatch of stores, added to which he supervised the porters' pay roll.

Did we make a mistake in attempting Kangchenjunga before the monsoon? Only time can tell. Heavy snowstorms appear more probable after the moonsoon, and the Bavarian party narrowly escaped disaster from a snowfall of seven feet, while Mr. Freshfield was considerably hampered in his plans by a fall of similar severity. On the other hand, these two parties experienced little or no wind, and wind is the greatest enemy of the Himalayan mountaineer. The present expedition had to withstand fierce winds, which according to porters were as bad as or worse than those on Everest. Nothing is more demoralising or lowers the vitality more than wind at a great altitude. The danger of being overtaken by a heavy snowfall, plus the increasing cold with the approach of winter after the monsoon, is more than counterbalanced by the winds before the monsoon. On the whole, therefore, another party attacking Kangchenjunga will do better to go out after the monsoon.

No general summary of the work of the expedition, and the lessons learned from it, would be complete that left out reference to the porters, without whom the expedition would have been impossible. It is absolutely essential that any Himalayan expedition should include transport officers who speak the language of the porters and understand them. The expedition was fortunate in having

Colonel Tobin, who is well acquainted with local conditions, whilst Mr. Wood Johnson, by reason of tea-planting experience, speaks fluent Nepali, and thoroughly understands the child-like temperament of the splendid men to whom the expedition owes so much.

The work of the chief Sirdar, Lobsang, was invaluable, and was equal in intelligence and trustworthiness to that of a sahib. Less spectacular, but also useful, was that of Naspati and Gyaljen, who were engaged with Colonel Tobin on the transport. Among those who did so well—and they are but a few among many equally good—must be mentioned the names of Nemu, Lewa, Sonam, Tsinabo, Ondi, Narsang, Kipa, Nima and, not least, Tencheddar, the cook, who, if frequently reviled, certainly did his best to propitiate rebellious palates. May but a short time elapse before I see again their broad, homely faces, with their infectious grins, and share once more with them the thrills and delights of mountaineering on the great peaks of the Himalayas.