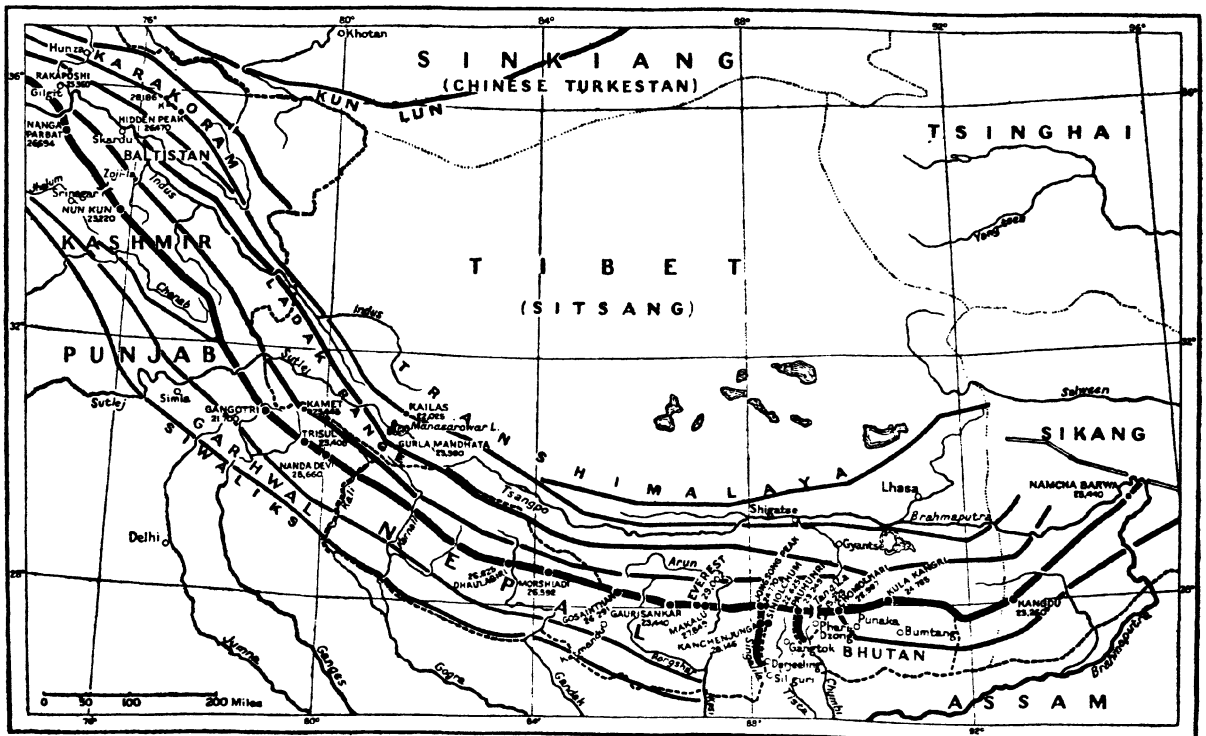
HIMALAYAN ASSAULT



OUTLINE MAP OF THE HIMALAYAS

HIMALAYAN ASSAULT

The French Himalayan Expedition 1936

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With an Introduction by

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INTRODUCTION

BY BRIG.-GEN. THE HON. C. G. BRUCE

MR. DE SÉGOGNE HAS DONE ME THE HONOUR OF ASKING me to write a short introduction to his book recounting the French Expedition to Gasherbrum I, named by Conway in 1892 the Hidden Peak; I am afraid not a very happy christening, when, as is so uncommon in that great region of the Baltoro and in the Kara-koram generally, a native name is already to hand. The honour accorded me by Mr. de Ségogne is probably due to the fact that I was a member of the Conway Expedition myself.

The French Expedition underwent considerable difficulty in getting under way, and only through the great enthusiasm and determination of its organizers was successfully despatched, wonderfully supplied and outfitted.

Although many remarkable mountaineers and exploring parties followed in the steps of Conway, such as Jacot Guillarmod's attempt on K2, the Duke of the Abruzzi's and the Duke of Spoleto's expeditions—to say nothing of the monumental work of Filippo de Fillipi—and though the whole region had been splendidly illustrated and described, the French had no single man who had had experience of Asiatic Mountain Exploration, or of the peoples and languages to be found there. In these matters in particular, a little practical experience is worth a mass of theory. It was a new venture, followed with the greatest interest by the mountaineering world.

How well I remember when, in 1892, we first had a good

view of the Gasherbrum group, our guide Matthias Zurbriggen (of Macugnaga and Saas Fee) exclaiming, 'Well, no one will ever conquer that mountain', and Conway answering, 'Don't make such a rash statement, we are but pioneers. All these mountains will be tackled in the future for certain.' Three years later Mummery, standing on the slopes of Nanga Parbat, made much the same remark to me, more definitely stated. Well, M. de Ségogne and his mountaineers nearly brought it off, and the result of their struggles adds another thrilling and instructive page to the history of adventure in the great mountains.

Probably on their return home and when reviewing their experiences they found, as all other Explorers have found, a great deal that they would like to alter or to modify in their arrangements. I would myself like to ask them to study very carefully the question of the seasons. It is a serious question whether, as far back as the Kara-koram range, the monsoon—the Arabian Gulf current—can get through, except in a most attenuated form, with all the wickedness out of it; but local bad weather is always to be feared. The problem is quite different from that which occurs where the main range is narrow and much nearer to the plains of India and to the influence of the monsoon currents; but the Kara-koram is protected by a series of most formidable ramparts. I, therefore, am more than inclined to favour attempts made during August. In Lahoul and in Suru and other places I have never been really inconvenienced by weather in that month, although the monsoon was raging to the south of me at a comparatively short distance. It would also save all the trouble with the crossing of the Zoji-La; and, more important, the huge accumulations of winter snow in the high ranges would be off; but unfortunately that horrid process called by us on the Baltoro glacier 'Moraine hopping' would be a longer and more formidable torture. As

it was, the expedition had as much as it wanted of dangerous and unpleasant problems to face and was, I think, lucky to come back without loss of life.

It is always pleasant to hear of the good behaviour of the Tibetan porters, whether belonging to the Sherpa community or other Bhotia tribes. The only parallel to the miracle of the escape of the two porters carried down by the avalanche that I can think of, is when Dr. Longstaff and the brothers Brocherel were swept away on the crest of a snow avalanche on Gurla Mandhata, they being even more lucky as they managed to extract themselves and to continue their attempt immediately, although after a slide of 1,500 feet.

I hear rumours that a fresh attempt is to be made in 1939; that is only to be expected. I fervently hope that many of the previous difficulties of finance, &c., will be got over. The organizers, too, will probably follow modern tendencies by making the equipment, &c., as light as possible and by cutting down much that was previously found superfluous. I am sure that the best wishes of all British sportsmen, whether mountaineers or not, will follow the next venture; and, actually, a success on Gasherbrum I would mean the conquest of the highest actual summit yet attained.

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WHAT IS THE USE OF CLIMBING THE HIMALAYA?

The universal appeal of these mountains to men of all callings and all nationalities, testified to by the long list of Himalayan exploration, is perhaps the most eloquent answer that can be made to this frequently asked question—a question which causes all mountaineers to cry out in protest and which in itself betrays a commonplace mind.

Direct communication was established between India and China at a very early date, and up to the beginning of the last century the best sources of information on the Himalaya were the accounts of Chinese travellers and geographers. The travels of Chinese pilgrims such as Fa-hien, Hiun-tsang and Yi-tsing, who went, in the years 399, 629 and 671 respectively, 'to seek the law' beyond the Himalaya, have been recorded with great detail.

In 747 a general of the Emperor Hiun-tsang, one of the T'angs, came over the Pamirs with an army of 10,000 men and occupied Gilgit and Baltistan.

In 1384 Nepal sent an ambassador to Hong-wong, one of the Mings; and in 1792 a Chinese army under K'ien-long, after crossing the Himalaya, crushed the Gurkhas at a day's march from Katmandu.

Himalayan exploration proper, however, did not begin until 1818 when Gerard reached a height of about 19,500 feet on Leo Porgyul; and the first important peak to be conquered appears to be Jubonnu (19,530 feet), which was climbed by

W. W. Graham in 1883. From this moment numerous expeditions [1] have been made by men of all nationalities, though the share of the English in this exploration has greatly predominated as is only natural.

Since 1921 (the date of the 'Reconnaissance' under the command of Lieut.-Col. Howard Bury) there have been no less than six expeditions, all English, to Mount Everest; and yet the last 1,000 feet of this the highest summit on the face of the earth still remain to be conquered. These expeditions have absorbed the energies of many men for many months and have called for an enormous expenditure of effort and courage, not to speak of the cost, which, from the earth-bound view of the economist, was as unproductive as one could wish for. And doubtless it will be thus until the summit of Mount Everest has been attained, for there still are and always will be men who look upon action as an end in itself and who do not judge the beauty and value of an effort by its practical usefulness.

Himalayan expeditions, with the exception of those devoted to scientific research, raise the whole problem of the justification of mountaineering. The solution of this problem, which may be found by following the history of mountaineering, is that Himalayan expeditions, like Alpine ascents, *find their justification in themselves.* There is no need to seek outside sensations and impressions either of an aesthetic or of a philosophic nature, though these are scarcely ever lacking in enterprises of this character, and would alone be sufficient to justify the effort.

Himalayan peaks over-step the normal measures applicable

[1] Marcel Kurz, at the end of his historical and geographical notes on the Himalaya, published in *Alpinisme*, Nos. 30 to 34, gives a chronological list of expeditions (No. 34, pp. 468–9). More than eighty between 1818 and 1934. The name of the Frenchman Victor Jacquemont, a friend of Stendhal, can be added to the list. In August, 1830, he reached Ladak after having crossed several passes of over 16,000 feet in the Kashmir-Himalaya.

to human forces, and no doubt this is one of the main reasons of their attraction.

A field of action where man may battle against overwhelming odds and prove that they can be faced sanely; where he must call, not in vain, upon the ultimate reserves of his physical and moral strength, holding that achievement is an end in itself and glorying in its intrinsic uselessness, is surely one of the greatest gifts bestowed upon mankind.

HIMALAYAN ASSAULT

I

Preparation[1]

Choice of mountain to be attempted.—For the first French Expedition to the Himalaya the choice of the mountain to be attempted was a more difficult and complicated matter than might be supposed. The question of altitude required much attention. Two theories were upheld: some considered that it was absolutely essential to make certain of reaching a summit even if this was only of secondary importance, while others argued that the objective must be one of the eight-thousanders (approximately 26,250 feet) of the Himalaya, in spite of the possibility of this choice lessening our chances of success.

A word of explanation is required here to account for the importance accorded to the 8,000-metre delimitation on the Continent.

In the Alps those summits which exceed 4,000 metres form a recognized category of 'great peaks' as opposed to the lesser peaks of from 3,000 to 4,000 metres in altitude.

For continental mountaineers who reckon in metres the 8,000-metre delimitation plays the same part in the Himalaya as the 4,000-metre line plays in the Alps. The difference of class is even more marked between peaks of 8,000 and 7,000 metres in the Himalaya than between peaks of 4,000 and 3,000

[1] This chapter, which originally contained a detailed account of the technical preparation, has been greatly abridged in the present edition.

metres in the Alps, as the Himalayan range numbers only fourteen summits exceeding 8,000 metres. It will thus readily be understood that the prestige attached to these 'eight-thousanders' by French, Swiss, German, Austrian, Italian mountaineers is but the outcome of a natural distinction that has long been accepted in the Alps.

Those in favour of the 'eight-thousanders' pointed out that the expedition would not be possible unless a favourable atmosphere could be created by which means alone the necessary material and moral support could be obtained from the public. With this end in view it was indispensable to select a summit of sufficient importance to arouse general interest.

The Committee decided to adopt this latter theory and consequently proceeded to the choice of one of the eight-thousanders of the Himalayan range, taking into account various considerations of a technical, political, and financial character.

The following is a list of the 'eight-thousanders' with the provisional observations of the Committee:

(1) *Mount Everest* (29,002 feet).[1] Eliminated as being the object of the British expeditions;

(2) *Kangchenjunga* (28,146 feet). Eliminated on principle, having resisted the attacks of the Münich climbers whose teamwork, enthusiasm and mountaineering value would be difficult to equal;

(3) *K2* (28,250 feet).[2] Ascent regarded as of doubtful possibility on account of technical difficulties;

(4) *Lhotse* (27,890 feet). No information. Probably more difficult than its neighbour (Everest), not to speak of the political difficulties of the approach;

[1] The most recent measurements now give Mount Everest a height of 29,140 feet.

[2] Other measurements give 28,186 feet. At the moment it is impossible to say for certain whether Kangchenjunga or K2 is the higher mountain.

(5) *Makalu* (27,849 feet). Scanty information. Certainly more difficult than Everest;

(6) *Dhaulagiri* (26,825 feet). To be discarded for political reasons;

(7) *Cho Oyu, T45* (26,750 feet). Appears possible; objections being the proximity to Everest and political difficulties of the approach;

(8) *Point XXX* (26,658 feet). To be discarded for political reasons (see hereafter);

(9) *Nanga Parbat* (26,694 feet). Eliminated for the same reasons as for Kangchenjunga but with still stronger motives, considering the loss of life suffered by the Germans in their attempts on this mountain;

(10) *Point XXXIX Morshiadi* (26,592 feet). See hereafter;

(11) *K5 or Hidden Peak* (26,470 feet). To be retained and carefully studied on photographs;

(12) *Broad Peak* (26,413 feet). Not to be discarded at first sight.

(13) *K4 or Gasherbrum II* (26,362 feet). To be retained and submitted to the same examination as K5;

(14) *Gosainthan* (26,291 feet). See hereafter.

Of these mountains Dhaulagiri was the first to be examined; this peak, together with Morshiadi, Peak XXX, and Gosainthan, is in Nepal, a territory which is on principle forbidden to foreigners. Putting aside the question of diplomatic authorization the two first-named summits were decidedly attractive. They are situated one on either side of the gorge of Krishna, along which lies one of the oldest trade routes connecting Nepal with Tibet. Dhaulagiri is only 9½ miles from this road. The approach is relatively short, the railway line running to within less than 125 miles of the foot of either mountain. The region also seems to be less exposed to the monsoon than the Everest

district. The greatest difficulty was to collect sufficient data. Dhaulagiri, of which a few photographs were available, was retained on principle in preference to Morshiadi, Peak XXX, and Gosainthan; the two latter are on the Nepalo-Tibetan frontier and inaccessible except from Tibet.[1] Moreover, the last-named summit appeared to be extremely exposed to the force of the monsoon.

Makalu was the next to be considered and was the object of a fairly thorough study. In spite of the likelihood of very great objective difficulties this peak, as well as Cho Oyu, was kept on the list.

The Kara-koram group, being one of the most explored of all the chain, naturally called for special attention. It contains four summits exceeding 8,000 metres, which are situated in the centre of a vast glacier basin of relatively easy access though still necessitating a march of at least one month. The climate is normally better than in the other Himalayan regions. The technical difficulties of Broad Peak and of Hidden Peak were examined with care.

The accounts of the German attempts on Kangchenjunga and Nanga Parbat were studied for the general information that they could afford, though all thought of attempting these summits had been set aside for the reasons already stated.

Finally two summits, Nanda Devi and Rakaposhi, both under 8,000 metres but commanding interest for various reasons, were the object of a thorough examination. Nanda Devi (25,660 feet), which is in Garhwal, is the highest point of the British Empire and had successfully resisted the attacks of several British expeditions.[2] Rakaposhi (25,560 feet) lies in

[1] At this time permission to traverse Tibet had not yet been given.

[2] It was not until August, 1936, that Nanda Devi was climbed by a British-American party composed of H. W. Tilman, T. Graham Brown, A.

the extreme north-west of Kashmir, in the Gilgit district and, owing to its situation, was by no means exempt from political difficulties. On the fine photographs presented to the Committee by Ella Maillart, this peak appeared rather formidable, and as it is also well under 8,000 metres in height it was struck off the list.

Diplomatic Preparation.—The first important step was to enter into communication with the Foreign Office and the Government of India through the *Ministère des Affaires Étrangères* and the French Ambassador in London, since the greater part of the Himalayan range falls either directly or indirectly under British authority. It was also indispensable to get into touch with the Alpine Club, the Royal Geographical Society, and the Himalayan Club. It is hardly necessary to say that the Organizing Committee received a warm welcome and most efficient help from all those with whom it came in contact.

The Committee would like to express its respectful gratitude to H.E. Lord Willingdon, then Viceroy of India.

It is not possible to mention the names of all those who helped during this difficult initial phase by putting all their Himalayan knowledge and experience at the disposal of the organizers. But special thanks are due to Brigadier-General the Hon. C. G. Bruce, C.B., M.V.O.; Colonel E. L. Strutt, C.B.E., D.S.O.; Lieut.-Colonel Kenneth Mason, M.C., R.E.; Major Kirkbride; Dr. T. G. Longstaff; Mr. Hugh Ruttledge; and Messrs. M. Kurz, J. Belaïeff, P. Bauer, Professor A. Desio, P. Ghiglione, Lefevre, and Cosme.

The first task undertaken by the Committee was the difficult one of obtaining authorization for an eventual expedition to

Carter, A. B. Emmons, C. S. Houston, W. F. Loomis, P. Lloyd and N. E. Odell.

Nepal. Circumstances appeared favourable. Following interviews with Monsieur Cosme of the French Diplomatic Service, and with the late Monsieur Sylvain Lévi, professor at the Collège de France, an intimate friend of the Maharajah of Nepal, a letter was dispatched on the 2nd of May, 1934, to the Consul-General of France at Calcutta, who was then shortly due to go to Katmandu. The answer received was unfavourable. Although the Maharajah had no personal objection to the Expedition he nevertheless refused the desired authorization on the grounds of the superstitious nature of his people. The Nepalese apparently attributed the many calamities that had befallen their country of recent years to the British Everest Expeditions which had unhappily coincided with all sorts of epidemics, floods, earthquakes, &c. The summits in Nepal were therefore discarded *ipso facto*.

Some time later, following the application for permission for an expedition in Sikkim, the Committee was informed that the Maharajah of this country was not disposed to grant his authorization. This refusal surprised the Committee, for the Germans, in 1929 and again in 1931, had had no difficulty at all in obtaining permission for their expeditions.

In the meantime the president of the Committee, during a visit to Nanking in the summer of 1934, had taken advantage of his position as Counsellor to the Chinese Government to apply to the governments of Nanking and Lhassa, through the sub-Committee for Mongolian and Tibetan affairs and with the support of the president of the Chinese Council, H.E. Mr. Wang Ching-wei, for permission to conduct an expedition to Tibet with a view to an attempt on Makalu. This permission was granted following the presentation of a very complete report of the proposed intentions and itinerary of the Expedition. Entry into Tibet was to be effected via India and the route to be

followed coincided in great part with that of the British Expedition to Mount Everest. Subsequently Makalu had to be discarded for technical reasons. But the important fact remains that the Dalaï Lama and the Chinese authorities, after a thorough examination of the question, granted permission for a French expedition to penetrate into Tibet to attempt one of the big summits—actually the fifth highest in the world—situated on Tibetan territory in the neighbourhood of Mount Everest and the Nepalese frontier.

Finally the Committee came to the conclusion that the Kara-koram, in spite of its inconveniences, offered a better choice of mountains, at any rate as regards the approaches, than the other Himalayan *massifs*. Authorization was sought, therefore, for an expedition to this region for 1935; but the Committee was informed that the project would have to be put off. An expedition to the Kara-koram entails a long approach and requires a very considerable number of porters. The district is extremely poor and the mobilization of so many men, coupled with the quantity of food needed for their nourishment, weighs heavily on the scanty population. In consequence the authorities had decided, on principle, to allow only one expedition a year. A scientific expedition had been to the Kara-koram in 1934 (Dainelli). Another was anticipated for 1935 (Visser). In these circumstances the Committee decided to put in a demand for priority in 1936, which was accorded, thanks to the postponing of a new German expedition to Nanga Parbat.[1]

From this moment the definite choice of a summit was possible. K5 or Hidden Peak (26,470 feet) appeared to offer a fair chance of success. Although it is the second highest summit in the Kara-

[1] This expedition was announced for 1937 and the Tibetan authorities had accorded their permission for another British expedition to Mount Everest in 1938.

koram it did not appear hopeless—in fact, far less hopeless than some other summits, inferior in altitude, which had been specially brought to the attention of the Committee by various authorities as being suitable objectives for the French Expedition. Consequently the members of the Committee, after the autumn of 1935, concentrated all their efforts on the organizing of an expedition to the Hidden Peak, the necessary diplomatic arrangements having been rapidly concluded.

The technical preparations were immediately taken in hand and the Committee now came up against the formidable difficulties of the financial problem.

The Financing of the Expedition.—Since its first meeting (20th December, 1933), the Committee, taking the average between the budgets of the German expeditions to Kangchenjunga and those of the British expeditions to Mount Everest, came to the conclusion that a sum of about 800,000 francs (about £11,000) [1] would be the amount needed for the French Expedition. It is rather remarkable that this figure corresponded exactly with that of the actual cost of the enterprise.

The sum of 800,000 francs was that needed to carry out an expedition of the most expensive type, that is to say an expedition to the Kara-koram, the most distant region, requiring a large number of porters and entailing great expense for provisioning.

The financing of an enterprise of this nature largely depends on the attitude of the general public. In England, where the expeditions to Mount Everest made a direct appeal to the sporting, and in a way to the Imperial, instincts of the public, the atmosphere was sufficiently favourable for the Mount Everest Committee to be exempt from all serious preoccupations of a financial character. A report dated 5th February, 1937, contains some very interesting information relative to this subject. The

[1] In 1935 the £ was worth approximately 75 francs.

two first expeditions—the reconnaissance of 1921 and the attack of 1932—called for a sum of about £18,500 each. Roughly £5,700 was received from the subscription lists opened by the Alpine Club and the Royal Geographical Society, the rest was obtained by the sale of copyright on books, articles and photographs, and by the profits from lectures, films, &c.

The German Bauer expeditions were helped by a very considerable contribution from the Sporting Association of the German railways. The Dyhrenfurth expedition to the Karakoram (1934) was subsidized by cinema companies. In Italy the Government substantially supported the recent scientific expeditions. And again the Belgian exploration of the Ruwenzori in Africa benefited by an important grant from the reserves set aside for scientific research. But in France, where the public at large takes no interest in enterprises of this description, many people considered that a campaign amongst the Himalaya ought to be a purely private enterprise at the expense of those directly interested—forgetting that the very small number of people rich enough to indulge such a luxury are not necessarily mountaineers.

The Committee had very definite principles regarding financial matters which they ardently desired to put into practice. They hoped to raise the greater part of the necessary funds—like the Mount Everest Committee—by subscriptions drawn from amongst mountaineering and sporting circles, alpine and sporting organizations, from the sale of copyright, and possibly from some official grants. The financing would thus have been of a semi-private nature without any need for excessive publicity. A fund would be formed from which the expenses of the first expedition would be deducted in advance and the profits from films, books, articles, photographs, lectures, &c., would then go towards creating new reserves, permitting the organizing of a second expedition, and so on. The Committee never once thought it

possible that one single expedition would exhaust the activities of French mountaineers in the Himalaya. Neither was the Committee bold enough to think that this first French expedition would be more fortunate than others by winning straight away, without experience, a victory which would enable French mountaineers to rest on their laurels. On the contrary, the opinion of the Committee had always been that France ought to enter, for a period of at least several years, into the lists of international Himalayan exploration, and that many expeditions would be necessary for the participants to acquire sufficient experience to give them a fair chance of success.

Perhaps the opinion of the Committee was too idealistic—anyhow it very soon became apparent that, if these ideals were insisted upon too rigorously, the Expedition would run a great risk of failure through lack of the necessary funds. To the great regret of the Committee the financial campaign had to be considerably revised. The official subsidies, which up till then had been expected to be quite small, began to take a far more important place in the budget of the Expedition. At the same time the subscription list had, of necessity, to be extended beyond purely sporting and mountaineering circles. From this moment the need for advertisement and publicity on a large scale—which was what the Committee least desired—became evident. In other countries people smiled at the ' national ' character given to the Expedition, at the ' noise ' that the Organizing Committee had to make, and at the constant efforts made to obtain private donations and even official support. The members of the Committee would have infinitely preferred to work quietly and in the background. They were the first to regret that the financing of this Expedition was not as simple a matter as for most foreign expeditions. It is perhaps scarcely believable that, only four months before the date fixed for the departure of the

first contingent of the Expedition, we had not yet collected a third of the funds required, and that in consequence we seriously contemplated a small reconnoitring expedition consisting of only three or four climbers, to some peak of secondary importance; that we were not able to give the first orders for equipment before about the 15th of November, 1935; and that even then we were not sure of being able to pay for what we were ordering. This chapter in the history of the first French expedition to the Himalaya is better left untold.

Choice of the Team.—The choosing of the members of the Expedition was one of the most important, difficult, and responsible tasks that fell to the lot of the Committee. It was decided that no preference should be given to mountaineers of particular brilliance who had accomplished sensational exploits of an acrobatic nature, especially on rock. On the contrary the idea was rather to form a team of strong, enduring men—willing 'snow-plodders', having to their credit long hard trips in the Alps, with bivouacs at high altitudes. Acrobatics have no place in the Himalaya; this type of mountaineering is exacting enough in our Alps—and at higher altitudes becomes totally impossible. It is probable that, if the moderate rock pitches of a classical ascent such as the Grépon, to take an example, had to be negotiated at a height of between 25,000 and 26,000 feet instead of between 10,000 and 11,500 feet, the organs of the human body would be strained to a dangerous degree or even beyond all possibility of recovery. Moreover, the time has fortunately not yet come in the Himalaya when, all classical routes being exhausted, one is reduced to looking for acrobatic variations as in the Alps. In the case of the Hidden Peak, the rock buttress some 6,000 feet in height which gives access to the upper plateau, and a few snow or ice traverses, were considered as requiring a sound technique, but no acrobatic passages were

contemplated. The mountaineering standard of the candidates was not the only point to be taken into account. It was desirable also to consider the psychological aspect of the men, the diversity of their temperaments, their probable reactions—individual and collective—and their different mentalities and tastes. Investigations on these lines were made possible by the fact that nearly all the candidates were comrades of the G.H.M.[1] and that the members of the Committee had on many occasions made big trips in their company. Previous experience of Himalayan expeditions has proved that the difficult conditions under which a little band of men are compelled to live for many months exercise a great influence on their morale. Self-control, good temper, sociability are all put to the test, and any weakening of these qualities may endanger the co-operation and discipline of the party. For easily understood economic reasons preference would be given to those capable both of taking an active part in the climbing and at the same time of filling specified rôles in the auxiliary forces of the Expedition.

Taking into account all these considerations the following team was assembled:

HENRY DE SÉGOGNE. Leader of the Expedition. President of the G.H.M., Vice-President of the C.A.F., experienced mountaineer (well-known for his first ascent of the Aiguille du Plan by the north-west face[2]), possessing the necessary authority and easily capable of shouldering the responsibilities and difficulties of the position. This choice proved to be the best that could possibly have been made.

PIERRE ALLAIN, leader of many exceptionally brilliant trips in the

[1] Groupe de Haute Montagne.

[2] This face was the scene of Mummery's famous attempt recorded by Collie under the title *Three Days on an Ice Slope.*

Alps (amongst which the first ascent of the north-west face of the Drus, which have won for him a place in the first rank of French mountaineers). His profession marked him out to be the expert on questions of equipment, camping outfits, &c.

LOUIS NELTNER, Professor of Geology at the École des Mines at St. Étienne, geologist and cartographer of the Expedition. Besides having made numerous remarkable ascents in the Alps, Neltner had visited and mapped the Atlas range in Morocco and also taken part in an expedition to the Caucasus.

JEAN LEININGER, frequently the companion of Pierre Allain during his first ascents. Could second the latter very efficiently in all matters of technical equipment.

JEAN CHARIGNON had to his credit a number of first-class trips and climbs of exceptional difficulty, and would put at the disposal of the Expedition his knowledge of botany.

JEAN DEUDON, excellent all-round mountaineer and first-class climber, had taken part, with Neltner, in a recent expedition to the Caucasus.

JEAN CARLE, assistant Medical Officer, to be counted on for any medical attention needed at the higher camps.

In addition to the climbing team the Expedition included:

MARCEL ICHAC, the well-known specialist in mountain films as cinematographer. An excellent mountaineer, he would be capable of following the attacking parties during the final assault and of filming all the phases of the ascent.

DR. JEAN ARLAUD, of Toulouse, Medical Officer. As a rule Dr. Arlaud would remain at the Base Camp or possibly at an advanced Base and would, if necessary, take charge of this camp. An indefatigable Alpinist, or rather 'Pyrénéiste', and an excellent skier, he would always be ready to go to the high camps in order to fulfil his medical duties, and even to take part in active operations at high altitudes if required.

JACQUES AZÉMAR, Quarter-master Secretary, in charge of the Base Camp and entrusted with the supervision of all 'behind the lines' services, which duties he performed with the greatest competence.

Finally the Expedition was accompanied by an English liaison officer appointed by the Indian Government. Captain Streatfeild, who is mentioned in the next chapter, filled this rôle.

During the early days of 1936 all the members of the Expedition, after preliminary health tests, were submitted to a severe medical examination by Dr. Collet, chief doctor of the Le Bourget airport and Drs. May and Lagarde. Shortly afterwards the Expedition left for India in three groups at intervals of a few weeks.

II

The Journey to Base Camp

I. BOMBAY AND DELHI

We disembarked at Bombay after a voyage of eleven days—a voyage too often described with romantic exaggeration by novelists in search of something new or sensational to offer the reader.

We had dreamed of an enchanted country rich in legends, treasures, and Fakirs, but from the moment we first sighted land, it became more and more evident that Bombay and its surroundings were little short of commonplace. The town itself is entirely devoted to commerce and abounds in wealth. Our thoughts, however, were all of the Great Adventure that lay ahead of us, and we looked forward eagerly to beginning our acquaintance with India.

The gangway was barely in place, when Captain Streatfeild, our liaison officer whom the Government of India had appointed to be our close companion for many months, was announced. Of average height, thickset, dark, with sparkling eyes and free of gesture, he did not present at all a typically English appearance.

Summoning all my knowledge of the English language, I described briefly the position with regard to our Expedition. Jacques Azémar, Jean Carle and myself formed the vanguard; the rest of the party would follow in three weeks' time, with

the exception of Jean Charignon and Jean Leininger, who were due in ten days.

We had been informed before leaving France that at least three weeks in India would be required to complete all the necessary preparations. The preliminary work fell to the lot of Jacques Azémar and myself. Three other members would also be needed for various jobs. Carle was to go to Darjeeling to choose the Sherpas destined to serve as porters at high altitudes. Having done this, he would continue to Srinagar, where he would be joined by Charignon and Leininger on the 21st of March. These three would then organize a small expedition to convey in advance from Srinagar (or in any case from Skardu) as far as the Baltoro glacier the many tons of flour that we should need whilst traversing the high Baltistan valleys, which are too poor and barren to be capable of supplying the quantities of food that we should require for our 500 to 600 porters.

Scarcely had I finished this short *résumé* when Streatfeild, with his quick intelligence, his power of simplifying and arriving immediately at the essentials of the case, explained that most of what I proposed was either impossible or at all events unnecessary. During the winter months enormous quantities of snow had fallen and would be long in disappearing. The Zoji-La [1] would certainly still be impassable for a caravan of laden coolies —so from the very first the shadow of this dreaded Pass was cast upon us. It would be useless, according to Streatfeild, for either the main body of the Expedition, or even for the preliminary provisioning party, to leave Srinagar before the end of April

[1] A Pass at a height of 11,000 feet situated to the north-east of Srinagar, four days' march from this town. It marks the lowest point of the great Himalayan range, the Kara-koram mountains being geographically apart and to the north of the Himalaya and separated from the latter by the valley of the Indus.

at the earliest. Once on the spot I could not fail, he insisted, to see the prudence and wisdom of his advice and to revise my plans accordingly.

However, it now turned out that there would be no need for the provisioning party, as the British Resident of Kashmir, on the request of our Committee in Paris, had agreed to arrange for the transport of the flour to the required points. We learned also that Mr. Hugh Ruttledge, leader of the 1936 Mount Everest Expedition, had very kindly undertaken to select our porters whilst organizing his own party. At first sight this arrangement might have appeared detrimental to our own interests, as no one could reproach Mr. Ruttledge for giving preference to the needs of the British Expedition, with the result that the standard of the porters selected for us would suffer. But subsequent events showed that our fears were entirely unfounded. Our Sherpas were an extraordinarily able and courageous set of fellows, and they backed us up splendidly throughout: judging from our own experience of these wiry little men we could only marvel at the fine stuff the best of the Everest porters must have been made of. It is with a very grateful heart that I thank Messrs. Kydd and Ruttledge for their aid.

Except for the news of the bad snow conditions on the Zoji-La and the possible need to delay the start of the Expedition, things were simplifying themselves considerably, and our future prospects appeared bright.

The fact that the friendly good-will and support of the British authorities never once flagged greatly helped to strengthen my optimism. Captain Streatfeild kept watch over everything, and by putting his remarkable intelligence and his indefatigable activity at the service of the Expedition smoothed away many difficulties from our path.

A few hours sufficed to attend to our business in Bombay and

to complete our purchases. The British customs officials smiled on us benevolently, for the Indian Government had granted total immunity from duty to all goods appertaining to the Expedition; the P. & O. Steamship Company gave permission for transhipment *en route* for Karachi of all our goods immediately on their arrival at Bombay; and the Imperial Tobacco Company presented us with 50,000 cigarettes for the use of our porters.

Before leaving this great commercial metropolis we had time to visit the Brahman and Buddhist excavations of Elephanta and Ellora, the latter extending for a length of about 2 miles underground. This was our first experience of the many fantastic wonders of India.

DELHI

During the journey from Bombay to Delhi we sampled the comforts of the Indian trains which, had it not been for the intolerable dust, would have compared favourably with those of our own continent. I must admit, however, that the monotony of the immense dry plains which we traversed, coupled with the dust and heat, was such that I fell to initiating Streatfeild in the joys of 'Belotte'[1] at the expense of contemplating the country-side. Nevertheless, we were delighted with all that we now saw—the picturesque stations; the turbanned crowds that filled the carriages; the water-sellers with different water for Hindoos and Mohammedans; the casual way in which the train stopped, without any respect for the time-table, just whenever the British travellers felt like breakfasting or lunching. All this gave us the impression that we were, at last, coming into contact with real Mother India.

To recount our proceedings in Delhi would be to tell a long story of English courtesy and charm. I should like here to offer

[1] A French card game.

my very sincere thanks to Mr. Caroe, Secretary of State to the Department of Foreign Affairs, and to Major Gueterboeck, General Secretary of the Himalayan Club, who received us with great cordiality and did everything in their power to help us. Many problems scarcely dreamt of in Paris were to find their solution at Delhi. First of all there was the forwarding of the news bulletins of the Expedition, of which *L'Intransigeant* had secured the sole rights. The last telegraph office which we should pass was that of Skardu, quite thirteen marches away from Base Camp, and the last post office was at Shigar only one stage farther on. We had both receiving and transmitting wireless sets and on the possibilities of using these depended the facility and rapidity with which we could dispatch our telegrams. Permission to use the sets was granted, but with certain conditions. We had next to consider the nature and distance of the ground between Base Camp and the nearest suitable wireless station, which, together with the capacity of our apparatus, would determine the extent to which communication by wireless could be used. Unfortunately this examination led to the abandoning of our apparatus at Srinagar. We had thought at first that the station at Lahore would be capable of receiving our messages, but the distance turned out to be too great.

There still remained the possibility of Srinagar, but the barrier of hills intervening between this town and our Base Camp presented too considerable an obstacle, and we had therefore to give up the idea altogether. Beyond Srinagar we should find no experienced wireless operator; so we were obliged to set aside all thought of using wireless as a means of communication with civilization. We should of course take with us our small portable Radio telephonic (ER.40) sets for use between the Base and high altitude camps.

Telegrams at reduced tariff were accorded only to press

agencies and not to newspapers; the full tariff represented an expenditure quite out of proportion to our means and so we were obliged to adopt the following slow and complicated system. From Base Camp letters and telegrams alike were carried by runners as far as Shigar, where the Kashmir Government Post Office authorities took charge of our communications and forwarded them to Skardu. From here the letters went slowly by the usual channels, and telegrams were transmitted by telephone to Mr. Price,[1] agent at Karachi for the firm of Louis Dreyfus, and forwarded by him to the offices of the 'Air France' line.

This system, whilst being the best we could devise, was nevertheless deplorable. The time needed for our communications to reach their destination amounted to fifteen days for telegrams and twenty-five days for letters. As regards telegraphic communication with India, this was so slow that we received the indications concerning the monsoon, sent to us by the Meteorological Service from Poona, on our return journey. We were at that time already well informed by the English newspapers of the retreat of the Everest Expedition. The month taken by the monsoon to travel from the eastern to the western extremity of the Himalaya thus enabled these papers to warn us of its approach in time.

Next came the problem of rights and facilities for filming. The Expedition had the advantage of numbering amongst its members Marcel Ichac, whose talents as a film expert were already well known. He had with him a considerable equipment, a detailed description of which will be found in Chapter XI, and we were anxious to obtain full permission for its use. No diffi-

[1] We have to thank Messrs. Mossé and Price, agents for the Louis Dreyfus firm at Bombay and Karachi respectively, for the immense services they rendered—the one for the general organization of the expedition and the other for the transmission of our messages.

culty was raised, the only stipulation being that all our films and photographs should be developed before we left India. This stipulation appeared to perturb Ichac greatly, and certainly it was doubtful whether we could trust such important work to the local photographers of Bombay. Fortunately the point was not insisted upon, and the only condition imposed was that all films and photographs should be taken with the knowledge and permission of our liaison officer.

Finally, there was the problem of local customs. Kashmir, in the territory of which the Expedition would take place, is a semi-independent state under the nominal sovereignty of a Maharajah, a subject of the British Crown, and has retained control of its own customs and excise. Could we hope to be treated with the same favour as had been accorded us by the imperial customs? This question was only decided later at Jammu, the Maharajah's Winter Capital.

A host of other problems concerning the two governments had also to be examined at Delhi, only to receive their final solution later on at Srinagar or Jammu.

I left Delhi on the 27th of March accompanied by Charignon and Leininger, who had joined us there. Our baggage was encumbered with all sorts of purchases, and in particular with presents destined for important personages. We had also acquired a water filter, which Carle had chosen with great care, but which absolutely refused to do the work expected of it the moment this became of real importance.

Carle stayed behind to receive Ichac, who had left his companions of the last detachment on their way to Karachi, and was due to arrive shortly in Delhi by way of Agra, after taking the first scenes of the film on the way. Azémar and Streatfeild had preceded me on the road to Kashmir. Their mission was to get into touch with the government of the Maharajah and submit

various questions to his ministers. Azémar would join me on the following day at Rawalpindi, the railway terminus, whence we should continue by road to Srinagar. Streatfeild left us for a time in order to meet our comrades of the last group at Karachi and help them with the transport of the bulk of our luggage to Srinagar.

II. TOWARDS SRINAGAR

The Frontier Mail deposited us at Rawalpindi on the borders of the North-West Frontier Provinces, which are well known for the permanent state of guerrilla warfare existing between the Afghan tribes and the English troops. We were still 180 miles from Srinagar, the capital of Kashmir—a distance that had to be covered by car. At Rawalpindi one is still in the Punjab plain; but no sooner had we left it than we were abruptly confronted by the first barriers of foot-hills of the Himalaya.

We immediately came upon an undreamt-of land, a land of huge dimensions that had undergone important geological changes long after France, as we know it, was fashioned. Here everything was out-size, exaggerated: the height of the mountains, the steepness of the slopes, the size and swiftness of the torrents. Ahead of us was a buttress around which the road made its way—there are many such in any part of our Alps. But here it took us treble the time to cover a distance apparently equal to those we were familiar with in our Alpine districts; our eyes were unaccustomed to such vast proportions.

For the most part the road followed the deep-cut valley at the bottom of which swirled the Jhelum, a mountain torrent as large as one of our own big rivers. It was a curious road, and often anything but reassuring. In many places it was constructed several hundreds of feet above the bed of the swiftly running river on unstable ground, across immense scree slopes or old moraines,

its one and only sound foundation being the built-up walls supporting it; and even these were always crumbling away and in constant need of repair.

But at last, after a long day rendered depressing by the torrential rain, the walls of the valley opened out and the road, henceforth sheltered from all danger of destruction, penetrated into a vast basin, formerly the bed of a lake, surrounded by mountains and dominated by Nanga Parbat (26,694 feet), which forms a gigantic landmark at the western extremity of the great Himalayan range.

Leaving behind the wild barren country where there was no possibility of cultivation, we now came to a more familiar landscape, with men and women working up to their waists in water in the rice-fields. Night had fallen and in the half-light we caught our first glimpse of the great town of Srinagar, the capital of Kashmir. In the chilly darkness we crossed the Jhelum, and some 400 yards farther on the car stopped in front of the Nedou's Hotel. We were at once surrounded by a crowd of natives which even the incessant rain had not succeeded in dispersing. One was a hair-dresser, another had postcards to sell, another copper ware, &c., &c. Major Lander, Director of the Kashmir Express Company, who had come to Delhi to offer his services and whom I had appointed as our commercial agent, was right when he said: 'At Srinagar everyone awaits your arrival with the utmost impatience. Since the announcement of a French Expedition there has been great rejoicing and hopes are high that it may prove to be another such Godsend as the Citroën Expedition, which by its prodigality enabled the merchants to amass what for them were tidy little fortunes.'

III. SRINAGAR

The next morning at 9 a.m. ' Peychaud Sahib ' was announced. I made my way with difficulty through the crowd of merchants who had already been awaiting my appearance for several hours, to find myself in the presence of our compatriot René Peychaud who, during our whole stay at Srinagar, encouraged and helped us with his advice, his friendship and his authority.

Peychaud warned us at once against these troublesome merchants who, it seems, had been accumulating for months stocks of junk to sell to us. Provided with all sorts of valuable hints, we said good-bye, with the hope of meeting often again, for we took to each other from the first. I am only afraid that subsequently I may perhaps have taken too much advantage of our friend's kindness.

We were so pestered by the swarms of beggars crowding around us at every moment that I decided at once to leave the hotel and to hire one of the hundreds of house-boats, which for the stranger form one of the outstanding peculiarities of Srinagar.

Why are there so many house-boats in the town and so few of those charming little bungalows, with their flowers and general air of well-being and tidiness, which everywhere in British India reveal the presence of the English ? The reason is that we are in Kashmir, and this state, although under English dominion, nevertheless retains many of its own laws, one of which forbids any foreigner to own land.

Life runs smoothly and easily aboard these floating homes. Every one anchors at the place of his choice—on the Jhelum at the foot of some picturesque mosque—near the polo ground—in one of the many canals running across the town which form the chief means of transport—or better still on one of the lakes encircling the town.

On leaving the hotel we took a house-boat in the centre of the town, but we soon moved our home, the *Pinafore*, to the Dhar Lake about a mile outside. From here, looking over the rippling water we could contemplate the surrounding mountains, which were so covered with snow at this season that they seemed of immense height and gave to Srinagar the aspect of an Alpine town like Grenoble or Innsbruck.

Moving house was a picturesque affair: twelve coolies took charge; facing aft and leaning on long boathooks reaching the bed of the canal, they pushed the boat forward by walking along the narrow boarded space that runs the whole length of the boat. On reaching the end they returned quickly to their starting-point and began again. They performed their movements to the regular rhythm of a Mussulman litany uttered in a monotonous sing-song.

Our situation had the great advantage of enabling us to enjoy a little rest and quiet, and of forcing all the undesirables who wanted our custom to keep their distance. We were thus able to lead a simple healthy life—the best preparation for the troubles and fatigues which lay ahead of us.

IV. LAST PREPARATIONS

April 8th.—Yesterday the *Pinafore* was promoted to the rank of flagship to a fleet composed of three house-boats and a kitchen-boat. All the members of the Expedition were now united at Srinagar.

We still had various things to see to, and numerous purchases to make. Hosts of details needed attention and continually complicated our preparations, which were nevertheless soon well under way. We obtained all the necessary permissions, our 13 tons of goods were due to arrive the following day, and in a few days all would be in readiness.

The conditions, however, were anything but favourable. During the past few months considerable quantities of snow had fallen, causing many avalanches and at the same time the season was extraordinarily late. Contrary to all precedent the winter still continued on the heights, and the sun, on which we were counting to clear the snow from our route, had not yet put in an appearance.

I had hoped to be able to leave Srinagar on the 13th of April; but all our friends there—Peychaud, Major Hadow, &c., joined with Captain Streatfeild in advising us to put off our departure a few days longer. No doubt the Zoji-La, which constituted our first obstacle, would under present conditions be extremely difficult to cross with our 500 heavily-laden porters. But perhaps a few days would suffice to change this state of affairs. We really could not wait for the sun to clear our way. However, the insistence of these friends and their fear of our augmenting the list of some 650 casualties due to winter avalanches in Kashmir alone compelled me reluctantly to give way. We decided, therefore, not to leave until the 17th of April; so we had more than sufficient time to complete all our preparations.

Except for a few hours taken by my companions to revisit the town, we spent our time between the house-boats and the garages where our cases of stores were deposited. These cases did not entirely escape the Kashmir customs, but they came through on the appointed day, as big as houses and reminding one of the vastness of the steamer's hold which they had been built to fit.

Once unloaded and broken up, the small cases inside were set in rows, opened, listed, and their contents rearranged so that the loss of one case would not be a catastrophe. Our equipment and provisions were submitted to a severe census. Nothing must be forgotten—an oversight at this moment would have had

the most serious consequences and might even prove fatal to the Expedition. As the work went on I received lists of what had still to be bought. Arlaud, in command of the commissariat, arranged the cases so that each contained thirty-three meals. This was done from a previously prepared list of menus and of the ingredients required for each meal.

Meanwhile our Tigers arrived, conducted by their sirdars and accompanied by an interpreter—thirty-five little men, thick-set, yellow-faced, bright-eyed, clothed in the most astonishing fashion, covered with amulets and each armed with a long curved knife capable of cutting a thick branch at a blow.

At once all sorts of questions cropped up. Would the foot-gear we had brought from France fit their feet, which as we saw at once were extremely short and broad? Would it be possible for them to wear the expedition equipment? Would they like the varied European food which we had provided for them—these Buddhists whose religion forbids them to eat anything that has been killed? A host of such problems arose which had to be settled in a few minutes; one of the most important was how to secure the transport of the money for the payment of our porters. Those who had already been to the Kara-koram had told us that unless one can pay the coolies in bank-notes one has to take all one's money in coin locked up in iron-bound chests. I had just bought some of these chests and they certainly seemed to make a great impression. Wages for 500 porters for thirty-five days represent about fifteen loads which, more than all others, would run a great risk of being lost—for somebody's profit. Such things had already happened. However, thanks to friend Peychaud this task was to be greatly facilitated—though not without a good deal of discussion.

It was arranged that I should pay the coolies in notes as far as Skardu. I had also been allowed to make out a cheque to the

Treasure Officer of Srinagar, who gave me a letter of credit to the Treasurer of Skardu. Thus as far as that town, which was more than half-way to Base Camp, we should have no difficulty over money. We were in every possible way favoured and supported by the Government of Kashmir and its officials, and this was a great help to us.

We had some difficulty over the recruiting of our army of coolies for the passage of the Zoji-La, but here again Peychaud was invaluable. He obtained the promise of the Governor of the Province of Srinagar to take charge of the recruiting of the coolies, at the official tariff of 7 rupees for the crossing of the Zoji-La, five marches from Srinagar.

Once at Dras on the other side we should be left to our own resources and should have to get along as best we could.

Whilst my companions, with the help of the Sherpas, who showed themselves invaluable from the very first, attended to the cases, Arlaud, accompanied by Azémar as guide and interpreter, made the round of all the stalls in search of spices and seasonings, each of which he conscientiously sampled. I, for my part, with the aid of Streatfeild, attended to the engaging of the permanent personnel of the Expedition—those destined to remain with us until our return to Srinagar. We needed two Shikaris (head-porters), cooks, post-boys, and a sweeper—for in this country none but those whose special task it is would dream of lowering themselves by attending to certain cleaning operations which were part of the sweeper's duty. A crowd of the most unattractive-looking men applied for these jobs. With the exception of a few, who were engaged immediately, they were a lot of ruffians. Each candidate was followed by a group of cronies who took it upon themselves to inform me that the competitor for the job coveted by their particular friend was a

thief, that he had stolen money-bags, or that on the return of some previous expedition he had set up a grocer's shop with his ill-gotten gains and that he would very probably do the same again. Not very encouraging all this—but we had no choice, for it was six to one and half a dozen to the other. And let me say here at once that experience showed that one could by no means judge by appearances, for our personnel proved of irreproachable honesty and devotion.

It was now necessary to clothe all these fellows. We bought shirts, picturesque costumes from the bazaars occasioning terrible jealousies, blankets and chaplies—leather sandals which are the national footgear. All this gave rise to the most appalling disorder, which it was impossible to remedy. The muddle would have been much worse had it not been for the presence of Major Lander, our commercial agent, who kept off the crowd of merchants. These made a bee-line for Deudon and even more for Charignon. Fifteen boats were moored permanently round the house-boats at a respectful distance. The moment Charignon appeared there was a rush to surround him and to sell him—what? All sorts of atrocities—articles of copper-ware, bronze, and even of papier-maché, a local speciality—and Charignon, infected by some germ of buying madness, could not resist the temptation. At times the fight for advantageous positions became so fierce that we had to send the whole lot packing, but they only kept off for a while and soon came back to the attack.

These happenings usually took place after our lunch, during which the pirates waited with patience while Charignon finished his last mouthful. But no mouthful was the last—either for Charignon or for Deudon! Their appetites were insatiable. Mountains of rice disappeared, no matter how strongly seasoned. Later on Arlaud brought them to see reason. Allain, the reasonable, considered the matter with despair—he, the vege-

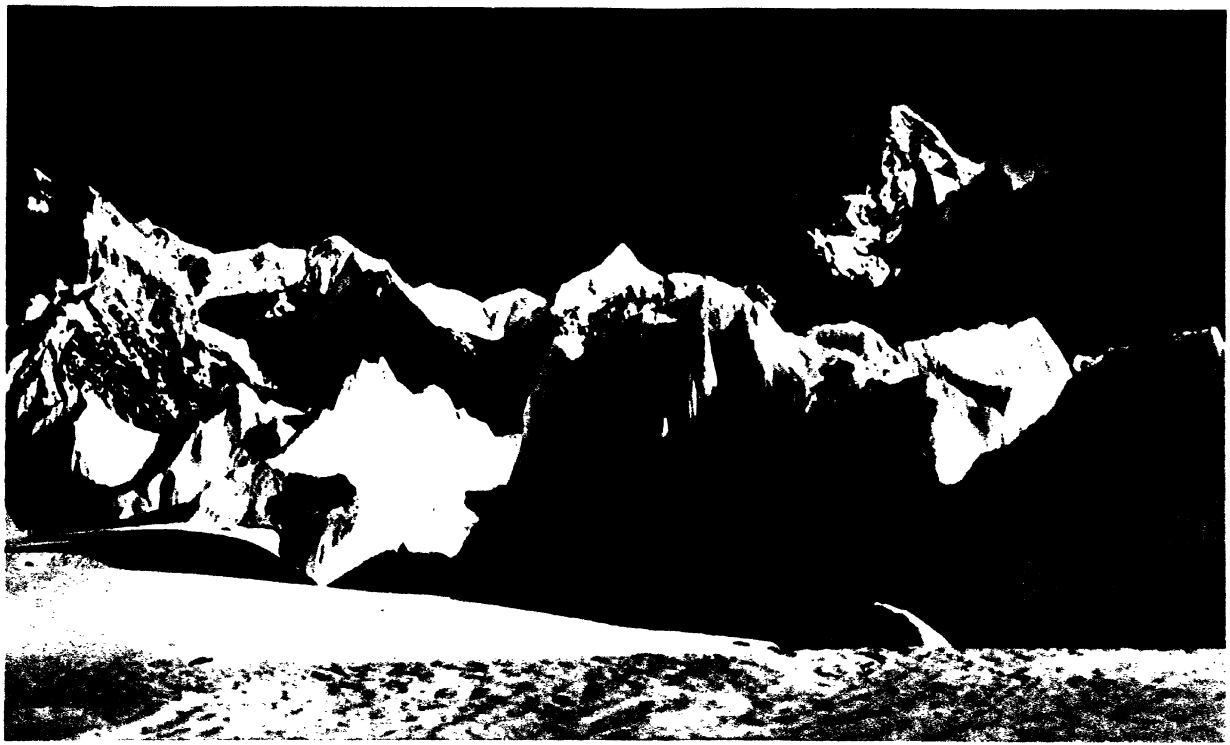
tarian, the lover of porridge, kept himself well in hand. One day a dish of vegetables was served. Spinach ! Allain licked his lips in anticipation. He helped himself liberally. Hardly had he put his fork to his mouth when his lips were convulsed in an awful grimace. Spinach indeed ! More like green vitriol. . . .

But we all got used to this healthy life, spent between sorting and packing our goods in the day-time and in the evenings visiting our friend Mahatta, the photographer of Srinagar, or some picturesque corner of the town, or at the temple of Martand. Here it was a treat to see Charignon and Leininger, our two Leica specialists. They went quite mad—possessed by the devil of photography. Just think of it—forty-eight views to take without having to recharge the camera ! They were to be seen, their eyes glued to the view-finder, their fingers to the trigger. And they both insisted on taking exactly the same photo, from exactly the same distance, at exactly the same angle, and with exactly the same exposure and stop !

Ichac was also in his element with his Rolleiflex, and his cinema apparatus, which followed him everywhere on the shoulders of his faithful Sherpa, Tchang-Tsering. But filming is quite a sport in Kashmir, where conditions are not by any means always favourable. One day, while visiting the temple of Martand I saw Ichac disappear into a shop, like Ali Baba into the jar. Later on when crossing the town we noticed a crowd. It was Ichac, his tripod and his camera surrounded by the whole population, while he implored assistance to disperse the mob, which scattered, only to re-form immediately at a distance.

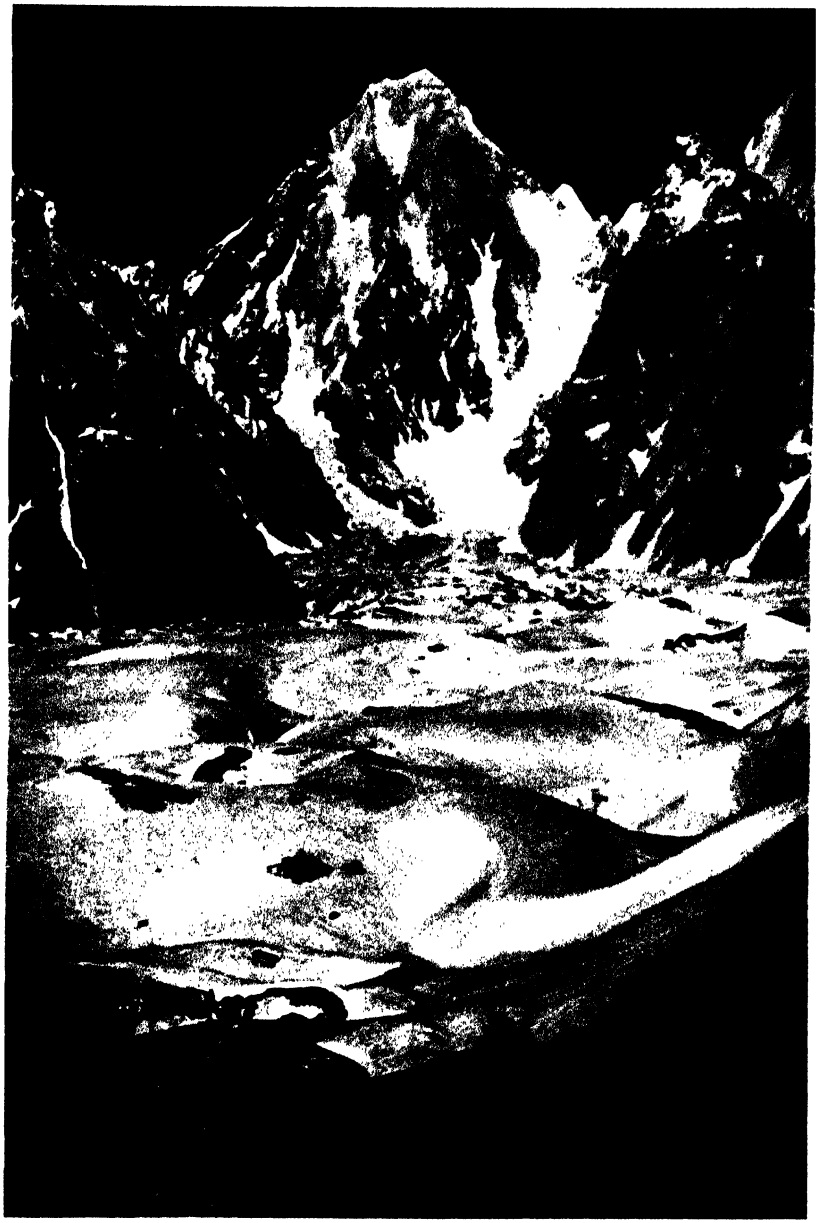
We often saw him thus in the streets of Srinagar, close to the stalls so characteristic of the town, on the old wooden bridge trembling under the weight of the crowd which closed round him obliterating his view, or again at the great Friday fête

The Mustagh Tower



K2 and the Seracs of the Baltoro Glacier

Lower Buttresses of Bride Peak from near Base Camp



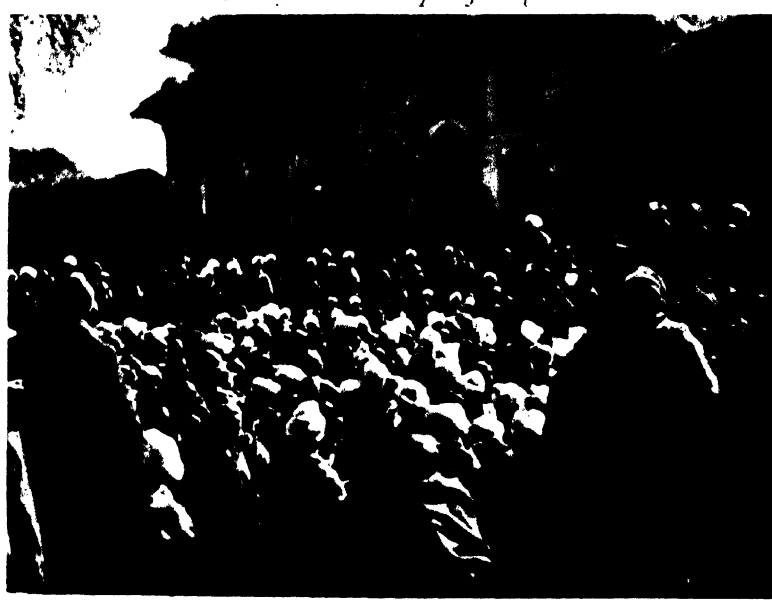
Gasherbrum IV

Golden Throne

A Balti smoking his Pipe

a. The Old Wooden Bridge over the Jhelum at Srinagar

b. Friday at the Mosque of Hazrat Bal



a. A Native of Olthingtham

b. A Typical Balti

which brought the Mussulman population to the holy mosque of Hazrat Bal. They came on foot and by shikara across the lake to participate in the prayers and to enjoy the gaiety of the market. There was a continuous stream of traffic from the holy place, where the priests were describing the tortures of hell and the paradise of Allah, to the fruit stalls, amongst which circulated a variegated crowd attracted by the steaming pancakes and the succulent marzipan. Oh, unforgettable charm of Srinagar !

But Ichac did not film every day. His activities were also employed in pulling to bits and putting together again the two engines which would serve to recharge the accumulators of his cinema. He tackled this work on the after-deck of the house-boat, sitting on the floorboards whilst the nuts and bolts and smaller pieces of machinery disappeared down the cracks. The apparatus for registering sound was always in pieces, exposing its inside to full view, and invariably refusing to work. It had in the end to be abandoned.

Meanwhile the date of our departure was approaching. The cases were all weighed and in order. They then had to be grouped together, bringing the total weight of one porter's load to not more than 60 lbs. But when all the loads were ready we found that there were too many. What was to be done ?

I had thought at first that our Sherpas would be able to go unloaded as far as Base Camp, but now I decided that they must carry their own personal equipment. We thus got rid of fifteen of the extra loads, which incidentally now ran no risk of being lost. But what a business it was ! All the cases had to be opened and nailed up again, the loads rearranged and the contents renumbered. No—it is certainly no joke organizing an expedition. . . .


KARAKORAM
THE INDUS
Askoley
BALTORO GLACIER
HIDDEN PEAK
26470 ft
RANGE
Skardu
VALLEY
GREAT HIMALAYAN
Karhal
Bridge
Zoji-la
SRINAGAR
RANGE

V. DEPARTURE

April 16th.—In a week all our preparations had been completed. To-morrow we leave.

Besides myself the Expedition was made up as follows:

Nine French climbers:

DR. ARLAUD, physician to the Expedition, and also in charge of the commissariat.

Pierre ALLAIN, Jean CARLE, Jean CHARIGNON, Jean DEUDON, Jean LEININGER, Louis NELTNER, members of the attacking parties.

Marcel ICHAC, cinema specialist.

Jacques AZÉMAR, general secretary and quartermaster.

Jean Carle, already included in the climbing parties, was also second physician.

Captain STREATFEILD, liaison officer.

Two shikaris (head porters).

Two Kashmiri cooks.

One sweeper.

Four runners, who would assure the postal service, leaving the party *en route* and relaying each other.

Thirty-five Sherpas.

One interpreter sirdar, Zigmey-Tsering (nicknamed Jimmy).

One sirdar.

One assistant sirdar.

Two cooks.

There were also 512 loads, including the 1¼ tons of food for the consumption of the Tigers between Srinagar and Skardu, and 154 gallons of petrol and paraffin [1] required for use at Base Camp.

[1] The petrol and paraffin were contained in strong drums of 4 gallons each. To prevent the evaporation noted by the Second German Expedition to Nanga Parbat we used a sort of cap that was soldered on over the stoppers, thus avoiding practically all loss.

The porters, whose number would be increased in any case after Skardu, would be renewed every four or five days, according to the possibilities (in man-power) of the villages through which we passed. The first change could not be made until we had completed the five stages which would take us across the Zoji-La to Dras.

The winter conditions still existing on the Zoji-La made it impossible for more than 100 porters to cross the col on the same day, for the precariousness and extremely reduced area of the halting-places afforded shelter only for this number. I had, therefore, to divide the Expedition up into five groups which, once over the Zoji-La, would re-form again at Dras on the other side.

In the evening the vans came to take the first 100 loads, under the supervision of a few of our 'Tigers', over the 15 miles from Srinagar to the bridge of Voil, at the entrance of the Sind valley where the road ends.

April 17th.—Allain, Leininger, Carle and Deudon, who would accompany the first batch of porters, forming the vanguard of the Expedition, bade farewell to the *Pinafore* at 7 a.m. Their job was to find out whether it was possible to cross the Zoji-La, and if so to supervise the operation. Once on the other side they would stop at Dras and await the other parties. They had orders to pay the porters off on their arrival after having examined and verified each load. Allain was in command of the first party. I had absolute trust in his authority, his judgement, his knowledge of mountaineering and, last but not least, in his humanity. I accompanied the party as far as the bridge of Voil and they started off, taking with them all our good wishes, on the first stage towards the Kara-koram.

April 18th.—Neltner and Charignon left in their turn; they accompanied the second group as far as Gund, where they

remained. Here the ponies, which we were chartering as far as this village, would be paid off. Neltner and Charignon would organize each day the departure of the 100 porters, and supervise the distribution of the loads. Each porter would be given a ticket, on presentation of which Allain would remit the wages due.

April 19th.—Threatening weather. At 8 a.m. rain began to fall. What bad luck that the wonderful weather of the last few days has broken! At 10 a.m. it cleared up a little and I felt more hopeful. However, along came Streatfeild with news that conditions on the Zoji-La were very bad, and that he thought it would be wiser to put off our departure. He gave me a terrifying description of the col: avalanches, tracks covered up by fresh snow, clouds right down and thick mist, causing the caravans to lose their way. So this famous pass was doing its damnedest. I really could not understand how a pass of little over 11,000 feet could give rise to fears of such magnitude—even in that tardy season; but under pressure from Streatfeild, who was backed up by all our friends, I decided to wait until evening for further news, before loading up and sending off the fourth contingent. At 5 p.m. we learned that it was snowing heavily on the Zoji-La. It would be madness, declared Streatfeild, to leave now: we should simply clutter up the different stages already overcrowded by the coolies of the preceding batches, who were held up all along the line by the bad conditions. I gave way; and that evening the stars shone in a clear unclouded sky.

April 20th.—The favourable signs of last night did not fulfil their promise; the weather was appalling. Early in the morning our liaison officer came back to the attack. The crossing of the Zoji-La would henceforth be quite impossible, he declared, without incurring grave risks for the coolies.

Major Hadow, whom Streatfeild had asked to accompany him, joined with the latter in trying to dissuade me from leaving. The discussion took a rather dramatic turn. I settled to go and see for myself. Once on the spot I should be able to judge, and could take the responsibility of insisting on continuing if I considered this justifiable.

In the evening Peychaud came to bid us farewell. He brought with him the usual atmosphere of gaiety that emanates from his cheery person. Some bottles of champagne were opened, these not now being so precious, as we were only taking one case with us. Ichac tried to take a talkie film of the dinner, but naturally the machine refused to work. Anyhow, that settled its fate—it had to remain behind in Srinagar.

April 21st.—At 7.15 a.m. Arlaud and I in our turn left the house-boat. Once again we passed right through Srinagar. Yesterday's rain had made the roads dirtier than ever. At Voil we stopped to take the ponies and 50 yards beyond the bridge we hailed the spot where, on the day of the departure of the first contingent, Deudon had been humbled to the dust —his mount having had enough of its burden. Fortunately there was no damage done. Warned by experience and conscious of my danger, I trotted along on the most outlandish nag, whose faltering step quickly reassured me against the possibility of a similar occurrence—my steed was obviously quite incapable of the vaguest shadow of a buck. A picador might possibly have persuaded the ponies to get a move on. Mine was a dirty white beast, and a more hideous specimen one could scarcely imagine. That of Arlaud was of a more normal colour but ridiculously small. Our unfortunate doctor's legs dragged along the ground, while he had to urge his beast along with continuous lashes. And what saddles !—if one can so name a pastry board covered with a rug. Anyhow,

luck was with us. Yesterday evening we should have arrived at the end of the day's march soaked—whereas to-day the sky was only clouded and grey.

After a short halt at Kagan we continued on our way along the Sind valley, which was of no very great interest. We spoke too soon about the weather, for it was in pouring rain that we completed the last mile or so of the way—trotting and galloping in the oddest manner—the riders urging the steeds along by every possible means.

Neltner and Charignon welcomed us and put a tent at our disposal. They at once wanted to know what they had been asking themselves for the past two days—why they had not had any ponies to pay off? We informed them of the delay and the reasons for it. Naturally Neltner found all the fuss and precaution ridiculous: according to him the weather had never been bad, only somewhat stormy. And it would seem that he was right; anyhow, there was very little fresh snow to be seen on the heights. However good were the intentions of our advisers it now appeared evident that delay was not justifiable, and I dispatched a wire to Azémar instructing him to leave at once with all the loads. Our head-quarters would be Gund instead of Srinagar, and even if the bad weather continued we should at any rate have accomplished one stage.

On this date the position of the expedition was as follows: the first contingent had crossed the Zoji-La and was at Dras; the second contingent with the Sherpa sirdar was at Baltal ready to cross the pass; the third contingent with the second sirdar at Sonamarg; the fourth and fifth contingents still at Srinagar.

April 22nd.—For a few minutes I remained in my eider-down sleeping-bag; I was cold. Dawn was just breaking.

On getting up I looked at the thermometer—it was freezing. No washing this morning !

To-day's march was through much more beautiful and interesting scenery than yesterday's. The valley was attractive and rather wild; the nearest comparison I can make is with the valley of Nancroix in the Alps. The slopes were very steep and were still decorated with magnificent avalanche cones which had cut through the forests, dragging great tree-trunks right down to the river's edge. A push, and they would be in the river, some day to arrive down in the lakes encircling Srinagar.

The presence of man was not revealed here by any peculiarities. There was nothing unusual except perhaps the way in which the peasants utilized the trees as barns by putting their straw or hay in the forks of the branches.

Soon the patches of snow became more and more frequent until they were quite continuous. We were now penetrating into the upper Sind valley, which has a totally different aspect. Much narrower, and closed at its head by high steep mountains covered with snow, it reminded one of the Grande Chartreuse in winter. We wended our way in and out amongst the trees —all trace of the path having disappeared, buried beneath the snow sometimes to a depth of 20 or 30 feet, quite apart from the avalanches. The higher we went the more the walls of the valley closed in on us until we were in a regular defile through which it would not be pleasant to pass after a heavy fall of snow, and then the walls receded and the valley opened out once more.

We passed the little village of Shitkhari: never had I seen such filth—a mass of dung-heaps covered with melting snow, from amongst which rose a few apologies for houses, half-submerged in foul mud.

Rounding a bend in the valley, we came in sight of Sonamarg some 2 miles distant. We still had a stiff climb before us and it was getting on for 2 p.m. Breakfast was long since forgotten; and unfortunately our lunch was on the backs of the coolies several hours behind us. Sonamarg consists of a few houses, with a postmaster who lives there all the year round amidst a miserable population. On our arrival we found him crouched before his transmitter surrounded by three natives also huddled on big rugs. He was expecting us and gave us the news that the second group had succeeded in passing the Zoji-La. I took the opportunity of confirming my order to Azémar for the immediate dispatch of the last batches of loads in one convoy. After this we inspected our lodgings. A few rooms in a tumbledown shack were just habitable—about equal to a very poor hut in the mountains.

The courtyard was banked up with snow to a height of 6 feet or so, and this, as it was melting, produced a disagreeable state of dampness. It was cluttered up with an appalling crowd of people—the third batch of porters who had left Gund yesterday, and who had spent the night out on the way. One could not help feeling pity for these creatures, who were more like beasts than human beings. Their misery was terrible to behold, but they did not appear to feel this in the slightest; it seemed to fit them naturally—as naturally as the rags in which they were clothed. For them it was nothing unusual but merely their normal condition. They could not have imagined any other mode of existence. Their faces never showed any expression either of joy, annoyance, or terror; they were animals with human voices—'Salaam Sahib', 'Baksheesh'—wearing clothes: and what clothes! Their feet were bound with a material about as waterproof as tulle, over which they wore a sort of sandal with soles and thongs of straw;

they required five or six pairs of these to go from Gund to Dras—about five days' march over snow—which gives some idea of their durability. Round their legs they wore criss-crossed puttees. Their bodies were enveloped in shapeless rags made from pieces of sacking of an indescribably dirty greasy grey—held together by countless darnings and mendings; in a word absolute tatters. Seeing them thus, one could not conceive of their being capable of anything beyond eating and sleeping. But they were poor harmless creatures, ready to do anything; as the ox resigns itself to the yoke so did they carry their 50-lb. loads fastened to their backs by means of plaited straw cords. They had not an atom of pride, their first instinct being to hold out their hands for alms.

The Sherpas held them in contempt and only spoke to them in commanding or threatening tones. Our Sherpas—we had in reality only twenty, the other fifteen porters for high altitudes being Tibetan—were themselves quite extraordinary folk. They belonged to an entirely different race. Proud, generous, faithful, hard-working, intelligent, skilful and devoted, these Ghurkas are the men from which the élite of the Indian Army are recruited. Agreeable manners and great willingness are also to be counted amongst their qualities. No one could have been better served than I was by my Sherpa Lagpa-Tensin. At the end of the day's march he was always there to take off my boots, put up the tent, inflate my pneumatic mattress and arrange my baggage; he never made a mistake. He knew no word of English and I no word of Hindustani; yet we understood each other perfectly.

Hardly had we arrived when the Sherpas started to deal with the troop of porters; the loads were put under cover and the poor Kashmiris went off to find lodgings for the night in the village.

April 23rd.—We were awakened by the departure of the porters, who looked just as pitiful in the morning as in the evening. They were to continue as far as Baltal. The weather was fine and remained so the whole morning.

I stayed at Sonamarg to receive any news that the postmaster might have for me. He soon appeared, and I offered him a cigarette which he refused. He said that he did not like to smoke in the presence of such an important French personage ! While Arlaud went in for a little ski-ing practice on the neighbouring slopes the postmaster and I conversed upon European affairs. He asked me if Italy was a republic and was surprised to hear that there was a king. Ah, of course Mussolini . . . Was France a republic? Just what was a republic? He questioned me on Napoleon, of whom he had learnt at school and about whom he had read a number of books. This postmaster was an intelligent Hindoo bent on occupying his time with reading during the complete solitude of the eight winter months. From June to October he was isolated from the world, seeing no one except the peasants, who were no very great source of interest to him. Never by any chance did he have a letter to deal with. An expedition such as ours was a real event in his life. I gave him a message to send to Neltner announcing that the two last convoys would be arriving at Gund to-day.

April 24th.—We arranged to be wakened early in case it should be fine and our porters able to continue, but on getting up at 5 a.m. I was greeted by a dull leaden sky. The summits were all hidden in the clouds and it was snowing. The porters at first refused to leave, but as their provisions were strictly limited they finally decided to go on rather than stay and ration themselves.

We left Sonamarg at 10 a.m. in pouring rain. Arlaud

and I took our skis. The way was cut by enormous winter avalanches and the débris of ice was rendered terribly slippery by the rain. We passed a dead horse. Three miles out from Sonamarg the rain changed to snow; the clouds descended low and we could not see more than 50 yards ahead. The wind howled, blowing so hard as to hinder our advance. The porters, their feet half-bare, disappeared into the snow in places. They walked with little steps, stopping every 20 yards to rest their loads on a sort of crutch made of wood in the shape of an ice-axe; and then off they went again.

At Saribal we halted a few minutes in the shelter of a barn, but the cold soon obliged us to move on. Once outside again we were immediately soaked through. This march, which was short in actual distance, seemed unending. Behind every hummock we hoped to see our port of call, but each time we were disappointed.

Finally at 3 p.m., after one last steep climb, we entered the bungalow of Baltal which consisted of one room and a kitchen. 'Sahib! Sahib!' my Sherpa called, and brought me to a fire already crackling on the hearth and, miracle of miracles, the chimney did not smoke. Seen from outside the bungalow was almost entirely hidden under the snow, and the branches of the surrounding trees were all white. Inside absolute darkness reigned, every window being snowed up. It was snowing steadily—and this was the day on which the third convoy of ninety-seven porters was due to cross the Zoji-La. God grant they all be safe and sound!

April 25th.—Accompanied by much advice which I was inspired to give on account of the foul weather and the danger of avalanches, Arlaud took his skis and went off to explore the neighbourhood of the pass. He returned with the information that the Zoji-La, a narrow steep defile, exposed to avalanches,

was undoubtedly pretty dangerous. An avalanche had fallen between his going up and coming down effacing his tracks for more than 100 yards.

Meanwhile we were expecting the fourth convoy to arrive at the bungalow at any minute. At 4 p.m. still no sign of the porters. What could be the cause of this delay? Could an avalanche have overtaken them in the gorge of the 'Grande Chartreuse'?

Arlaud was writing his 200th postcard. I tried to get a little comfort and encouragement out of him, but the only answer I got to my questions or remarks was a nodding of the head or complete silence, occasionally interlarded with a few of his favourite expressions.

I was beginning to get very worked up when Charignon arrived at 6 p.m. Yesterday the torrential rain had obliged the whole convoy to stop on the way so that they had only arrived at Sonamarg to-day. And Charignon, foreseeing my anxiety, had come straight up to Baltal to let me know that one group would be arriving to-morrow and another the day after.

In the meantime the porters that I had with me had no provisions left so that they must move on to-morrow. Arlaud and Charignon will accompany them while I remain to superintend the crossing of the last groups.

April 26th.—Neltner arrived at 11 a.m. We discussed the happenings of the last few days and exchanged impressions. In the defile of the upper Sind valley a batch of twenty porters had only just missed being swept away; an avalanche had just fallen in one of the couloirs which lay in their path; the men crossed at a run, and scarcely had they got safely over when the whole avalanche started to move on again.

VI. THE ZOJI-LA

April 28th.—Streatfeild and Azémar came up yesterday with the last consignment of loads. To-day it was our turn to make the acquaintance of the Zoji-La, the very name of which had been sufficient to terrify the inhabitants of Srinagar.

First of all we crossed a plateau; then followed a stiff climb up a narrow gorge exposed to the danger of avalanches, where a great number of people have been killed in the past. After the gorge we reached a plateau which rises gently over a distance of about 7 miles. The slope was so slight that it was difficult to estimate precisely the exact crest of the pass.

From the edge of the plateau, before beginning the descent, we had a magnificent view looking back towards the Zoji-La. A mountain of about 19,000 feet appeared to bar the passage. On the other side of the pass the descent followed a succession of little valleys. Towards the middle of the afternoon we arrived at the Metaïan bungalow which was just about as primitive as those we had already experienced. Here I found a note from Neltner, whose personal boy had had to carry Jimmy, taken with an attack of malaria on the summit of the Zoji-La, for a distance of some 10 miles over soft snow.

April 29th.—Here we are at last at Dras after a march which, coming on top of the previous day's hard work, left us feeling pretty limp. The bad weather had made things extra trying. The tracks followed the edge of a torrent whose waters thundered beneath enormous masses of snow. We passed under a curious village perched on a cliff—a site for a fortress; the inhabitants observed us from the roofs of their houses which formed terraces along the wall of the cliff. A little farther on our attention was attracted by some peculiar dwellings—platforms scarcely raised above the level of the ground, covering

a habitation to which one gained access by a couloir. To enter, one had to force one's passage through the snow.

At the end of the day's march we sank deep every three or four paces into the snow that had been softened by the sun; this state of affairs continued for a distance of 3 miles. We ourselves were tired out; so the condition of our poor porters may well be imagined. Fortunately this was their last march —to-morrow they would be relayed.

A fine mountain of over 19,000 feet dominates Dras, which itself is at a height of nearly 10,000 feet. The valley is broad and open and would make an excellent winter-sports station, which no Swiss centre could rival for the quantity of snow.

At last we had finished with the trials and tribulations of the Zoji-La, certainly a troublesome pass but dangerous chiefly on account of the bad weather. Had we left Srinagar five days earlier, as had originally been planned, we should without doubt have avoided the principal difficulties we encountered. Be this as it may, the main range of the Himalaya, of which the Zoji-La is the lowest point for a distance of about 1,500 miles, was now behind us, and we began the descent towards the valley of the Indus.

May 1st.—Two marches, one of 22 and one of 15 miles, along the bottom of the valley brought us from Dras to Karhal. Almost imperceptibly we had passed from winter to spring. In the morning we noted some bear-tracks dotted along the slopes. Soon the patches of snow grew smaller and smaller until they disappeared altogether. We greeted the first flowers with joy. At Shimshah Karbu the peasants were tilling their terraced fields by means of wooden ploughs drawn by long-haired oxen; the women fled at our approach.

This relative fertility disappeared little by little, the valley assumed once more a deserted character, and the sun blazed

down. The farther we advanced alongside the rocky slopes, at the foot of which rushed a foaming torrent, the rarer grew the patches of green, and it was in a stony sandy desert that we pitched camp.

Karhal is the name, not of a village, but of a suspension bridge of which Kashmir is very proud, most of the bridges being made of rope. Crossing this bridge we left Kashmir behind and entered Baltistan proper. We remained at this camp for two days in order to collect the ponies on which we were depending for the transport of the greater part of our goods from here to Skardu. Estimating that one pony carries three porters' loads, we should need 150 ponies. Never should we have succeeded in finding these in this wild deserted country had it not been for the valuable aid of the Diwan Gupta, who welcomed us with the greatest cordiality.

THE INDUS VALLEY

May 4th.—At noon we got under way, the shortage of ponies being made up by coolies. We followed the valley of the Zuru, a tributary of the Indus; this river has hollowed its bed out of the granite. High walls towered above us. In places the river had bored out regular cañons through the rounded rocks, and in others it had spread out. Along the walls the occasional flat spaces were occupied by villages built of earth with little terraced fields. A few apricot trees with their dark red leaves were in flower. Sometimes even the little patches on top of the granite blocks overhanging the river were covered with earth and cultivated.

About 5 p.m. we reached Olthingtham, the end of the day's march. A steep climb and we came to the bungalow—a wretched hovel, whose courtyard was filled with our tattered porters. In the midst of this crowd of men, some of whom

were on the terraced roof of the bungalow, were all the loads, dumped anyhow and forming a picture of indescribable confusion. We had no interpreter with us to help restore order. All we could do was to take photographs of the Baltis spinning wool and taking turns at smoking a big wooden pipe.

The Baltis present much about the same appearance as the Kashmiri folk. They are certainly more robust—some of them being capable of carrying loads of up to 77 lbs.—but they are just as miserable-looking, just as poor in body and in mind.

May 5th.—In the morning we tried to get things a bit to rights. We had at our disposal three means of transporting our goods: ponies hired with their drivers who, having been paid at the outset, were responsible for landing their loads up at Shigar where we were to rejoin them later; ponies belonging to the Race, a sort of official carrier who is paid and relayed at the end of each march; and finally, to make up for the lack of sufficient ponies, coolies whom we engaged each day.

Before leaving I received a visit from a Rajah. We had known since yesterday that an important personage had arrived in the village, the quantity and richness of his baggage—big leather chests bound with silver—having revealed his presence. He came with a retinue of servants, who brought me some dried apricots as presents. His one ambition was to have his photograph taken. An arm-chair, bearing, alas! no resemblance to a throne, was brought forward for him and he took his place. Ichac had no longer before his camera the weak face of a king without a crown (which the family had lost over a hundred years before), but the hard and energetic visage of a conqueror—an expression no doubt assumed by the Rajah when looking in his glass. After many salaams he left us and we returned to our loads, with which Carle was dealing authoritatively.

At 8 a.m. we got off. The track now rose high up above

the Zuru valley and suddenly we beheld a magnificent sight—the converging of two immense granite trenches, the confluence of the Zuru with the Indus, that mighty far-famed river which had opened the way for so many conquerors, amongst whom the celebrated Alexander the Great.

Sometimes carved out of the rock walls, sometimes taking to the sandy bed the track followed the river closely. The sight of the narrow gorge, deep-cut between walls rising to a height of 8,000 feet, was truly stupendous. The vertical walls of these savage granite cliffs and the sharp outline of the rock needles reminded us of the Aiguilles of Chamonix, but the French scenery, though more harmonious, was in no way comparable for size and power with that which we now had before us. And this gorge continued for mile after mile—which for us meant several days' marching.

Beyond a bend in the valley we came upon a large oasis where poplars and apricot trees grew together: this was Bagicha, the end of the day's march. It is a curious village, situated in the middle of terraced fields of ripening barley and maize. Narrow alleys, which we could span with our arms, walled in by granite blocks, led to the main village square. Here slabs of granite, set up edgewise, enclosed small squares filled with earth—the cemetery. Beside this place we paid off the coolies: each in turn had to produce the ticket given him in the morning and show his load before receiving the money.

This finished we strolled about the village. The women chattered on the roofs of their hovels whilst the men cultivated and watered every available square foot of ground.

May 6th.—We got off at 8 a.m. The distribution of the loads was easier to-day. We had fewer ponies and as many coolies as we wanted.

We still followed the Indus valley, broader here and not so

grand as during yesterday's march. Two miles from Bagicha, half-way up the precipice, was an island of greenery full of flowers in bloom, bringing a note of gaiety into the desert of rock. A little farther on, was a hill crowned by a fort—that of the Rajah of Markhand. A fine situation, but the peace and security of the present times had enticed the Rajah down from his eagle's nest and he had built himself a palace just outside the village, by the banks of the river.

The enclosing walls were here much less high and the valley lost a good deal of its wild character, though the general aspect was quite as desolate. Since leaving Karhal the scenery had been similar: nothing but the river and its banks, without cultivation or vegetation of any description—just a world of stone.

At the first village we stopped for lunch. Every day Arlaud apportioned out to each of us what he considered the necessary amount of nourishment. Two rounds of *saucisson*, one and a half sardines, two rusks and two ounces of cheese or one spoonful of jam was the ration given to those who had covered a distance of 12½ miles! No doubt this diet was scientifically sufficient to keep us fit and to assure a perfect state of health, but I must say that we should have been glad to have had something a bit more substantial beneath our belts.

Five miles out from Tolti the road overhung the Indus, whose waters, once more penned into a narrow space, foamed turbulently beneath us. As was the case at every junction of a lateral valley with that of the Indus the houses were lost in a profusion of undergrowth. We were welcomed by an envoy from the Tah-Sildar (chief of the district) of Skardu who had come to offer his services, as well as by the Rajah of Tolti.

The latter in no way corresponded to the French conception of a Rajah—and in fact he had nothing but his title; his king-

dom had been conquered a century ago by the Maharajah of Kashmir, whose government had deprived him of all administrative rights, giving him a pension in exchange. He was not at all an impressive personage; still young, he wore a white turban, a collarless shirt, and a pink coat, his fine slender hands alone betraying his high caste. Through an interpreter I received him and his suite with much cordiality. Soon after, his servants arrived, bearing presents including radish leaves, which are regarded here as a vegetable of great luxury. The Rajah helped us in the recruiting of the porters and ponies we required.

May 7th.—To-day I was mounted on a horse chosen by the Rajah's major-domo; the saddle was covered with a magnificent pink-and-green cloth of which the mount was not worthy.

The oasis of Tolti is large. The valley had opened out and changed its appearance. We had left the gorges and defiles behind us. This was our third day in the valley of the Indus; another three days and we should reach Skardu. From now till then we should encounter a uniform landscape, the only variety being afforded by the villages, each of which had its own special characteristics.

To-day we passed the village of Parkutta, situated, like Sisteron, on a high mound barring the valley. When we arrived at the bungalow we were surrounded by the whole population. We were shown the children, who for the most part were in need of medical attention. Hygiene is quite unknown in this country, one of the favourite remedies for open wounds being either to rub or cover them over with cow-dung. The appearance of the people rather naturally suffered from this kind of treatment.

In the evening we heard for the first time the Muezzin calling the faithful to prayer. His invocation broke in upon a conversation in which Neltner was already debating what the

Expedition ought to attempt after the conquest of the Hidden Peak, which for him, with his usual invincible optimism, appeared to be an affair of only a few days. He talked of nothing less than an attempt on K2—a peak of 28,000 feet !

Carle limited his ambitions to the Hidden Peak. He declared that he wished, on his return, still to be capable of going up the stairs of the Saint-Lazare station without panting, and that it would need a champion to get him out of his tent once the Hidden Peak was conquered.

May 8th.—After a march similar to the others we reached Gol. We passed the afternoon here and had the opportunity of hunting some game—a sort of moufflon or large wild sheep : three of these animals had been sighted on the mountain-side above the village. Ichac, Charignon, Carle and Deudon went off at once in spite of the presence of the local game-keeper, who did not know whether to stand upon his dignity or wink at the law-breakers. Our hunters manœuvred very successfully and soon encircled the game, but just at the critical moment when Ichac—who had the one and only gun—was preparing to shoot, Charignon, always possessed by the devil of photography, showed himself and took four photographs. The moufflons immediately scampered off, sending down a shower of stones, whilst a shower of curses were directed at the photographer. Meanwhile the smile on the face of the game-keeper broadened ; the flight of the game had set his conscience at rest.

May 9th.—This evening we shall sleep at Skardu, with more than half the journey to Base Camp behind us, at all events as regards the number of marches.

It is true that we have so far only accomplished the easiest part of the way, as except for the crossing of the Zoji-La, which had cut us off completely from all human contact for five days, we had been in inhabited regions the whole time. Although

we had already experienced many difficulties we had always been able to find men and sometimes ponies for the transport of our goods, fresh food for our dinners, and, whenever this was necessary, the kindly help of the Kashmir authorities.

What would it be like once we had quitted the civilized valley of the Indus? What could we expect from a nature henceforth harsh and bleak, and from the wild, disease-ridden population with which we should soon come into contact, and all this without the aid of the authorities, whose influence beyond Skardu is only illusory? My thoughts as I rode along were darkened by these prospects. However, I took heart when thinking of the many obstacles already overcome. We had got so far with our 512 loads and yet our coolies had been by no means easy to manage. Why should not things continue to go well?

My reflections were interrupted by an accident which laid Ichac low and occasioned much hilarity. Whilst drinking at a pond, his horse, advancing too far into the water, had stumbled in a hole, dragging down his rider, complete with photographic apparatus and the gun: moreover, Ichac had caught his foot in the stirrup and could not get out of the water—hence the merriment of the others. This was the first mishap of the kind, but we were soon to become familiar with such accidents.

A few miles before Skardu, the high walls which had enclosed the Indus since Karhal, fell back; lofty snow-peaks now appeared in the distance while the river flowed majestically across a vast plain of grey sand. From the summit of a dune we had an extensive view. Before us in the distance we could see the Indus disappearing behind a big promontory, at the foot of which lay Skardu hidden in an island of green.

The village of Skardu, or rather town, as it would be called in this country, is important. It is the capital of the province. The Wazir (governor) has his residence here as well as the Tah-

Sildar (chief of the district). We were given a great welcome from these important personages, whose fathers had known France during the years of the Great War and whose affection for our country, where there is no prejudice against coloured races, had steadily increased ever since.

A lot of work was awaiting us here: the reorganization of the transport, the rearrangement of the provisions of our Sherpas for the march, and the purchase of the supplies necessary for our personnel during the whole of our stay at Base Camp. So the merchants, for whom we were a gold-mine, were watching out for us. One of them had already made a corner in the potato market during the last fortnight with the intention of concluding a very satisfactory bargain with a profit of 1000 per cent.

May 10th.—We had been received yesterday at dinner by the Wazir Sahib in a simple bungalow in a wonderful situation facing the desert. Squatting round a carpet we were each served with a tray on which were placed a dozen little dishes. Some contained meat—mutton, of course, as the Wazir Sahib was a Hindoo and could not eat of the sacred cow—others vegetables or sweets, but, though cooked with skill, they all tasted alike. The original flavour was disguised with a seasoning so strong and so hot that we did honour to the feast only at the expense of much discomfort—such is the lot of diplomats!

During the dinner the Tah-Sildar, disturbed by the rise in prices occasioned by our arrival, informed me that he would himself see to our revictualling. All the better for us and all the worse for the potato merchant!

May 11th.—During the morning we had to go to the Treasure Officer of Skardu to collect the money we should need for the payment of our porters. Henceforth we should have to pay

in solid cash; the country into which we were about to penetrate being too primitive—or too sensible perhaps—to accept notes. A pity, for 10,000 rupees—£750—represents in coin a weight of over 300 lbs.; in other words, six loads to be transported and also carefully watched.

The charming residence of the Tah-Sildar, which housed the treasury, resembled a palace out of a comic opera. Like the feudal castles in children's books it contained within its walls all the administrative services. There were the apartments of the lord and master, the court of justice, the army, the police, and lastly the treasury protected by a strong grille with a Ghurka mounting guard, and this was what chiefly interested us. On the carpet were 10,000 rupees in pieces of one rupee or less. I shrank from the thought of having to count all these coins, but the Wazir Sahib reassured me. A turbanned personage, the sign of Siva on his forehead, appeared—it was the Treasurer. He brought scales with him. When everything was ready he sat down and taking 100 rupees weighed them exactly. 'All right?' he questioned me with his eyes.—'Yes.'

Then a song rose up: 'Eg Eg Eg Eg! Do Do Do Do! Tin Tin Tin Tin!' whilst the rupees slid on to the dish of the scales, the scale-beam stood still, and the dish was emptied. Then the song began anew. A fine way of avoiding mistakes in one's accounts. To popularize this system at home Marcel Ichac, who was enchanted with the idea, filmed the proceedings. We regretted our apparatus for registering sounds which we had left behind at Srinagar.

At noon we set out on our way to Shigar. We had at the outset to cross the Indus which, tired of eating its way through the granite gorges, here took things easily, spreading itself out over the desert sand. It was on a ferry-boat worked by fifteen men that we made the crossing. The current was still so strong

even here that we landed on the opposite bank more than 300 yards down-stream.

The track now followed the valley of the Shigar, a tributary of the Indus. Riding has its charms, and this day's march left memories of some involuntary duckings which diverted the company at the expense of each of us in turn.

It was Azémar, our best—I ought to say our only—horseman who inaugurated the proceedings. In wading through a ford his horse sank into the sand and it was on all fours that our general secretary clambered out on the opposite bank. A little farther on, when Ichac and I were riding side by side, we saw Allain, who was in front, in difficulties; he was standing up to his knees in water bending over his horse, which had also got itself stuck in the mud and which was only rescued with great difficulty.

Farther on again we came to a still broader reach of the river. On the far side those already safely across were awaiting the occasion to get a good laugh. I guessed the reason, and so I undressed and with my trousers and boots hanging round my neck, my camera on my head, I started out resolutely. At first all went well, but, just when I thought I was nearly safe, my horse sank into the bed of the river and, lying down, deposited me in the water. Close by, Ichac suffered the same fate. We continued on our way to Shigar soaked through, the tails of our shirts floating in the breeze.

The oasis of Shigar is exceptionally large. By countless paths, alleys and canals we reached a mosque of carved wood and finally the bungalow. I had hoped to be able to rest a bit at Shigar, but the Munchi Sahib, a powerful personage, who had seen to the recruiting of our porters, was awaiting us. He justly boasted of the beauties of his residence, but he also insisted so strongly on the dangers of the route which we should have to

negotiate, on the tremendous amount of snow and on the impossibility of being able to set foot on the glacier, that I was seized with apprehension regarding the coolies, two days ahead of us under the escort of Captain Streatfeild. After receiving the visit of the Rajah of Shigar, a child of seven, accompanied by the Regent and bearers of presents, I decided to leave the main body of the Expedition and go on ahead. Carle came with me.

May 12th.—Carle and I covered about 28 miles in the day, and in spite of our being on horseback, the march was hard. Two-thirds of the way along we were overtaken by a sand-storm; the wind blew down the valley, creating a draught which increased its violence tenfold. Blinded, burnt, suffocated, we headed through the eddying clouds of dust and, before the storm had died down, we reached the junction of the Shigar with the Braldo. The width of the river and the pace of the current at the crossing place damped the zeal of our porters and recent experiences made us hesitate ourselves. But there was no alternative. The valley of the Braldo began opposite us on the other bank. . . . Heaven preserve the horses, forced down-stream by the current, from sinking in! The water came up to their withers, and this time . . . But all went well and the ducking was avoided.

Desso, where we pitched our tent, is situated above the torrent. We found here one of the two groups of porters who had left before us—the one under the supervision of the shikari.

May 13th.—The Braldo had hollowed out for itself an evil-looking valley, and the thought that we should have to follow it to its source, the Baltoro glacier, filled us with misgivings.

To-day we made the acquaintance of our first rope bridge, though there was but little trace of rope. It consisted of three cables made of plaited branches. One of these, as wide as one's foot, formed the gangway; the other two, narrower, served as hand-rails. At each end the cables were wound round two posts

stuck into a heap of loose stones. The whole described a graceful curve from 80 to 120 feet in length with a sag in the middle of 18 to 20 feet. Every year the villagers renew the cables, which, being vegetable, are sometimes nearly rotted through—a fact which damped my desire for a new sensation. If the descent of the first few yards was disagreeable, how much more so was the passage of the middle portion! Underneath one's feet the torrent frothed and roared whilst the draught gave the whole frail structure a swinging motion, the rhythm of which was accentuated or broken according to the step of those who crossed. But all the 680 porters of the Expedition would have to pass this way.

May 14th.—A hard day: 22 miles partly on the shingle of the dried-up bed of the river, partly on the sharp stones along the banks.

May 15th to 17th.—For the last two days we have been crossing a country more savage and deserted than ever. Here nature seems still right in the middle of its geological evolution. Nothing appeared stable and all manifestations were unbelievably exaggerated and varied. In such a country human existence is terribly precarious and miserable. The people live in dens made of four low walls of stone without mortar, covered with logs or boards, which 'houses' are grouped together on the flat spaces which appear from time to time. But in order to live, both men and plants need water, and the importance of these groups is determined by the rare fresh springs as distinguished from those which contain quantities of mineral salts. From the waterfall to the village ran a straight green line—the canal, which, when it reached level ground, distributed fertility all around. Wherever there was water there was greenery, elsewhere nothing but grey stone; the division was distinct and absolute.

The state of the population is on a par with the conditions of life under which they are forced to live. Monstrous goitres hang down on the chests of these poor people or encircle their necks with enormous rims. Hardly any of them escape this disfigurement. Their only nourishment consists of barley cakes cooked underneath stones. The doctor never visits them and they never dream of visiting the doctor—the nearest was 120 miles away. Only the fittest survive, but this natural selection does not better the race. They have no human value. Lacking all intelligence, courage and pride they live bent down by their pitiless destiny. If they accepted the tasks given them it is less for the money they would gain—what could they do with it?—than because they have not enough energy to refuse. A refusal implies some thought. . . . With their baggy trousers, their tunics, their caps and their long hair, they walk barefoot with short little steps on the tracks of sharp stone. From time to time a loose stone toppled down and wounded them. Did they feel anything? . . . Such were the poor inhabitants of the sinister valley along which our way lay. After Chango the valley opened out and grew brighter. Finally we arrived at Askoley and Streatfeild's tents.

May 18th.—Our coolies, engaged at Shigar to come as far as Askoley, were 620 strong; this was excessive. Taking into account the 7 tons of flour necessary to feed this number of men during the march from Askoley to Base Camp we should need to collect some 900 porters here. Never would this poor village be able to supply such a force. We had therefore to abandon everything that was not strictly necessary and to rearrange the remaining loads.

The porters engaged here would have to go as far as our Base Camp, a distance which represented nine marches—five of which were on the glacier. Some of the men had, in the

past, experienced the difficulties and hardships of this march and in consequence few of them were disposed to offer their services.

We had long palavers with the help of the lombadar (head man of the village) before being able to obtain 650 men, 150 of whom were specially engaged to carry the food necessary for the other 500. They left in the evening to carry the flour as far as Paiju, the last point where it would be possible to find the wood needed for cooking their barley cakes.

May 19th.—The Baltis invaded the camp at 5 a.m., fighting to get hold of the most advantageous loads. Just when we thought that everything had been taken and that only our own personal luggage remained, we discovered another fifty loads lying on the ground. A batch of men must have deserted during the night. It would be hopeless to try to find substitutes in the village now. And yet it was imperative that we should catch up as quickly as possible with the main body of the porters, already gone on ahead The whole morning our Sherpas ranged over the surrounding country visiting all the hamlets. They returned sometimes with one, sometimes with two men. At midday there were still fifteen loads left. We decided to leave them behind in charge of Jimmy, our interpreter, with orders to continue the hunt for men until the next day and then to follow us with whatever porters he had managed to find.

To-day's march was short, but finished with the toilsome crossing of the Biafo glacier—the broadest in the Himalaya. It was like Douaumont after the War;—nothing but ditches and holes. After an hour of marching over ridges and down into troughs, on stones that slipped and rolled under our feet, we finished the crossing and arrived at Korofon. On the way Ichac once more let his camera fall into the water.

May 20th.—We had evidently mobilized the whole of the

male population of Askoley, for many of our porters were aged or infirm, making the general standard pretty low. And with these men we should have to ford the Braldo, a strong swift river.

Leaving Korofon the track rose for a hundred yards or so up the mountain-side. The long file of our porters, spread out over a distance of several miles according to the strength of the men, traversed a series of very steep slabs which in places necessitated real climbing. In a hollow I saw a pool of blood: a Sherpa had been hit on the head by a falling stone, fortunately without any serious damage.

Beneath us rushed the impetuous waters of the Braldo, and we now descended to its level, where we had to cross. The porters tucked up their clothes, and braving the cold—the source of the Braldo is the Baltoro glacier, only 30 miles from here, and the strength of the current, which threatened to sweep them off their feet, they entered the water in groups of four or five holding on to one another. The water splashed over their chests; the current carried them down-stream. They advanced, testing the stones with their feet and choosing the most stable. Suddenly they would disappear beneath the water, get up, lose their footing again and narrowly escape being swept away.

There were also the sheep which I had bought at Askoley—at 5*s*. apiece—to keep us supplied with fresh meat at our Base Camp. One of these animals crossed over on its own, swimming desperately and bleating S O S messages, whilst the others were carried over on the shoulders of their shepherds. And so we continued our way up this evil valley, arriving early at Bardumal. A violent wind got up—and the air was filled with sand.

May 21st.—The last march before reaching the glacier. We arrived early at Paiju.

The 150 Baltis who had left in advance were occupied in

making their barley cakes; but in twenty-four hours they had been able to cook only a third of the total quantity required. We had to arrange that each man be given two cakes for the following day and the rest in flour for the five days to Base Camp and back. This distribution had already begun when a fine-featured Balti, wearing a blue turban, tried to start a strike. He knew well that if the porters now refused to continue, the Expedition would be paralysed; so he advised the men not to accept the flour, saying that we were deceiving them as regards the quantity. How could we prove the contrary to these men who were ignorant of the use of scales and weights? Perhaps some words or even other more energetic measures would be efficacious. . . .

May 22nd.—In the morning the porters were better disposed, and the distribution of the flour began again. Meanwhile Streatfeild and I chose out the hardiest of the men, who would come on with us whilst the more weakly would be sent back to Askoley. It was a truly heart-breaking examination. These creatures were human wrecks. One showed ulcerated legs, another was almost blind, a third had his hands eaten away by frost-bite.

While we were paying those who were to return to Askoley, they pushed and fought to be the first to receive their money, so great was their fear that there would be nothing left for the last-comers. These occupations kept us at Paiju till lunch-time. It was therefore somewhat late when we got under way.

The Baltoro glacier is over 40 miles long and would take us five marches as far as Base Camp. To-day's march was relatively short but hard on account of the difficulties which it reserved for the coolies. The moraines of the Dauphiné, which have such a bad reputation among mountaineers, are race-tracks compared to this glacier, all covered with stones which roll and

slip as soon as one sets foot on them. Our porters advanced very slowly over this ground and the file stretched out over a distance of several miles. If all of them were to reach the evening's halt we should have to pitch camp early.

Between the rocks and the left bank of the glacier was a vast hollow in the shelter of which we pitched the camp. By groups of ten the porters arrived, many of them having had their feet cut and bruised by the stones. The surroundings were magnificent—a setting suitable for the smugglers' act from *Carmen.* After nightfall the scene became really characteristic. Round the fires, which lit up the rocky walls above us, the Baltis were assembled in groups, and their slow chants floated out on the still night air. That night, our first on the glacier, was very cold.

May 23rd.—The ground was again extremely unpleasant—the surface of the glacier was irregular with ups and downs of ridges and lake-filled hollows, and the whole covered with terribly sharp and unstable stones.

After many weary hours we came to Rdokass, which in the midst of this desert seemed to us a paradise, though it was only a patch of earth by the side of the glacier with a little grass and a few flowers—the last flowers. . . .

The view of the mountains on the other side of the glacier was magnificent: 10,000 feet of sheer rock. The proudest of our 'aiguilles' cannot compare with the Towers of Tramgo.

May 24th.—Against all expectations we were agreeably surprised when the glacier turned out to be less troublesome than before. We soon passed the Masherbrum glacier. Magnificent mountains appeared all around us.

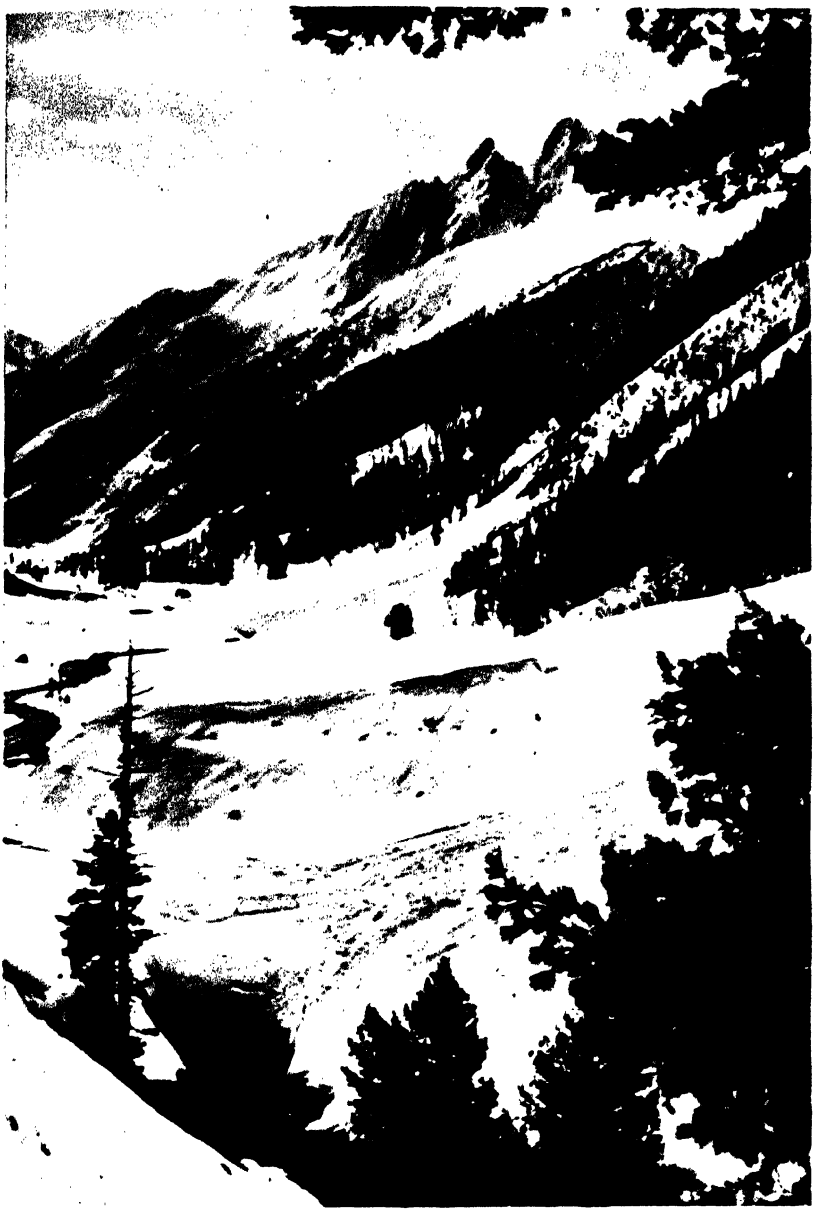
We were now in the centre of one of the largest Himalayan basins in which are four peaks of over 26,000 feet; but we found it difficult to judge the true dimensions of the surrounding summits. Our eyes were accustomed to an Alpine scale. . . .

A Porter engaged for the Zoji-La

a. The Members of the Expedition

From left to right: Standing, J. Carle, J. Deudon, L. Neltner, J. Charignon, J. Leininger, J. Azémar. Seated, Dr. Arlaud, H. de Ségogne, Pierre Allain, M. Ichac

b. Srinagar : the Expedition leaving the House-boat

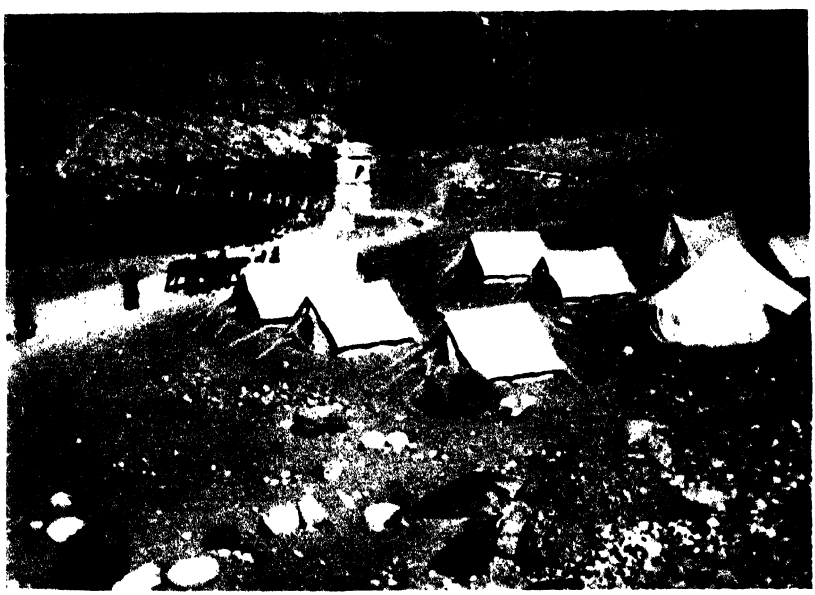


Between Scossa Real and Sonnamarg

Crossing the Zoji-La

a. Camp near the Karhal Bridge

b. The Karhal Bridge



a. The Leader of the Expedition in conversation with the Rajah of Tolti

b. Paying off the Porters at Gol

a. The village of Parkutta in the Indus valley

b. The track along the banks of the Indus

Nearing Skardu

Here in the Himalaya we were obliged to correct our visual calculations by reading the heights and distances on the map.

Some 20 miles ahead the triangular wall of the Gasherbrum juts out. Already for the last two days we had been going in the direction of this mountain, but its distance and its height seemed unchanged. The true dimensions of the Himalaya are here marked by days of marching as they are by hours in the Alps.

Neltner and Charignon went on in advance to make tracks on the glacier and to choose the site for our next camp. The porters were already tired; I don't know what we should have done had the ground not become easier.

On our left was a vast field of stones, in the middle of which rose some curious ice pinnacles. The coolies left the tracks and made off in this direction without receiving any orders to that effect. It was here that the Dyhrenfurth Expedition had camped two years previously, and quite naturally the porters—some of whom had been on that expedition—wished to stop here. Some of them had already taken off their loads and it was only by threatening that we got them to overcome their fatigue and move on again. After this incident each sahib took charge of a group until we reached the site chosen for pitching camp.

The march had been hard. I ordered some tea to be prepared to cheer up the porters, who were worn out. My trouble was in vain—none of them would drink the beverage, as it had been prepared by Buddhists.

May 25th.—We broke camp at 7 a.m.

The way along the moraine amid such grand scenery was not unpleasant. The Baltoro glacier revealed its wonders to us. Behind us was the Masherbrum, on our left the Mustagh Tower (24,190 feet), which surprised us by its jaunty air and its long arête at quite a moderate angle.

As we climbed up the snow became more and more abundant

and the morning freshness was succeeded by the torrid midday heat. The farther we went the deeper we sank in. At the head of the column Neltner and Charignon made the tracks. Our pace became terribly slow; but even so the porters had hard work to get along. They were in a state of great fatigue, and they still had a further effort to make. Most of them were barefoot and on contact with the stones their flesh, softened by the snow, cracked and bled. We still had a long way to go to reach our goal. We had no surplus food and at all costs we had to reach Base Camp by the following day.

About 2 p.m. we stopped on the moraine. A halt of forty-five minutes only served to render the departure more painful. Two more hours of toil. We now sank up to our shoulders in the snow.

At 4 p.m. the fatigue and suffering of the men was such that we could not hope to attain our proposed camping site. Where we had stopped there was a flat space suitable for the tents, and these were put up here and there on the snow.

We were at the ' Concordia Platz '. Before leaving France we had seen in photographs the incomparable beauty of the panorama, perhaps the grandest offered by any glacier. Facing us rose K2, a magnificent pyramid 28,250 feet high, with a difference in level of over 13,000 feet between us and its summit. . . .

Our tents were put up haphazard. Mine, which I shared with Azémar and Arlaud—poor Arlaud who would not be able to sleep as his head was not oriented towards the north—was next to that of Carle. The presence of the two doctors occasioned the visit of hundreds of the porters; they had no glasses and came to have their eyes, which were affected by the reflection from the snow, attended to.

May 26th.—I had fixed on 3 a.m. as the hour for our departure

in order that the porters might have time to reach Base Camp and begin the descent the same day. The whistles of the Shikaris sounded shrilly, but without the slightest effect either on the Baltis or the sahibs. Streatfeild and I, with the help of the Sherpas, had to go and shake the sleeping porters. The light of our electric torches revealed an unforgettable scene: over the space of a mile or more the porters were sleeping in groups of seven to ten. They were absolutely naked, packed close up one to the other in an unbelievable jumble and covered over with their clothes. The night was particularly cold, but in spite of this they slept.

Neither by scolding nor by shaking could we get them to move: a few of them sat up showing their inflamed eyes. There was only one method and that was to take off their clothes which were their only covering. Meanwhile all the sahibs—who had had to be roused individually before they would consent to get up—crowded round.

Once we had got our men on foot we found them in such a terrible condition that we had to leave twenty of them behind. We returned on the following day to fetch their loads.

This was the last day's march, and fortunately so because our men were really suffering. The coolies had reached the limit of their endurance and their fatigue was now increased by the effects of the altitude. Every 4 or 5 yards they stopped a few moments to rest their loads on their wooden ice-axes, straightened themselves, and started off again, sometimes only to fall and stop again. We really had to harden our hearts to find the courage to urge them on and order them to continue with their task: but on this depended the success of the Expedition. The trail of porters spread out over more than 2 miles. The last reached the site of our Base Camp four hours after the first arrivals.

The site was at an altitude of 16,400 feet at a bend in the

Baltoro glacier where it takes the name of the Duke of the Abruzzi. The *cirque* in which we were enclosed was magnificent: to the north-west the glacier curved down towards the valley and just in the axis of the curve rose up the Mustagh Tower about 25 miles distant; seen from here it is identical with the well-known photograph by Vittorio Sella. To the south-west, quite close to us, the Golden Throne presented its fantastic chaos of glaciers and seracs; to the south the arête of the Bride Peak outlined its elegant festoons of snow against the sky, and finally to the north-east rose the Hidden Peak—our goal.

The site of the Base Camp was spacious and there was ample room for the tents as well as for the various provision dumps. Our tents were pitched on two hummocks, from which the best views of the Hidden Peak were obtained. In a little valley, near a glacier stream, were the mess tent and the kitchen. Behind, on a third hillock, were the tents of the Kashmiri porters and of the Sherpas. In the centre of the camp were the provision dump and equipment depot.

On all sides the porters busied themselves; the snow, which was still abundant, was cleared away, and the tents were set up, while the baggage dump grew bigger and bigger. We all helped with the work of arranging camp. Towards 3 p.m. the last of the loads was brought in.

Streatfeild and I proceeded to pay off the porters, who were immediately sent off on their way down. We kept with us twenty of the best Baltis to help with the work of the camp and with the provisioning of Camp I, whilst the others went off in groups, valleywards, with their little fortunes; the confusion and noise gradually died down, giving place to ordered activity and silence.

And so the sun went down on the first of the thirty-five days that we were destined to spend at this spot.

III

Base-Camp Diary

MAY 27.—OUR FIRST AWAKENING AT BASE CAMP.

Until the last minute the Hidden Peak had remained true to its name. Since leaving Srinagar, we had concentrated on reaching Base Camp, but with this stage now accomplished, our thoughts and hopes soared upwards once more to our ultimate goal—that beautiful peak towering 10,000 feet above us.

My comrades were occupied with the installation of our camp and, as I watched them, one after the other, they stopped, straightened themselves and, taking up the field-glasses, looked questioningly at the mountain. No comment was made: perhaps it was better for each to keep to himself the emotions, fears, doubts, hopes, and desires which now crowded the thoughts of one and all. And I too kept silent, for I felt as they did.

May 28.—For two days, two days of rest rendered imperative by fatigue and the need for a little relaxation, this silent conversation continued, to be interrupted only at meal-times by a few remarks, invariably optimistic, which were the outcome of the speaker's desire to reassure himself rather than his neighbour.

And yet a plan of attack took form in our minds, born of this communing with the mountain and ourselves. And we were all of the same opinion!

In front of us, and connected with the Hidden Peak itself by a huge glacial plateau, rose the South Hidden Peak (23,200 feet) throwing out towards the Baltoro glacier two triangular

buttresses in the shape of a fan with the handle pointing upwards; the right hand of these, also the highest and broadest, was the one I preferred. It was formed of a succession of snow couloirs and rock ribs, and a combination of one of these couloirs and one of these ribs seemed to offer a possible means of access to the upper end of the buttress, which, being here less spread out and more compact, also became steeper and in consequence far less sure.

If we could reach the top of this wall, the handle of the fan, we should have practically conquered the South Hidden Peak; from here the great glacial plateau, extending for a distance of about 3 miles with a difference in level of 3,000 feet, rose in gentle slopes to the summit of the Hidden Peak itself. We must therefore concentrate on surmounting the buttress, and this point once gained our hopes would be high.

Our opinions regarding the best line of attack being very definite we did not trouble to examine attentively the route followed in 1934 by two members of the Dyhrenfurth Expedition, MM. André Roch and Ertl. They managed to climb up a thousand feet or so above the glacier, but their porters—ordinary Kashmiri folk—refused to follow, and they were forced to give up. The itinerary they had planned joined the arête connecting the Queen Mary Peak to the Hidden Peak so far from the latter, that I foresaw there would be much difficulty in organizing a provisioning service if we were obliged to follow a ridge for such a distance. Nevertheless, in the event of our present plan of attack proving impracticable, we should study anew this other possibility. In any case, it would be advisable, however favourably impressed we might be by our proposed line of action, to confirm these impressions by a reconnaissance.

In the meanwhile let us cast another look at the camp which is now taking definite shape. One tent for every two sahibs—

Azémar and myself, Neltner and Charignon, Allain and Leininger, Carle and Deudon, Arlaud and Streatfeild. Ichac is the only exception, his bulky and precious apparatus affording him sufficient company. On the rising ground occupied by the sahibs were two other tents, a little one for the wireless—Azémar's domain—and that of Arlaud—the Infirmary—stacked with provisions, medicaments, oxygen tubes, stretchers, &c., &c. Arlaud also had charge of the kitchens where he reigned supreme, doing practically everything himself. Four cooks awaited his orders, but these were scarcely allowed to open tins, let alone do any cooking.

Streatfeild undertook to construct, at some distance from the tents, a little edifice destined to shelter certain commodities brought all the way from Srinagar on the backs of two coolies. It was an intention worthy of much praise: most laudable also was the care with which Streatfeild supervised the erection of the walls built to resist all weathers. But, alas, the movement of the glacier was so strong that after forty-eight hours these pieces of domestic furniture were left naked and unashamed, crowning a heap of ruins.

Our two rest days had been well employed; the route chosen; all the cases—not one of which had been lost on the way—opened. Although many more than half arrived in a very bad state—dented, nailed and patched up anyhow—nothing was missing. High-altitude equipment had been distributed; the stores all made over to Arlaud; the tins of petrol buried in a crevasse to prevent evaporation and the necessary equipment sorted out and arranged in order of requirement for our departure towards the buttress.

From the physical point of view, the Expedition was in excellent condition. The breathlessness experienced on the first day had disappeared. We were, perhaps, obliged to breathe more

deeply once out of ten breaths at most, but that was all. This breathlessness was most noticeable when we were walking up the little hill back to our tents after meals. One or two of us suffered from insomnia. Arlaud seemed the most out of sorts: he was troubled a good deal by his eyes. No doubt this was due to his obstinate refusal to wear either dark glasses or helmet on some of the glacier stages and to his frequently going naked to the waist into the bargain—at an altitude of over 13,000 feet in a latitude corresponding to that of Cairo, and all under the pretext that he had always done likewise in the Pyrenees. But the attacking parties were in form and their complaints of insufficient nourishment were an excellent sign. Not a single cloud in the sky: the reconnoitring expedition will leave to-morrow.

May 29.—Neltner, Charignon, Carle and Deudon have left Base Camp accompanied by twenty Sherpas and seventeen Baltis. Their aim is to establish Camp I. Most of the porters will return to Base Camp to take up fresh loads whilst the sahibs will try, with the aid of a few Sherpas, to get on to the buttress to observe the general conditions of the mountain and also to spy out the land with a view to the placing of Camp II.

In the evening, I received a note from Neltner:

Camp pitched about 16,800 feet on a snowy plateau at the edge of a lake roughly 2¾ miles from the foot of the buttress. This buttress has an encouraging aspect, but it will be terribly hot if it is anything like the temperature here. The lower portion looks fine, a snow-slope of from 50 to 80 yards at 40°, followed by broken rock where progress ought to be easy as far as you can see from Base Camp. The *bergschrund* is child's play.

P.S.—Charignon is a bit out of sorts, but I think he will be all right to-morrow. Soft snow on this plateau.

Altogether our first favourable impression seemed to be con-

firmed. One troublesome point, however, was that all attempts to communicate by wireless proved fruitless, the probable reason being that Camp I was situated too much in a hollow.[1]

May 30.—Allain and Leininger left in their turn for Camp I. They will begin the equipping of the buttress to-morrow if the reconnoitring party report favourably. With great anxiety those remaining at Base Camp followed—their eyes glued to the glasses—the progress of the climbers on the buttress.

Nothing in view all the morning. After lunch we sighted them terribly low down—not nearly as high as I had hoped. They hardly seemed to move during the day, and finally came down. Once again I was deceived by Himalayan dimensions. No other explanation of their pace was possible.

Renewed attempts at radio-telephonic communication remained unfruitful. Doubtless, remarked Azémar with reason, because Neltner had not taken a set with him. Night fell without any news reaching us. I made preparations to leave for Camp I on the morrow. Arlaud, Ichac, and Streatfeild will accompany me.

May 31.—Early in the morning the glacier was easy, its surface being composed of an infinite number of minute spikes offering excellent foothold. We encountered a coolie who handed me a message. At Camp I a few moments later Neltner gave me all details. Yesterday only three sahibs (Neltner, Carle and Deudon) had left camp, as Charignon had gone down with a bad throat. They went up the big snow couloir and then up the broken rocks on its true left. The rock is lime-stone and most unstable ; it broke away in lumps as big as one's hand ; progress had been very slow, the Sherpas showing a marked repugnance to this kind of ground. The couloir, on the contrary, offered at all events an agreeable, if not a very rapid, means

[1] See page 202.

of advance, and, contrary to all Himalayan precedents (if these can be accepted as being really established), it was found preferable to keep to the snow as much as possible. Arriving underneath a wall of rock the party had been brought to a halt for want of pitons, ropes, &c., but they discovered an ice couloir that avoided the difficulty and obviously constituted the best line of ascent. Satisfied with their work the reconnoitring party regained Camp I.

To-day, whilst Allain and Leininger with six Sherpas were endeavouring to get beyond the point reached yesterday, Carle, Deudon, Neltner and myself made a short excursion on skis up the glacier and discovered the existence of a secondary glacier by which we might, perhaps, be able to gain access to the upper plateau in the event of the route being tried out by Allain proving impracticable. Arlaud, Ichac, and Streatfeild will go up to-morrow to reconnoitre.

Returning to Camp I, we made haste to examine the buttress. On the rocks it was difficult to pick out our comrades. Again and again we scanned the probable route with the glasses : the couloir itself, then its left bank, then the rock barrier which had defeated yesterday's party. About 1.30 p.m. we spotted them above the rock wall, which they had surmounted by following the ice couloir discovered yesterday. A little later they found a site for the tents of Camp II, which were perched on a rock platform.

From time to time I was able to make out a figure—infinitesimal in the immensity of the face.

From this Camp, situated at 18,500 feet, one looked down two deep-cut couloirs. The site was so small that the six high-altitude tents were erected with difficulty ; having to be scattered about at points sheltered from stone-fall. The tents were on the rock itself and the guy-ropes fastened to stones. And,

whilst Allain and Leininger were occupied in equipping the two most difficult pitches, placing over 600 feet of fixed rope in the process, we congratulated ourselves on this first success and reckoned up our chances for the future. Broadly speaking, the route which from now onwards appeared to offer the greatest chance of success lay up a spur of rock bordering one of the snow couloirs, then by the rock wall on the summit of which was perched Camp II. Above it followed a not very marked rock rib, which, at a height of about 21,000 feet, lost itself in a broad face streaked with snow couloirs all running up to the summit arête of the South Hidden Peak. From this point it appeared comparatively easy to cross the big glacial plateau extending for 2 or 3 miles in gently rising slopes to the summit (26,470 feet). It was, of course, far from certain that we should be able to attain the summit ridge of the South Hidden Peak, but should this prove possible, there would then be no doubt in our minds as to the final success of the Expedition.

June 1st.—In spite of the work of organizing the provisioning parties awaiting me at Base Camp, I remained the whole morning at Camp I. Charignon being out of sorts, Neltner, his climbing partner, went up alone with eleven Sherpas to Camp II.

The men, heavily loaded as they were with equipment and provisions, advanced slowly and sometimes hesitated at certain pitches. These Sherpas, who showed the finest physical and moral courage during the whole expedition, particularly during the final assault of the South Hidden Peak, proved to be relatively poorly gifted for actual mountaineering. They had no experience in the technique of rock climbing or in the use of the rope. It was only towards the end that they showed themselves skilful and capable of overcoming unaided the difficult pitches where fixed ropes had been placed.

Neltner's party, moving very slowly, having only one sahib

for eleven Sherpas, reached the foot of the rock wall. Now that we knew the route by heart, we were able to pick out our friends: one man arrived on the top of the wall—it must be Neltner. For the most part, he remained stationary, though occasionally moving a little upwards or downwards. Half an hour, an hour, went by without the slightest sign of progress.

In the morning I had searched in vain for a sight of Allain and Leininger on the rib above Camp II. I could swear that no one had left the tents. Why? What was happening up there?

For Neltner the passage was difficult, and the porters seemed rather frightened. Neltner had to haul up several loads and then to insist on the Sherpas following in their turn. Not without difficulty six of the men succeeded in reaching the top of the wall complete with all the loads; the five others came down again. Amongst these was my own boy Lagpa-Tentze, in whom we had great confidence: unfortunately, during the descent, he was hit by a falling stone and had to return to Base Camp. It may here be said that the Sherpas give of their best only when everything runs smoothly. As long as all goes well they deserve all possible praise; but in adversity their morale is immediately affected without their having sufficient stamina to resist depression. They must have success for their ally.

Finally, Neltner made Camp II to find Allain and Leininger feeling the effects of their magnificent effort of the previous day, and of the altitude. During the night of May 31st they had suffered from all sorts of discomforts—unbearable thumpings in the head, buzzings in the ears, total lack of appetite, difficulty in moving their limbs and inability to put any force into their actions. In the morning, their condition being little better, they very wisely decided to regain a lower camp. I welcomed them on their arrival. Their troubles disappeared immediately

on descending. They described their impressions and gave me their opinions.

It is imperative to equip the route up to Camp II very completely if convoys of Sherpas are to carry loads up to this camp on their own without the escort of a sahib. It will also be necessary to accompany them the first time to show them what to do. Pitons will have to be placed and ropes fixed almost the whole way so that they can progress with absolute safety. Allain is optimistic regarding our prospects. Everything is well . . . except the provisioning. Nothing has come up from Base Camp to-day. To-morrow, to catch up lost time, I shall have to make the Balti porters do two trips.

June 2nd.—Returned to Base with Arlaud, Ichac, Allain, and Leininger. They deserve a well-earned rest for some hours at any rate. Allain mended the pneumatic mattresses. Charignon came down with us too in order to get something for his throat trouble. Unfortunately the medicine chest, which was chock full of all sorts of complicated drugs and remedies for practically every known disease, could produce nothing really effective for one of these classical altitude throats.

After a night spent at Camp II, during which the thermometer registered 14° Fahrenheit, Neltner and his Sherpas also began to feel the effects of their efforts of the previous day. Nevertheless this did not prevent them from starting out to look for a suitable site for Camp III.

We watched their slow progress up the spur, the ascent of which was really dangerous on account of loose rocks. Neltner had to reduce the pace, the Sherpas showing a tendency to dislodge the unstable blocks thus risking to hurt each other seriously. Later on, they got accustomed to these broken rocks and became as careful as the sahibs themselves.

At about 20,000 feet, the spur peters out, giving place to steep

snow-slopes with outcrops of rock here and there. No camping site being visible beyond the spur, Neltner decided to pitch Camp III on a small shoulder of extremely reduced proportions. The tents were erected a few yards from one another, utilizing every available projecting ledge.

The same day, after having established Camp III, Neltner descended to Camp II for the night. After this magnificent effort, he was entitled to a well-earned rest, but with his habitual energy and go he decided to await the arrival of Carle and Deudon who will continue the ascent.

June 3rd.—Neltner accompanied Carle and Deudon to Camp III and only then returned to Base. To-morrow Carle and Deudon will try to establish Camp IV. Meanwhile Allain and Leininger went up again to Camp II to proceed with the placing of the duralumin windlass on which we greatly counted to help with the provisioning of the higher camps.

June 4th.—Alas, clouds are gathering and it is snowing. Another illusion gone ! Yet we had been well assured—and until now facts seem to have supported the statement—that at this time of year and in this region the weather remains continuously fine.

All operations at the high altitude camps were suspended. Nevertheless, Ichac, Arlaud, Azémar, and Streatfeild went up to Camp I. Some of them will film the tents under snow whilst the others will give Jimmy, who is in charge of this camp, instructions regarding the provisioning.

Azémar, returning in the evening, told me what I had already guessed—that in view of the snow Allain and Leininger had not been able to proceed and are still at Camp I. Carle and Deudon are coming down from Camp III.

June 5th.—Still snowing. The mountain is all white. After

lunch, Arlaud and Streatfeild arrived back at Base, their beards powdered with snow.

Shortly afterwards back came Carle and Deudon—the latter very hoarse. In spite of the fixed ropes they had had great difficulty in descending on account of the bad snow conditions. Carle is opposed to making any attempt to continue the ascent.

No matter—what has already been gained is sufficient to make me optimistic, in spite of the present set-back.

On June 3rd, in the space of five days, we had already climbed over 3,000 feet—about half the height of the buttress. It is now only June 5th and the monsoon is not due before July 10th. We have, therefore, still nearly a month before us. It is more than we need.

June 6th.—Base Camp is under snow, but the sun is shining. The buttress is so white that we shall have to wait for the snow to melt before continuing the ascent.

On account of the bad weather Base Camp is exceptionally lively. We lead a healthy life, but it is scarcely gay. Daily routine is as follows:—

In the morning, we get up at 7 a.m. It is too cold to get up before the sun strikes our tents.

Breakfast at 8.30, and immediately afterwards the dispatching of the porters with equipment and provisions.

At 10 o'clock, Arlaud makes his round. There is always some Sherpa ill, and one of them has a very bad heart.

A light lunch at 12, following Arlaud's theory. The lucky chaps high up can eat as much as they like.

After this we rest. Then letter-writing, &c. and the preparation of the convoys for the following day; then sometimes a game of cards by way of a little distraction.

Dinner at 7 p.m., after which we all turn in; getting into our double sleeping-bags of eiderdown, still partially dressed,

we are able to sleep soundly and in comfort despite the temperature of 14° F.

In the evening, I sat up discussing the preparations for the final attack with Neltner whilst Azémar made up the post-bag.

June 7th.—Carle gone sick just when Charignon seems on the road to recovery. Deudon and Neltner will have to be partners. When Carle is better, he will pair with Charignon. Meanwhile, I have only two attacking parties instead of three.

Splendid weather.

With the exception of Azémar, we are all going up to Camp I. But it is mail day [1] and I have to wait for possible news before leaving. Eight days have passed without our receiving any letters.

At 4 p.m. the post arrived . . . and turned out to consist of two sheep! Great disappointment. Somewhere or other between Shigar and Base Camp there must have been a mistake or some carelessness; at all costs I must not let this disappointment affect the morale of the Expedition.

In spite of my great desire to get on to the buttress, I gave up the idea and sent Addou, our second Shikari, down the valley with all possible speed to meet the post, with orders to return with it to Base at once, after having remonstrated with the culprit; I shall await his return.

June 8th.—Only to-day has it become possible for Deudon, Allain and Leininger to regain the position which the bad weather had forced them to evacuate five days ago. Neltner and Deudon will sleep at Camp III to-day with the special purpose of estab-

[1] The Kashmir post brings the letters as far as Shigar. From this point we established a relay service of four runners who divided up between them the distance between Shigar and Base Camp, which is really quite considerable. The complete cycle is four days—one to come up, one to go down, and two rest days.

a. The Treasure House at Skardu

b. Weighing out the Rupees

In the Braldo Valley

Rope Bridge over the Braldo

Camp at Askoley

Tricky going near Bardumal

Rdokass

The Tramgo Towers

The Baltoro Glacier below "Concordia"

lishing Camp IV to-morrow. Allain and Leininger go to Camp II to proceed with the placing of the windlass. Ichac and Charignon will accompany them. Ichac will try to film the equipping of the buttress and the ascent of the porters. Charignon, who is much better, will take advantage of this trip to get into training again.

In the evening, following instructions given by Azémar, Ichac succeeded in putting the radio-telephonic set at Camp II into working order; he took this opportunity of informing us that he is well satisfied with what he has been able to film and that he will continue up towards Camp III to-morrow.

In future we shall communicate by wireless at 8 a.m., 12 noon and 6 p.m.

June 9th.—A bad day. Big clouds are gathering over the Conway Saddle and the lower part of the Baltoro glacier. Nevertheless, Neltner and Deudon with a few porters began the ascent. But immediately above Camp III, conditions became very bad—powder snow over ice. As under these conditions it would have been dangerous to follow the bed of the couloir, the climbers had to take to the steep rocks bordering its right bank. Difficult ground. Towards noon, fatigue coupled with a slight snowfall, obliged the party to fall back to Camp II. Another day gone—that makes us already behind-hand on our programme. We have gained no ground since June 3rd. Ichac phoned me that the placing of the windlass was proving extremely difficult; also that Pasang, one of our best Sherpas, had been hit by a stone above Camp II. Arlaud is going up to supervise bringing him down. On the other hand, Addou returned with the post in the evening. From Base Camp he had been right down to Rdokass and back in two days—or so he said. I shall never believe this to my dying day.

June 10th.—The snow which fell yesterday evening (2 inches at Camp III) completely paralysed the high camps. From Base Camp it is now practically impossible to follow the movements of the climbers above Camp III. At most we are able to spot the tents when once pitched. Consequently the wireless, which thanks to Azêmar now works perfectly, is of great help—being our sole means of communication. How we blessed it that evening! We learned that after waiting for the snow to melt Neltner and Deudon with four Sherpas had returned to the attack. Led brilliantly by Deudon up a chimney and over rotten rock rendered difficult by the quantity of fresh snow, the party arrived under a vertical wall. It was late, and with no possible site for the tents in view they could do nothing but return to Camp III.

June 11th.—To-day's great event is the hoped-for establishment of Camp IV. We know that Neltner and Deudon are at grips with the narrowest and steepest portion of the buttress and that the difficulties are very great. With growing impatience we await the evening's message.

About noon Arlaud arrived down with the injured Pasang. The crossing of the steepest part of the big couloir had been very hard work. It was the porter Giudu Amdou,[1] always devoted and willing and a regular specialist in rescue work, who carried, unaided, the injured man on his back from one side to the other.

Meanwhile, thanks to the fixed ropes already placed, the climbers quickly reached the vertical wall which had forced them to retreat the previous day. Deudon overcame the obstacle by means of a difficult crack. Neltner joined him, followed by two Sherpas carrying rope, and all four continued

[1] He had already carried Jimmy on his back for a distance of 9½ miles over soft snow during the crossing of the Zoji-La.

the reconnaissance. A site was found on a shoulder of broken-up stones and snow, at a slight angle. They decided to make this Camp IV; the rest of the day was occupied in pitching the tents and bringing up the loads left at the base of the wall.

I am well pleased. It is fine and we are advancing once more. To-morrow Neltner and Deudon will be relayed by Allain and Leininger who have given up trying to place the windlass on account of an insufficient length of cable.

June 12th.—Left Base Camp yesterday evening and arrived about 10 a.m. to-day at Camp II. Here I found Charignon not feeling very grand. I also expected to find Streatfeild who had gone up yesterday with the intention of having a look at the buttress, but his curiosity has led him on to Camp III in the wake of the Sherpas carrying provisions.

After a few hours rest I intended to go up too, but once more clouds rolled up. The equipping of the sections of the buttress preceding Camps III and IV having necessitated a large quantity of rope, there was now no more left at Camp IV and the occupants were obliged to await the arrival of provisions and equipment which were being taken up from camp to camp. Allain and Leininger arrived about noon at Camp IV followed by the heavily-laden Sherpas. They established this camp with the intention of continuing the advance the following day and pitching Camp V.

In the afternoon several Sherpas feeling tired asked to descend and Streatfeild, on his own initiative, brought them all down to Camp II instead of leaving them at Camp III. A great pity, as subsequent events proved. Anyhow, there is nothing to do until to-morrow.

June 13th.—We awoke to find 4 inches of snow over everything. The Sherpas, still feeling tired, insisted on descending and Streatfeild backed them up. The descent was effected in a

heavy storm and the snow in the couloir avalanched continuously. At every moment Charignon and myself, last on the rope of each party, had to stop the uncontrolled glissades of the porters.

Down at Base Camp I found Carle in a bad way. For several days he had been suffering from an abscess under a tooth and I now proposed that he should return to Srinagar. Charignon has gone down with another bad throat.

June 14th.—The weather is still threatening.

At 8 a.m. a call came through from Allain informing me that provisioning operations are greatly hampered by the lack of Sherpas and asking me to send some up immediately.

He himself will start going up towards Camp V whilst Neltner and Deudon with the few remaining Sherpas will see to the provisioning and bring down the porter Tsi-Toundou, who is ill.

I started making arrangements to satisfy Allain's request when Streatfeild took it upon himself to object to the sending up of the Sherpas. According to him, no doubt still influenced by the unpleasant impression of the previous evening's descent, the conditions were too dangerous for Sherpas to proceed alone without the escort of a sahib between Camps II and III.

In any case Ichac will go up to Camp I and to-morrow he will give his orders according to the weather and the aspect of the couloir.

June 15th.—It is hopeless. A lot more snow has fallen during the night.

At 6 p.m. Deudon arrived at Base bringing down the sick porter, Tsi-Toundou. Deudon complained of the food: too much farinaceous stuff and not enough tinned food. According to him, at high altitudes the sahibs can only manage to eat preserved foods; the Sherpas had also been having this food as they like it, and their own stuff had not been arriving for the past two days.

On hearing this Arlaud jumped up, saying, 'Under such conditions in five days there will be nothing left to eat.' We mustn't get alarmed—there is still time to remedy this. Arlaud went off at once to Camp I to explain to Jimmy what provisions should be sent up. Meanwhile Neltner went up to Camp III with the essential provisions. Weather got worse and worse and on his arrival there it started to snow again.

June 16th.—Four inches of fresh snow at Camp III. The weather fine again, but in the afternoon the sky clouded over once more. More snow! Allain and Leininger, who had been three days at Camp IV (20,500 feet) were obliged by lack of food to come down. In the evening the barometer rose unexpectedly. I had a feeling that we were in for a fine period and sent up a messenger to stop the climbers from descending.

No luck! It was too late—Allain and Leininger were already down at Camp I.

Neltner descended to Camp II to meet the ten Sherpas sent up under the supervision of the sirdar Ishii.

June 17th.—The weather is magnificent, but, alas, Neltner is the only climber at a high altitude; a specialist in big parties, he is going up to-day with fourteen Sherpas to provision Camp III.

Arlaud and Streatfeild returned from Camp I where they had examined and parcelled out the stores; from this examination they came to the conclusion that it would be necessary to send to Askoley for more cases of food and reserves of flour.

June 18th.—Another wonderful day which might have been better employed. A thousand pities that Allain and Leininger stayed at Camp IV during the storm and were obliged to descend for lack of food when it had finished. Through the glasses I caught sight of some movement on the buttress.

Allain and Leininger, now rested, succeeded in reaching Camp IV in the day; here they found Neltner and his Sherpas. Deudon, now at Camp II, will supervise the transport between Camps II and III until Charignon is fit again.

At Base Camp I had, for the third time, to move my tent, which played the rôle of a glacier table, protecting the ice that it covered from melting; after about eight days it was left perched on a pedestal about 3 feet high and in danger of toppling over.

June 19th.—A successful day for the Expedition.

The wall above Camp IV is cut by a nasty-looking couloir bordered on either side by difficult rock. In spite of the fatigue due to their terrific effort of the previous day, Allain and Leininger succeeded in climbing about another 1,000 feet up this wall and finding a site for Camp V. The greatest difficulties were now over. They said that they had seen before them the snow arête which marks the end of the buttress and that the ground that still separated them from this looked better. Returning to Camp IV in the evening they found that the supply of rope was running short.

Long wireless communication in the evening. I announced that Charignon was all right again and would go up to-morrow to Camp II to take charge of the provisioning. At the same time we learnt that the two skiers, Arlaud and Ichac, who had camped on a tributary of the Baltoro glacier the previous night, in order to attempt the ascent of the Chogoli, had reached the Kondus Saddle, 21,120 feet. It is the highest altitude ever attained by French skiers. Great rejoicing at Base Camp.

To-morrow the snow arête above Camp V will be reached. It will be the end of all technical difficulties. There is no denying the fact that the upper half of the buttress has taken a long time and given us a great deal of trouble.

We have been trying since June 3rd to finish with this buttress. Apart from the actual difficulties of the ascent that our climbers have had to overcome we have been hampered continuously by the bad weather. But once the snow arête attained, we shall be able to establish an important camp and provision dump in a neighbouring crevasse, already observed, where I shall take up my quarters to direct operations for the crossing of the vast glacial plateau—all that would then separate us from final victory. No obstacle awaits us here except the rarified atmosphere. All the climbers are in excellent shape. One week, and we ought to be on the summit. It is now June 19th. There are another three weeks before the arrival of the monsoon. This should give us ample time.

June 20th.—First thing in the morning Neltner sent three chosen Sherpas up to Camp IV with the necessary supplies of rope. Meanwhile Deudon shepherded a batch of porters up to Camp III and after a short rest continued on with Neltner to Camp IV where they arrived at 2 p.m., to find Allain and Leininger very tired from their splendid performance of the previous day. In spite of their weariness, these two latter immediately started off again and succeeded in pitching Camp V. The site for this camp was so small that there was only just room for the two tents on a rocky projection huddled up underneath the frowning rocks of the last steep slopes.

Carle, who has been *hors de combat* since June 5th, has started back to Srinagar. He will take the opportunity of recruiting porters in preparation for our return.

June 21st.—Threatening weather in the morning. I learned from the newspapers that the British Everest Expedition will, in all probability, have to be abandoned. In the Eastern Himalaya the monsoon has broken three weeks ahead of its appointed time. It arrives roughly one month later over the

Kara-koram—and we are already at the end of this month. Perhaps the cloud-darkened sky is a forerunner of its arrival.

At all events there was no time to be lost. I sent Neltner to join Allain and Leininger and help them to reach, if possible in one day, the snow arête that marks the end of the technical difficulties. The big crevasse, at the foot of the summit slopes of the South Hidden Peak, will serve as a depôt for all the equipment and provisions necessary for the crossing of the plateau and the ascent of the final slopes.

Neltner, therefore, went up to Camp V. Continuing his ascent he joined Allain and Leininger, who, after having surmounted the last rock wall, had stopped at the foot of a snow slope, dotted with rocks, leading directly to the snow arête: but it was late and conditions were very bad. Not daring to venture on this insecure ground, they were obliged to put off till the morrow the establishing of Camp VI. So, leaving behind what rope and pitons they had not used, they regained Camp V. Little did they think, whilst descending, that (in 1936) they would not go beyond Camp V again.

June 24th.—For the last three days it has been snowing. At Base Camp we have already registered a considerable amount of snow. Life is unbearable here. With the exception of our four meals [1]—and what meals !—occupying two hours in all, we remained, day in day out, confined to our tents, lying on our pneumatic mattresses. Our only relief was sleep—but one cannot sleep twenty-two hours out of twenty-four. So, with our eyes wide open, our spirits dulled and clogged—an

[1] This was the moment chosen by Arlaud, under the pretext of economizing our tinned food, to put us on a diet of his famous ' Navarin '—a foul concoction of bones, dried potatoes, dried and powdered cabbage and carrot tabloids. On opening the air-tight saucepan there came forth such a stink that it was enough for us. Truly an economic dish, as nobody could touch it and it invariably reappeared undiminished at the following meal.

excusable condition under the circumstances—we listened to the thundering of the avalanches and the gentle hissing of the snow sliding down the roofs of our tents.

We whiled away the time playing '*belotte*', *trente et un*, and other such games; or else we tried to add some names to two lists already begun—that of the members of the *Académie Française* and that of the '200 families'.

But these distractions (if they may be so called), these pastimes, did not stop the incessant dance of the snow-flakes which hour after hour, day after day, buried deeper and deeper our chances of success. This must be the monsoon. Three weeks early? Impossible! For the first time I felt a doubt as to our ultimate victory.

Three times a day, at 8 a.m., noon, and 6 p.m., Azémar sallied forth in his *cagoule* [1] to call up the high altitude Camps. But there was absolute silence; no one answered. What was happening? I no longer dared look at the barometer—it was going down, down, with never a single upward movement. And yet every evening I went to sleep confident that there would, there *must* be, a change for the better that would enable us to take heart once more and continue the attack. But every awakening, in the pale light of the snow-filled sky, killed my hopes one by one.

This state of affairs lasted three long days, days of ennui growing discouragement and . . . anxiety.

At last a note from Allain came through: The cold was intense—5° Fahrenheit; the wind terrific—so strong that at Camp V they were obliged to cling to their tents for fear that these should be blown away bodily. The canvas of the tents flapped and strained incessantly under the force of the storm, deafening them as though they were being bombarded. They dared not put their noses outside their tents. The drama of

[1] See note, page 190.

their lives was being enacted in a miserable 6 cubic feet of space. The familiar acts of going to sleep and getting up had, for them, lost all meaning. There was nothing to do but sleep, and sleep again . . . if possible.

And the storm still raged. But, thank God ! all is well.

June 24th.—A note from Neltner dated the 23rd.

Suffering from the same causes of depression as those of us at the Base, and moreover exposed to the full force of the bad weather at Camp IV, he was still by no means disheartened. His optimism is splendid, but, I am afraid, out of proportion to the facts. However, I was very pleased with his letter. Here are a few extracts :

Allain and Leininger are at Camp V. One fine day, and they ought, I think, to be able to reach the crevasse. I shall immediately follow up bringing everything necessary for Camp V and for the equipment of Camp VI. How on earth we shall manage I hardly know ; everything depends on the porters and already some of these are asking to go down—thanks to which you will get this note. This, of course, upsets all my calculations. But I shall have time to reorganize things accordingly. Assuming that 7 porters go down (I have just arranged for this) and that we get a few fine days, I have planned as follows :

June 24th.—Allain and Leininger (or I) will complete Camp V [1] if it is fine. I shall bring up four loads to this camp. Seven porters will go up to Camp IV.

June 25th.—Seven, nine or eleven loads, according to the possibilities of porterage, will go up to Camp V—eight men will sleep at this camp. I shall leave with Deudon and two men to reconnoitre for a site for Camp VI.

June 26th.—Eight loads up to Camp VI. Thus, by the 28th, everything will be ready for the final attack which will begin on the 29th or 30th. God is great and He alone is wise. It is a bit mad to make plans for the future. Violent storms again yesterday . . .

[1] It was already partially stocked, but consisted of two tents only.

great difficulty in keeping the fresh snow out of the tents owing to the bad lie of the ground, but our equipment is top-hole. Last night 1° Fahrenheit (20 in the tent) but with the *duvets* we are cosy—ever so cosy. Chabbach! Chabbach![1] Yours ever.

At this time I still firmly believed in our ultimate success. All wireless communication being cut I transferred to Neltner the command of high-altitude operations—and his programme filled me with hope.

The bad weather which we were experiencing was perhaps after all only the *avant-garde* of the monsoon, leaving before the actual arrival of the latter a short period of fine weather.

June 25th.—All yesterday and again to-day the storm continued. Snow . . . snow . . . snow. We played cards. Outside the shelter of the tent we were blinded by the force of the storm, and sank above the knees into the fresh snow. Even here I felt a prisoner, like some Arctic explorer. What, then, can be the feelings of those high up, who have nothing to do but lie down in their tents—clinging to the poles?

In the evening another note from Neltner at Camp IV informing me of the descent of Allain and Leininger:

DEAR OLD CHAP,

Have just had a visit from Allain and Leininger on their way down to Camp I. Was delighted to see them and to hear their news—their going down is a good sign—it's sure to be fine to-morrow![2] No wireless here, but Allain and Leininger tell me that the food can't last beyond the 6th or 8th of July.[3] This leaves us

[1] Expression often used during the march to Base Camp and now become the war-cry of the attacking parties, meaning 'Everything is O.K.'

[2] Allusion to Allain and Leininger's descent on the 16th of June due to lack of food, which had coincided with the return of the fine weather.

[3] This date had been fixed on not so much because of the food but because of the normal date of the breaking of the monsoon. Knowing the danger of the monsoon, I was determined not to let my comrades risk their lives once we were under the influence of this latter. I feared, far

very little time and unless the bad weather stops at once it's all up. Conclusion: we *must* be able to stay here until the 15th or 20th of July.[1] Is it possible? It's your job to decide. This is what I suggest: that we take the food reserved for our return, now dumped at Askoley, representing about 8 or 9 days' rations, for the use of the climbers: that for our return we buy food at Askoley (nothing but flour is to be found there). I grant this means a distinctly disagreeable return, but the Hidden Peak is worth it. Even if we make a terrific effort now we could still do nothing in this weather (awful wind and snow); we must wait. Can you give us sufficient time to succeed? If we had till the 15th or 18th of July I think we ought to pull it off (barring something unexpected)—we should then have 22 to 25 days, and we need only 8 to 10.

You simply must manage to hang out at Base Camp till then. I shall stay here with Deudon and the Sherpas and the moment it turns fine we shall move up again. At all events I don't want to consider coming down before the final success. I hope to 'phone through to-morrow from Camp V (in the sun !) but I should like to point out now that two years ago the monsoon broke on August 6th.[2]

more than the present bad period, a short interval of fine weather permitting us to recommence operations high up: this interval would be absolutely certain to be followed by a sudden return to even worse storms than those we had already experienced—and this renewed bad weather would be infinitely more dangerous should it surprise our climbers whilst crossing the vast glacial plateau, than if it should overtake them on the buttress.

[1] At this date we shall in any case be right in the middle of the monsoon even supposing this to be late instead of early—and the monsoon lasts more than a month.

[2] Neltner was confusing with the date of the ascent of the Golden Throne, having overheard one of us say he remembered reading somewhere that in 1934 the conquerors of the Golden Throne had watched from their summit the breaking of the monsoon over Nanga Parbat at the time of the terrible catastrophe on that mountain. It will be remembered that four German climbers and seven Sherpa porters lost their lives on Nanga Parbat from exhaustion and exposure after having been surprised near the summit by a terrific storm in exactly the same conditions as would be the case for my comrades were they to be thus taken unawares on the high glacial plateau leading to our peak.

Counting 15–20 days earlier still only brings us to July 15th to 20th. The present squall is *not* the monsoon and there is no need to become alarmed. Give me three weeks and I will win the summit for you. The only alternative is to make a dash for our eight-thousander the moment it turns fine and trust in God; I am ready to try this and all I ask is to be given a free hand.

I was worried beyond words by this letter and torn by painfully conflicting emotions. My desire for success was every bit as strong as that of my friends—not only was I the leader of the Expedition, but I had also done all in my power since the very birth of the idea to establish and help it on its way. For me success meant the realization of a dream. Now I began to feel the terrible weight of responsibility, which fell on me—and on me alone.

Since yesterday the English papers have confirmed the arrival of the monsoon and the abandonment of the British Everest Expedition. They also state that the conditions are quite exceptional—the monsoon having broken absolutely suddenly with no forerunner in the shape of the usual pre-monsoon. The Indian Meteorological Service, which usually gives warning of the approach of the monsoon weeks in advance, had this time been taken completely unawares.

Was then this bad weather of the last five days, which seemed now to have reached its maximum force, really the monsoon itself? Or, for those who hold that there is no monsoon in the Kara-koram, the repercussion of the latter with the same manifestations and dangers?

Neltner, Deudon, Allain and Leininger have been twenty-five days at high-altitude camps and their power of resistance must have been sorely taxed during the last five of these, when they were storm-bound at Camps IV and V.

My hopes of success were now all gone. The characteristics

of the monsoon are only too well known. From the moment of its arrival it rages for close on two months, broken only by very short fine intervals.

I was ready to accept for my comrades the risks proper to all Himalayan adventure—technical climbing difficulties, falling stones, bad weather—all these were part of the bargain. At the same time I had done all in my power to reduce these as far as possible by insisting on a very complete and careful equipping of the buttress. But I categorically refused to expose their lives to the dangers of the monsoon itself, or, with the coming of a temporary fine period, to the worse danger of the unpredictable but probable return of the storms. If this danger was relatively slight on the buttress, it would be formidable once on the big snow plateau, where exposure to the violence of the wind, the intensity of the cold, the mist, and the possible burying of the tents under enormous quantities of new snow, would in all probability lead to the climbers losing their way: a catastrophe which at such an altitude would be absolutely fatal.

For this, the first French Expedition, I preferred failure to the slightest risk of accident. I sent a letter up to Neltner summarizing all these arguments and formally forbidding him to depart from the undertaking he had already given. I reminded him that he had given his word to act according to orders and added that the present circumstances, fraught with danger, must be considered as a definite bar to any heroic attempt. To shut one's eyes to the dangers of the situation was perhaps only natural when so near to success. But to give up and turn back was far more praiseworthy.

I knew that I was dealing a bitter blow by forbidding any dash for victory: but my own responsibilities, my anxieties, my lost hopes were quite enough for me without the additional

responsibility of having to protect my comrades from themselves and of making them see reason.

This was our one and only dispute in four months, and it was laid to rest almost as soon as born.

After all, each man must fulfil his appointed task and it would be a poor sort of expedition that needed to be incited and urged on by its leader.

June 26th.—Taking advantage of a few hours of fine weather I gave my letter into the charge of some Sherpas who, despite the terrible conditions, would, with the security afforded by the fixed ropes, be able to take it up to Neltner.

Got into wireless communication with Charignon at Camp II where he has been for the past six days. With the glasses I saw him amidst the clouds, walking up and down like a caged bear on the little platform 6 feet by 9 feet in front of his tent. I gave him a *résumé* of my correspondence with Neltner and asked him if possible to join the Sherpas who were bearing my letter, and go up with them to Neltner to add the weight of his persuasion to my written arguments.

Charignon was most reasonable and promised to back me up. He would also prepare the others for the final order to retreat. Personally I had given up all hope, but to prevent the possibility of any subsequent regret, I put off a little longer making an absolutely definite decision.

At 6 p.m. a call from Allain at Camp II. He read me a letter received from Neltner and I in my turn gave him the reasons which had led me to my final conclusion, and with which I found he was in entire agreement

June 27th.—Another call from Allain at 8.30 a.m. from Camp II; it is snowing there but the cold is not excessive.

Heaven knows the whereabouts of Neltner, Deudon, and Charignon. At the appointed times for telephonic communi-

cation Azémar listened in vain for a message from them. They must be at Camp III or IV.

Down at Base Camp snow is falling thicker and thicker. This waiting is unbearable. Not only are our hopes all gone but the situation is becoming rapidly more dangerous for our comrades. Card games are of no more avail. It is enough to drive one mad! And looming in the background is the haunting knowledge that we are beaten—beaten.

June 28th.—The sky is overcast; it has ceased snowing—but for how long?

At 8.30 a.m. we got into touch with Allain. I told him he must return to Base Camp not later than July 2nd. I have decided to postpone giving the final order till then.

At 6 p.m. another conversation with Allain. I asked him to tell Neltner, from whom we can still get no response, that he must be down by the 4th. I also told him that Ichac is going up to-morrow to film the snow-covered buttress.

June 29th.—Heavy snow again. At 8 p.m. Allain informed me that he had sent two Sherpas up to Neltner to give him my message and at the same time seven Sherpas up to Camp III to begin evacuating operations.

At 12 noon I got a letter from Neltner at Camp IV:

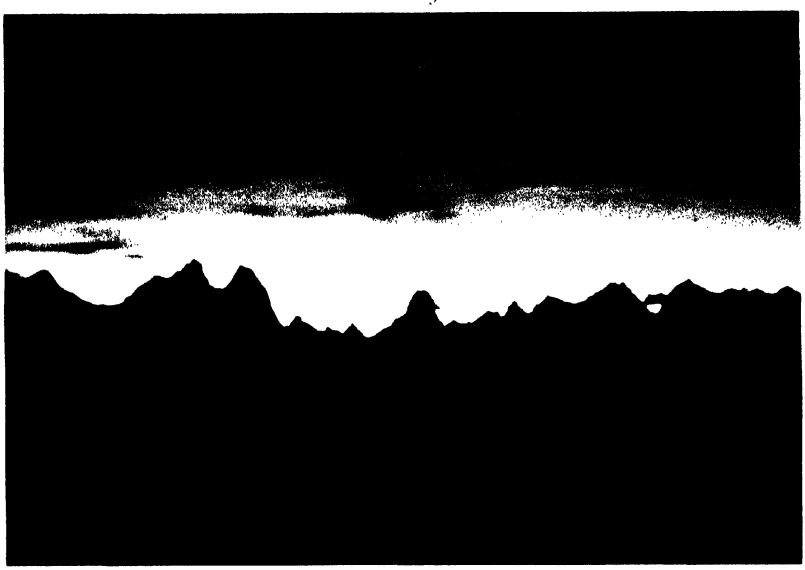
Noon. I am just as keen as you for a heart-to-heart talk, and with this end in view I went down yesterday to Camp III with two Sherpas. Here I had an unpleasant surprise: I found the set minus the microphone and the ear-phones; they must have been blown away by the wind. Awaited the arrival of Charignon this morning for news. He told me more or less what you thought of my letter . . . On joining the Expedition we undertook to represent our country's climbers . . . we must be worthy of the confidence placed in us and be prepared in consequence to accept the risks which this trust involves. My proposal was the following: To establish Camp V and from there to continue with six Sherpas, of

Arriving at "Concordia"

Camp at "Concordia"

a. Looking down the Baltoro Glacier from Base Camp

b. Same View after Sunset



Going up the Couloir towards the Bergschrund

The Rock Wall above the Couloir

The Wall beneath Camp II. (Camera tilted)

Camp II

Above Camp II

whom four were to be sent back from Camp VI and two from Camp VII, thus leaving Deudon and myself cut off for one or two days. It is certain that, in the event of bad weather, our position would be highly dangerous. But this cannot be helped—it is all in the day's work. It is for this manœuvre that I wanted your consent. You will notice that the Sherpas only participate in the danger to a minor degree, as is only fair and just; we have no right to involve them in the risks which it is our duty to accept for ourselves. Deudon agrees absolutely. Your scruples as Leader do you honour, but they are I think without foundation. I will try to 'phone through to-morrow from Camp IV.

In spite of the violence of the storm Ichac left at 5 p.m. for Camp I, but with very little enthusiasm. His boy Tchang-Tsering went with him to carry the camera.

A call from Neltner at 6 p.m. but it was impossible to hear anything on account of the storm.

After dinner the snow fell thicker and thicker.

June 30th.—On awaking we found four tents gone, leaving absolutely no trace—flattened and completely buried under the weight of the snow. One of these was Ichac's. Lucky fellow to have escaped this unhappy fate—an escape which he owed to yesterday's timely, though not overjoyful, departure.

After tea three Balti porters arrived down at the Base; for fear of the storm, which had been raging continuously, they had roped themselves together. They brought with them a note from Ichac, who described the appalling conditions and asked whether I still thought it necessary for him to go on to Camp II up a couloir which he said was spitting avalanches incessantly. He signed 'A father to be'. It was true that the avalanches, which for the past eight days had been deafening us with their semi-continuous rumbling, were now increasing in number at an unbelievable rate. I was seized with a new apprehension. The condition of the mountain had now become so dangerous

that I had every reason to fear an accident in the course of the evacuation of the buttress. Masses of snow slipped off the great wall, pouring down the couloirs. The whole mountain seemed to be on the move and we lived in a perpetual uproar.

July 1st.—The weather was so foul yesterday that Neltner, Deudon and Charignon were not able to begin the retreat. It is only to-day, though it is still snowing, that Neltner, taking advantage of a slight lull in the storm, has been able to begin the descent.

The situation was now as follows: Neltner, Deudon, and Charignon at Camp IV, Allain and Leininger at Camp II.

At 4 p.m. Ichac rushed in to Base Camp, breathless, bringing news that two Sherpas had been killed in an accident. Arlaud and Streatfeild went up immediately to Camp I. I could not go up until after the 6 p.m. communications.

Arriving at Camp I after dark, I was thankful to find Allain and Leininger. The Sherpas, whom we thought dead, were very badly bruised, but did not appear to be in any danger—yet they had fallen over 2,000 feet! Whilst descending together above Camp II, they lost footing in the fresh snow, starting an avalanche which swept them downwards in its icy embrace. Passing Camp II like meteors, before the terrified eyes of Charignon and his Sherpas, they shot over several rock walls, one of which was well over 100 feet high, finally coming to a stop with the avalanche at the foot of the big couloir. There Ichac, having taken up his position for filming purposes, saw the last waves of the avalanche come towards him, bearing the two bodies of the Sherpas. Rushing immediately to their aid, he realized the seriousness of the accident and dashed back to Camp I to fetch help.

Thus these porters owed their lives to a miracle—Ichac, by some providential hazard, awaiting them in the place of death

at the foot of the couloir. The same day Neltner, Charignon, Deudon, and their Sherpas succeeded in getting down to Camp II; they had, in addition to the extreme difficulty of the ground, to cope with their own fatigue caused by twenty-five days spent at high altitudes. As they descended the rocky spur the two couloirs on either side were swept unceasingly by avalanches. The rocks were so plastered with snow that in order to make their way down they had to dig out the fixed ropes and clear the holds.

Some of the Sherpas had lost confidence, and it was more than ever necessary for the sahibs to give them the assurance of the rope. In one place more than 100 feet of fresh rope had to be fixed.

July 2nd.—At noon Neltner, Deudon, Charignon, and their Sherpas got down to Camp I. We clasped hands with emotion.

There was now no one left on the buttress. Owing to the splendid efforts of the five climbers—efforts which ought to have been rewarded by a victory—the retreat was effected without any loss of life.

For me, the leader of the Expedition, that consideration came before all others.

And so ended our adventure. Our dreams have vanished. The disappointment is all the greater inasmuch as we had had up till the last every reason to believe in our ultimate success. Our march to Base Camp had been rapid and effected under the best of conditions; our choice of route had turned out to be judicious; all technical difficulties had been overcome: we were within 20 or 30 yards of the point from which operations for the final attack were to have been directed.

The ascent to this level had cost us no less than one month of continued effort; this was largely due to the fact that I was

determined that the buttress, up which our route lay, must be not only well marked out but literally covered with fixed cables, to assure the security of the porters and also to serve in the event of a forced retreat. The provisioning was carried out with the utmost regularity and great praise is due to the Sherpas to whom this was entrusted.

When the monsoon arrived and put a stop to our advance we ought, by rights, still to have had another three weeks of fine weather before us, as had been the case for all previous expeditions; for we had been told that the monsoon was a regular phenomenon, arriving at certain fixed times with only a possible advance or delay of a few days. The 10th of July was the date on which it was due in the Kara-koram, after having broken over Everest one month earlier; and then contrary to all expectations it arrived three weeks early . . . and we were forced to retreat. A few weeks previously the same fate had befallen the British climbers on Mount Everest—never before had they had to give up and turn back at such a low altitude.

This first defeat but follows the traditions of all previous expeditions to peaks of over 26,000 feet, where in some cases the attempts on the same mountain already amount to two, three, or even four in number.

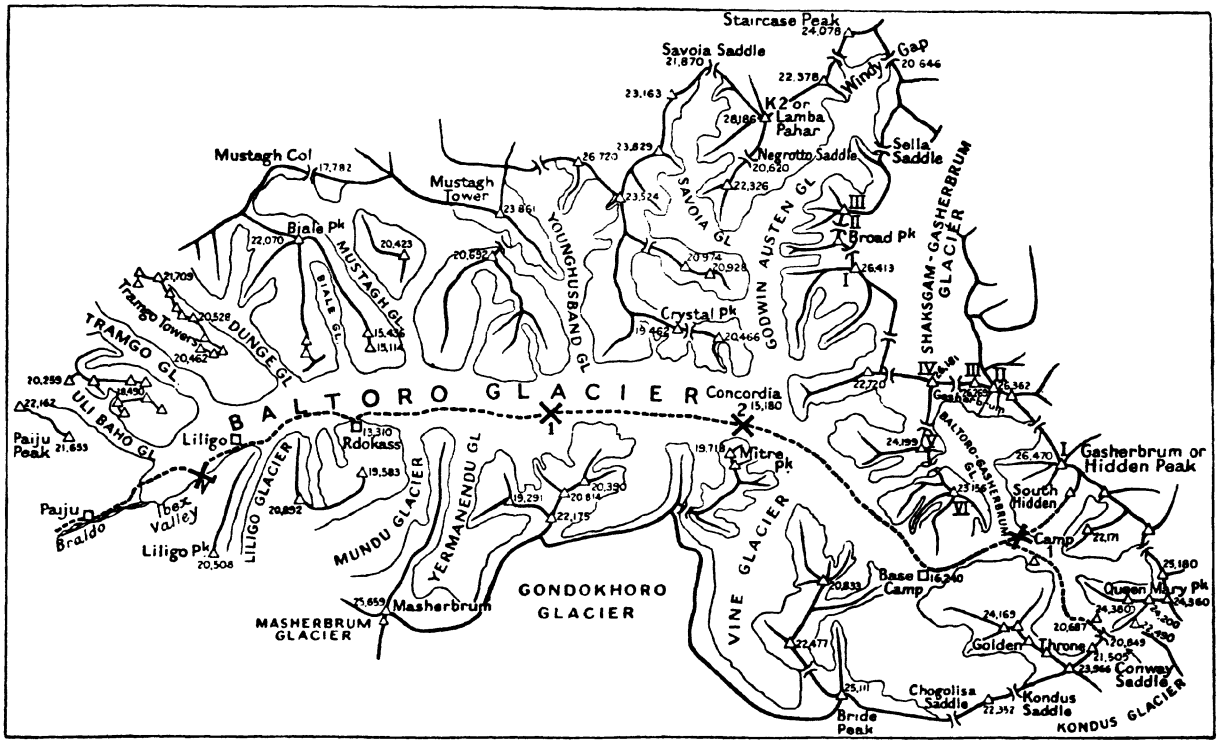
The first French Expedition has failed through unlooked-for bad luck. But luck always turns and we still have the hope that the years to come will reserve us a happier fate.

IV

The Assault

A VERY GOOD IDEA OF THE HIDDEN PEAK AS IT APPEARED to us on the 26th of May—the day of our arrival at Base Camp—may be gathered from the accompanying photographs. As soon as the first essential jobs were put in hand all eyes were turned towards the coveted summit and more especially towards the gigantic buttress some 6,500 feet high by which we hoped to gain the upper glacier—and Victory. Beyond this upper glacier the rest of the ascent looked fairly easy; at the worst we might perhaps encounter a short steep slope before being able to set foot on the terminal arête which rose at an easy angle to the summit of Hidden Peak. But this slope appeared regular and it seemed unlikely that we should encounter any important obstacles there. The whole problem for us was to gain access to the upper glacier which flowed down to join the Gasherbrum glacier in a tremendous cascade of seracs; and the buttress would prove the key to the problem.

Just under the snowy dome of the South Hidden Peak (23,200 feet) the buttress splits into two sections which are separated by a steep and impracticable funnel of ice and snow, the two masses on either side falling abruptly to the Baltoro glacier. The left-hand mass looked extremely difficult, whereas that to the right had a far more engaging aspect—and Ségogne, sharing the unanimous opinion, chose this line of attack. It is the right-hand of these two masses that I shall term 'the buttress'.



SKETCH MAP OF THE BALTORO GLACIER

The buttress is divided up into three distinct portions: at the base a rock wall, some 2,500 feet high, streaked with couloirs; in the middle a snowy zone, for about 1,800 feet, from which a few rock ribs emerge; and in the upper portion another rock wall, cut by a number of gullies, which join, at an altitude of a little under 23,000 feet, the snow arête of the South Hidden Peak. The rocks looked steep, and did not appear to afford many suitable sites for the upper camps, but in this we hoped that the future would prove our misgivings to be unfounded.

As soon as Base Camp was established and in order the assault commenced. On the 29th of May Carle, Deudon, Charignon, and myself made our way up the glacier, with about forty porters, to establish Camp I on the snow at the edge of a little glacier lake. From this camp we had an extraordinarily fine view of the enormous icy masses of the Golden Throne and of the steep pyramids of the Gasherbrum rising in the distance beyond a chaos of seracs.

On account of the soft snow and our having no skis we did not reconnoitre the *bergschrund*—in any case the latter looked very easy and was at the foot of a couloir of an encouraging aspect. Everything would have been perfect on this May evening had it not been for the fact that Charignon had a bad throat which looked like putting him out of action for several days. The wireless would not work, but so overjoyed were we by the thought of at last beginning the climb, that we did not care a hang. Our programme was to surmount the first rock barrier, to look for a site for Camp II, and to continue up afterwards as far as possible; in the meantime Allain and Leininger would follow in our steps, equipping the route thoroughly before coming up to support us. It was a fine project, though not destined to be successful.

May 30th.—In the morning three sahibs and eight porters

crossed the insignificant *bergschrund* at the point arranged, but the evening of the same day saw us descending once more to Camp I after having left our loads half-way up. What had happened? After a long ascent in the couloir, where the hard snow necessitated much step-cutting, we had taken to some narrow ascending ledges on the left bank and after avoiding some rocky obstacles on the right, we arrived at the foot of a nasty looking tower that blocked the ridge we were following. Behind the tower there was a couloir, but this looked bad, and Carle, who was then leading, said it would require at least an hour or two to cut up. Moreover, the hoped-for site for Camp II turned out to be no good on nearer acquaintance. On the descent we examined anew the rock wall barring the upper part of the couloir—it really did not look at all bad and we felt a bit ashamed of having been so easily led away. Allain would certainly surmount the obstacle on the next day. Leaving the loads on a small rocky shoulder, we regained Camp I.

But the day was fated to bring us bad luck. If the sun softened the snow in the couloir, making the descent more agreeable, it also caused the glacier streams to swell, and their coverings to diminish, so that in crossing one of these Carle broke through the crust and took a forced bath. Soaked and frozen he made all haste to regain camp but from that day on he suffered from his throat until he left the glacier and went down the valley.

May 31st.—This day on the contrary was a red-letter day in the annals of the Expedition. Leaving early, Allain and Leininger, accompanied by a few lightly-laden Sherpas, succeeded in surmounting the rock bar and in establishing Camp II on a head of rock overlooking the couloir up which they had gone, and a tributary couloir joining it on the right.

It was truly a curious camp: the tents were dotted about in

groups of two and three above the precipice, perched on narrow rock saddles or small terraces almost on the edge of the wall. Woe betide him who did not keep an eye on his sack, for in less time than it takes to tell the latter would be over the edge and bounding down to the glacier below. Later on some of the Sherpas took this route to their cost. But, all in all, this camp, which had a magnificent site, amply sufficed our needs. One could lie down at full length and there was room to cache the provisions and even to walk a few paces. Though this camp appeared very restricted at first, later on it was regarded as really spacious by the climbers returning from the higher camps.

Meanwhile the remaining sahibs down at the Base were not inactive. An examination of the map had led Ichac to the conclusion that there was very probably a convenient glacier behind the buttress by which it might be possible to attain the upper plateau. Although the accounts of the Dyhrenfurth Expedition seemed to indicate the impracticability of this route, Ségogne judged it useful to go and see; so all the sahibs, with the exception of Charignon, who was still very seedy, went up the Baltoro glacier on skis. Sure enough behind the buttress was a glacier rising in gentle slopes to a plateau at an altitude of about 20,000 feet, but above this was a zone of steep slopes cut by crevasses and bars of seracs. However, as a portion of these upper slopes remained invisible behind the buttress, it was decided that Arlaud, Ichac and Streatfeild should go up to the plateau (20,000 feet) and verify the impracticability of the route above. The afternoon at Camp I drew to a happy close; we had seen Allain arrive on the summit of the rocky bar and we spent the time watching him going and coming, occupied in equipping the rocks.

June 1st.—Having left at dawn, the skiers returned between

10 and 11 a.m. with an unfavourable report: the slopes were exposed to the danger of falling seracs and to send teams of porters up this way would have been to invite disaster.

Whilst we were waiting for the skiers' report the attack on the buttress continued. As Charignon was still feeling seedy, I left with eleven Sherpas to provision Camp II and back up Allain and Leininger who would be relayed by Carle and Deudon afterwards.

Although heavily laden, the Sherpas ascended steadily to the point where the routes of the 30th and 31st of May diverged; but beyond this the difficulties soon began to increase and each had to await his turn to follow the fixed cables placed by our comrades. A little rock wall followed by a long traverse brought us to the foot of a steep couloir up which we mounted as far as the last pitch—a large snow-filled chimney, followed by a difficult wall across which a fixed cable ran obliquely. The going was hard, and I was completely out of breath on arriving at the top. The Sherpas appeared terribly impressed by this pitch, and my second refused to come up and unroped; but Damdou who was third on the rope finally decided to try, and passed all right. I continued up to a rocky head in view of Camp II, which Allain and Leininger were on the point of leaving.

Our two comrades were feeling acutely the effects of the altitude after their efforts of the previous day. During the night and all the morning they had suffered from violent headaches, and under these conditions they very wisely decided to return to a lower altitude. Soon they reached me, and I watched them disappear rapidly downwards.

Meanwhile Mapcha Topki, my personal boy, had also managed to get up the wall and the three of us, encouraging the other porters, and hauling some of the loads up with the rope, succeeded in persuading four more men to join us: Pemba, Sam-

douk, Sona Topki, and Tsi Tondou. The others left their loads at the foot of the wall and went down again. This little comedy of gestures rather than words (on account of my ignorance of Hindustani) lasted three to four hours, and Camp II was only reached towards 6 p.m.

During the incident Sona Topki distinguished himself particularly, but Lagpa Tentze, on whom I had greatly counted, was amongst those who shied at the passage. But Tentze had been hit by a stone which had rather upset him, and although he was certainly more frightened than hurt, it was enough to demoralize him completely. Brave sometimes to the point of imprudence, our Sherpas showed remarkable high spirits and recklessness as long as all went well, but in the event of a hitch or the least little accident their fine courage rapidly disappeared and they became timid and irresolute.

We were, moreover, very much disappointed in them during the first days of climbing. It was evident that they had no experience whatever on difficult ground, and in fact only a very few of them had taken part in big expeditions before; which, when one comes to think of it, was quite normal, for the Everest Expedition having left one month earlier had naturally taken all the most experienced men. But if they lacked training, our Sherpas made up for this by many natural qualities and a tremendous willingness. In a surprisingly short time they got accustomed to the ground and they were soon to surmount smilingly those pitches which had at first caused them so many misgivings. They learned very quickly to handle the rope, and to climb on broken rock without dislodging stones. So at the end of our campaign on the mountain we had a group of five or six porters of first-class quality, worthy to have their names inscribed in the glorious annals of Himalayan expeditions—Pemba of the large smiling face and the long hair,

Da Tentzing on the contrary generally serious, Tsing Temba and Sona Topki the lucky survivors of a terrible fall, Nim Tsering who always seemed to be mocking someone or something and lastly, though not of quite the same class, Mapcha Topki and Lagpa Tentze, not always to be counted on, but excellent fellows and most devoted and Giudiu Amdou, who in spite of his whimsically cheeky air was always a ready volunteer for the hardest jobs.

At the other extreme were two or three men of really no value; but between these two poles there was a solid block of about twenty porters, faithful if not heroic, conscientious and docile, who, with or without sahibs, undertook the obscure and thankless task of the daily provisioning.

June 2nd.—Having arrived late the previous night at Camp II, we had not been able to see to putting things in order, and the arranging of the loads, &c., occupied a good part of the morning; it was not until nearly 10 a.m. that I was able to get under way to prospect for a site for Camp III. At first we followed a couloir, broad and easy in the lower portions, but becoming higher up, narrow and steep, and finally losing itself amongst some rocks near a little shoulder of scree. I was pretty tired and we ascended very slowly to this shoulder, where we made a prolonged halt.

Above, a rib of broken rock partly covered with snow stands out from amongst the snow slopes. Alone with my Sherpas, who do not very much fancy rotten rock, I tried the snow, but this turned out to be in bad condition, and I soon had to regain the rocks, which after all were safer. Finally after many halts, I attained the summit of the rocky rib.

Higher up, the steep slopes held out small chance of our finding a site for our tents and we were obliged to look for a place near by. At first sight this appeared almost impossible;

to the left, broad snow slopes at about 45° ran right up to the crest of our rib, whilst to the right the rib fell so steeply away that we were forced to establish camp on the crest of the arête itself. Here and there a minute shoulder was levelled; and so, taking advantage of the slightest projection or ledge, we finally erected the tents of Camp III. For that day we contented ourselves with putting up two tents 15 or 16 feet distant one from another, into which we bundled all the loads; and then, as the weather was threatening and the wind getting up, we quickly descended to Camp II, where we found Carle and Deudon who had come up with six Sherpas.

They also had experienced difficulty over the wall and had had to leave some of their loads, which now had to be recovered. So, while Deudon attended to perfecting the arrangements of the camp, Carle, in spite of having completely lost his voice, went down to the foot of the wall and attached the loads, whilst I supervised the hauling up from above.

June 3rd.—During the night the rocks were lightly powdered with snow but the morning sun soon melted this. Despite his bad throat Carle insisted on continuing the ascent with Deudon to establish Camp IV. For myself I was beginning to acclimatize well, and as I wanted to introduce them to Camp III we all went up together—and at a good pace.

On our arrival Carle and Deudon immediately set about arranging things: two more tents were put up, the loads were stored away safely or made fast with stones, and this humble but useful work left no time to continue the ascent as they had at first hoped to do. As for me I went down to Camp I with six men. At Camp II we passed a batch of porters bringing up provisions, without escort, but recruited as they were from the best elements they had surmounted the wall without a murmur; a good sign.

Meanwhile Allain and Leininger slept at Camp I with the intention of going up to Camp II on the morrow to fix the *duralumin* windlass. Thus on the evening of the 3rd of June everything seemed in excellent shape. At this time we had climbed over 3,000 feet without any serious hitch. Hopes for a speedy victory were justifiable. But alas ! the weather was now to play an important part.

June 4th.—Snow fell during the night and Allain and Leininger remained at Camp I, whilst Carle and Deudon returned to Base, not without experiencing some difficulties on the snow-covered rocks beneath Camp III. The new snow melted during the day and on the morning of the 5th the weather was fine. Allain and Leininger started off, but, surprised by bad weather, they had to abandon the loads half-way up and return. In the evening 2 to 4 inches of powder snow was measured at Base Camp, and the following day was spent in watching this melt.

June 7th.—Fine weather, but illness still continued to put one of the three climbing parties out of action. If Charignon was a little better, Carle, on the other hand, suffered terribly from his throat, and it was necessary for him to rest a bit. Poor Carle ! he who perhaps more than any other had had the ambition to be the first on the summit ! When his throat was better he went down with a most painful abscess under a tooth, and in the end had to leave Base Camp *en route* for Askoley and civilization before the end of our campaign. Deudon and I were therefore paired together until Charignon should be in training again.

On the evening of the 7th we were quite a party at Camp I : Arlaud and Streatfeild who were going up to the Conway Saddle on skis to-morrow, Allain and Leininger waiting to be able to fix up the windlass, Ichac who will film the ascent to

Camp II, and finally Charignon for re-acclimatization purposes; Ségogne had intended to come up as well but had been prevented from doing so at the last moment. The postal services were not working quite smoothly and he had been obliged to remain another day at Base Camp to reorganize the relays of runners.

June 8th.—Being the rest-camp of the Sherpas, Camp I offered a picturesque aspect with its high pointed tents for the porters and the minute high-altitude tents which sheltered the provisions and the sahibs *de passage*. But on the morning of the 8th, we paid little attention to all this as we set out for the buttress. The reconnoitring was now finished and on this happy day, the possibility of failure not having as yet entered our heads, we felt that we were really starting out for victory.

Followed by six Sherpas, Allain, Leininger, and Charignon, always early birds, were the first to leave; Deudon, Ichac, and I followed after an interval of an hour to avoid crowding at the pitches equipped with fixed ropes; eight Sherpas accompanied us. On arriving at Camp II we found everything shipshape and Allain already occupied with the problem of the windlass. At first sight the ground appeared extremely awkward, and it looked as though it would be very difficult, if not impossible, to prevent the carrying cable from touching the rock, but this in no way discouraged Allain who immediately set about devising a system of ropes to remedy the bad lie of the land.

Although this morning he had made all the tracks at a great pace, the indefatigable Leininger insisted on going down himself with a few men to bring up the loads left half-way up on the rocks three days earlier . . . and off he went full of joy and enthusiasm to accomplish this humble task.

Meanwhile Deudon and I, followed by six porters, went on

up towards Camp III—an ascent that left me some most unpleasant memories. To help matters I had myself taken a load of about 20 lbs., and on the last bit of the rock rib I was obliged to stop for a breather every 10 or 20 yards; from that day I gave up carrying a heavy sack on the ascent.

June 9th.—The night was warm—as bad a sign in the Himalaya as in the Alps—and sure enough in the morning heavy clouds rolled up over the Conway Saddle and the lower part of the Baltoro glacier. But merely threatening clouds were not sufficient to stop operations and, after sending two men down to Camp II for provisions, Deudon and I continued the ascent with four porters. From the start the conditions were foul: the ice was covered with powder snow, in places crusted, with blocks of rock emerging from time to time. So, before commencing the ascent of the long couloir which mounted straight up, we tested carefully and tentatively the quality of the snow in several places—a manœuvre rendered all the more necessary because our men were completely oblivious to the danger of the situation. At one moment Deudon, who was slowly making his way up the treacherous slope, turned round for an instant to behold the two Sherpas with whom he was roped resting their loads negligently against the slope, their heels dug into the snow; they were paying out the rope nonchalantly, cigarettes hanging from their lips. In spite of his well-known pluck down he came as fast as possible to rope up with me. It was quite clear that if we were to avoid accidents it would be necessary for the sahibs to equip nearly all the pitches, and for the porters to come up only after the placing of the fixed cables. Suiting the action to the thought we immediately set to on the rocks bordering the right bank of the couloir.

The arrival of the bad weather put an end to our work for

the day and brought Deudon down from a sort of steep iced gully where he was fixing cables, himself at the end of 150 feet of rope. The first snow-flakes were falling as we made our way down to Camp III, where we found Ichac who had come up with some porters. He was the bearer of two pieces of news, one good and one bad.

The good news was that of the installation of telephonic connexion with Base Camp. After our first fruitless efforts to communicate with Base from Camp I we had, I fear, been a bit contemptuous of the so-called highly perfected apparatus, and being very much occupied with the establishing of the higher camps we had made no really serious fresh attempts. Azémar, our wireless expert, was the only one to remain confident; with patience, and setting aside the possibility of boring us, he had, during the three days of forced inaction at the Base, continuously praised the qualities of the ER.40 sets and had finally persuaded Ichac to make regular attempts from Camp II at fixed times. At the first try perfect connexion was established and from that moment the wireless became a most precious ally, enabling us to hold daily conversations between the different camps, for which we had to thank the patient tenacity of Azémar.

But there was also the bad piece of news—Pasang, one of our best men, had been hit on the knee by a falling stone; badly upset, even crying, he had been taken down to Camp II from whence he will be transported to Camp I. We learned later on that this last descent had been extremely difficult, but under the able supervision of Arlaud it had been successfully carried out, though only with the placing of many extra cables. When Ichac had gone we rested in the tents while outside the snow fell softly—4 to 4½ inches during the evening.

June 10th.—Glorious weather, but we could not leave until

the sun cleared the snow off the rocks. We finished the ascent of the gully begun yesterday after which the route continued, nearly always difficult, to the foot of a vertical wall barring the way. No possible camping site being visible, we left the loads on a rocky head and returned to Camp III. Whilst descending we took the opportunity of clearing away all the loose stones.

June 11th.—In the morning we were back again at the attack, retracing yesterday's route up which the Sherpas now climbed without hesitation. Followed by Pemba and Da Tentzing carrying rope, we soon began work on the obstacle at the foot of which we had knocked off the previous day. Across the wall there ran a very [1] difficult narrow crack up which Deudon made a brilliant lead; I rejoined him by means of a nasty ice couloir that turned out little better. A knotted rope was fixed in the crack and the two porters once safely up, the ascent continued, often difficult, along a rock arête interrupted by steep steps which were fortunately furnished with good holds. The structure of these rocks is rather peculiar: vertical layers of limestone form perpendicular walls which, being cut by the couloirs are transformed into fantastic *gendarmes*. One always hoped to find a comfortable terrace above each wall but these hopes were invariably disappointed, for at best we found only miserable saddles scarcely a yard wide.

But away to our left we saw a well-marked shoulder surmounted by a thin line of snow; traversing a broad couloir we reached this shoulder and had the satisfaction of finding behind it a bank of scree at a gentle angle where it would be possible to put the tents of Camp IV. The rest of the day was spent in arranging a direct route up to this camp from the crack where we had fixed the knotted rope, and in bringing up the loads which had been left at the foot of this latter. Our

[1] In the modern classification of difficulties, according to Deudon.

men worked with a will, some of them making as many as three ascents of the crack.

Meanwhile the men at Camp II had been far from idle; three days of going backwards and forwards, up and down the rocks beneath this camp, had finally resulted in everything being ready for the placing of the windlass. But alas, the cable proved too short by 80 feet! However, these days of going and coming amongst the steep rocks had so accustomed the porters to the pitches, which had at first inspired them with no little terror, that even the Baltis themselves now consented to go up to Camp II. Under these conditions there was no use losing any more precious time in trying to find a better place for the installation of this contraption and, after consulting Ségogne, Allain and Leininger started up to take part in the forefront of the attack. Charignon is up at Camp II. Let us hope that his recovery is final this time. Streatfeild is with him.

June 12th.—At Camp IV we ran short of rope and, after going down to fetch what we had left on the way up, we completed the equipping of the rocks beneath the camp. We were fagged and it was with joy that we saw Allain and Leininger arrive with rope, provisions, and telephone. Camp IV which now consisted of four tents would thus be stocked little by little; to-morrow the good work would be continued by the porters whom we had sent down to Camp III to fetch up equipment.

June 13th.—Bad weather: we were greeted on our wakening by wind, snow and mist. There was no question of continuing the attack in such weather; so we remained in camp. In the evening we learned by 'phone that Streatfeild had been up to Camp III, which he had completely evacuated, taking all the Sherpas down to the glacier. The threatening weather and the fact that the porters were tired had led him to take

this decision. Ségogne had only just arrived at Camp II and could do nothing but regret the action, the storm preventing him from countermanding the order. With all our hearts we cursed this untimely act; on the buttress the members of the Expedition must be the sole and only judges of the measures to be taken; all organization becomes impossible if those who play no active part take it upon themselves to make important decisions without giving any notice of their intentions. The whole provisioning system was upset, and during a good part of the night, which was incidentally extremely cold (5° F.), we pondered over the situation.

June 14th.—In the morning the sky was grey and not encouraging but we had to do something. Having asked Allain to send an S O S for porters Deudon and I went down in the hail to try and re-provision temporarily Camp IV. Down at Camp III we had an agreeable surprise in the form of six Sherpas. These men, sent down the day before yesterday from Camp IV with orders to bring up provisions to this camp had followed our instructions and had not gone down with Streatfeild. We sent four of them up to Camp IV and ourselves continued down to organize the revictualling of Camp III and to escort the porter Tsi Toundou who was sick. One of us held him on a short rope to help and encourage him; every 5 or 6 yards the poor fellow stopped for breath. When we reached Camp II we found it scarcely recognizable after all the work done in the attempts to put up the windlass.

June 15th.—In the morning Camp II was in thick mist and the rocks around were covered with 2 to 2½ inches of fresh snow, but the sun came out little by little and soon melted this away.

Deudon had been suffering from his throat since yesterday, and in spite of his great desire to remain, it was better for him

to go down and rest a bit while the weather prevented any advance; in any case it was necessary for some one to go down to clear up the misunderstanding regarding the food. The higher camps were overstocked with flour and with Eleska, but there was a shortage of tinned stuff, which, being nourishing and agreeable to the palate as well as being quickly and easily prepared, formed the climbers' favourite nourishment. In spite of severe rationing, we should soon be totally deprived of it. There had evidently been a misunderstanding at Camp I, and it was imperative to remedy this state of affairs as soon as possible. For myself I went up again to Camp III with a few men, in order to be in a position to back up those at Camp IV. Unfortunately the break in the bad weather was of very short duration and it was already snowing when I reached the tents.

June 16th.—The weather turned fine again, and the 4 inches of fresh snow fallen at Camp III started melting slowly. But the sky clouded over once more, and soon after noon a few flakes began to fall just as Allain and Leininger arrived down from Camp IV, where they had been confined to their tents for two days waiting for the sun. But instead of sunshine, snow had begun to fall once more and when they left there was about $7\frac{1}{2}$ inches of powder snow on the rocks, which, according to them, would take at least two days to disappear.

At the same time they had been on a farinaceous diet for the last two days and, curious effect of the altitude, at Camp V they soon began to be nauseated by the porridge of which they were such fervent addicts at lower levels. They now dreamed of *saucisson* or ham; and, in spite of the seriousness of the moment, I could not help laughing as I thought of the way these two had held forth about vegetarianism on the march to Base Camp.

Our friends had therefore decided to spend a day at Camp I to rest and refresh themselves. I went down with them as far as Camp II, which we reached almost at the same time as a batch of ten Sherpas, conducted by the sirdar Ishii, coming up from the glacier with provisions and an important load of equipment.

June 17th.—The wind has gone round to the north and the weather is magnificent. Followed by a file of fourteen Sherpas I went rapidly up to Camp III. For a moment I thought of going on to Camp IV, but it would have been of little use. It would scarcely be possible for me to continue the ascent beyond alone, and on the other hand half a day's rest in the sun would be really enjoyable; and so I spent a delightful afternoon in contemplation, lazing, writing, and making calculations with a pocket level, which gave Camp III a height of about 19,600 feet.[1]

A wonderful silence reigned over everything. From time to time a few stones fell from the upper slopes and seemed to be heading inevitably for the highest tent, that of the sahibs; fortunately we knew that at the last moment these missiles would ricochet and disappear down the couloirs. It was quite a pastime to watch them.

The time passed quickly and the great shadows soon began to creep over the glacier, which, flowing regular and tranquil to the left, chaotic and jagged on the right, glimmered softly at the foot of the immense enclosing walls. I watched the slow invasion of the night—and as the sun disappeared behind the Masherbrum the air suddenly turned icy. It was time to turn in.

June 18th.—Weather still fine. Followed by eight men I went up to Camp IV inspecting and arranging the pitons and cables on the way. The camp had not been damaged and everything was intact. The lowest reading of the thermometer was

[1] See pages 164–165.

— 5° Fahrenheit, the coldest registered during the whole expedition. I cursed not being able to take better advantage of the sun; but I decided at all events to start up with two men, and we succeeded in placing over 150 feet of rope on the left bank of the couloir bordering the wall above Camp IV; beyond was a long steep snow slope and alone with the Sherpas I dared not venture on this unstable ground. Very shortly I saw Allain and Leininger approaching. I waited for them at the camp and we were already exchanging news whilst they were still toiling wearily up the last slopes. Cheered and refreshed by their day of rest, but not a little furious at having gone down just at the wrong moment, these two had left very early in the morning and had succeeded in ascending in the day the some 4,000 to 5,000 feet separating Camp IV from the glacier. Although they found the last few yards extremely fatiguing, it was in the best of tempers and full of hope that they arrived to carry on with the attack. I wished them good luck and leaving them with the two porters made my way down to Camp III. The same day Deudon went up to Camp II to supervise the provisioning.

June 19th.—'A good day, for Allain and Leininger have found a site for Camp V', is written in my diary. Notwithstanding their efforts of the previous days, Allain and Leininger started early up the couloir bordering the steep rocks above Camp IV. After ascending the snow slope, at the foot of which I had turned back, they either followed, or remained close by, a rock rib covered in places with *verglace* which brought them to a little shoulder with just sufficient place for two tents. The route was magnificent and comparatively sound: by placing 800 feet of rope the way became immediately practicable for the porters. Faithful to their method of quick going they had, in one grand day, climbed the steepest part that remained to be

overcome; beyond, the difficulties appeared to decrease and, as we listened to this good news on the 'phone, victory seemed close at hand. On this same day Charignon, now quite recovered, had been able at last to get up to Camp II, Deudon had seen to the provisioning of Camp III, and I had once more gone up to Camp IV.

Everything was working smoothly. The porters, full of confidence, went rapidly about their work up and down the buttress. Those occupied with the provisioning led a tranquil, almost provincial, existence, getting up regularly when the sun began to touch the slopes, leaving about 8 or 9 a.m. in the direction of the next camp, and enjoying a halt there at about 12 noon, followed by an easy descent in the afternoon. Later on, back in the tents, physical activities gave place to writing and reflection, and we drew up lists of loads, provisions and equipment, for all the world like a bank clerk taking stock of the day's operations after closing time. Dinner, a little reading, letters to friends, and finally a few moments devoted to personal reflection occupied the rest of the evening. In fact, it was the regular life of a minor Government employee who goes neither to cinema nor pub, but who lacks nothing—not even the wireless news—which three times daily at 8 a.m., 12 noon and 6 p.m. put us in contact with the Base.

June 20th.—Yesterday's rapid progress took us a bit by surprise; we had not been prepared for such success and we had to see to things at once. At this rate there would soon be no more rope and there were only two porters at Camp IV, a totally inadequate number even for the simple provisional stocking of this camp. To avoid delay I sent my three best men off at dawn lightly loaded with rope and they rapidly made their way up to Camp IV. On his side Deudon hurried his men to such an extent that they arrived at Camp III before 8 a.m. I

decided to take these men up with me to Camp IV and gave orders accordingly, but this change of routine was not to be effected without a little trouble. The porters, who had already started to go down, had to be recalled and persuaded to do a double carry. It was the sirdar Mingma who, though quite a second-rate climber, stepped into the breach and revealed himself a consummate orator. Thanks to his haranguing of the men I was able to take seven of them with me, the remaining three still insisting on going down. These three were afterwards kept under observation, and on the following day they carried from Camp II to Camp IV without any fuss.

Thus, followed by eleven men, I reached Camp IV just as Allain and Leininger were preparing to leave. Worn out by their magnificent effort of the previous day they had taken the morning off. They were now going up to pitch two tents at Camp V, which would be a temporary camp, and they counted on attaining the next day the terminal arête of the South Hidden Peak where Camp VI would be established.

June 21st.—Threatening weather in the morning; high clouds covering the sky in the direction of the lower part of the Baltoro glacier: but this was nothing new and we reckoned on two or three days of bad, or just uncertain, weather. However, I learned by 'phone of the abandonment of the British Everest Expedition. The monsoon is very early and we must speed up operations. Up till now the order had been aclimatization, training, and the husbanding of our forces, so as to be on the top of our form for the final assault. Now that we were pressed for time Ségogne proposed the speeding up of our movements, and enjoined me to see to the provisioning of Camp IV and then to push on up to Camp V with a few men and if needs be to join the attacking party and help them.

This programme was carried out and I arrived at Camp V

with the porters, admiring on the way up the terrific amount of work already accomplished. This camp was really an impressive sight: the two tents were huddled together on a narrow sloping bank of stones perched high between two deep-cut couloirs. Above, the rock-wall reared up steeply—a forbidding spot if ever there was one, and directly exposed to the full force of the wind.

Followed by Mapcha Topki and Tsing Temba, both loaded with rope, I negotiated a chimney and hailed Allain and Leininger who were just finishing the ascent of the rock wall. When I caught up with them a little later on they had halted at the foot of a long snow slope dotted with rocks which led up to the summit arête; having exhausted their provision of rope they were waiting here for fresh supplies.

We continued the ascent together for a while, but the ground was still tricky and it was evident that we should not be able to attain the arête that day. Leaving behind all pitons and supplies of rope we turned back greatly encouraged by having had a sight of the remaining easier slopes leading to the South Hidden Peak (23,200 feet). Little did we think that never again (in 1936) should we get beyond Camp V.

On the way down we took a more direct route, descending a nasty couloir; a manœuvre which considerably shortened the way and so enabled us to economize some rope. The wind began to get up and the weather became more and more threatening, but the last of the biggest obstacles had now been overcome and it was full of hope that we returned to Camps IV and V respectively, in spite of the prospect of being confined to the tents for a day or two by the bad weather.

At Camp IV I found Deudon, who had come up with his men to join me, full of impatience to take the lead once more. To-morrow Charignon will sleep at Camp III and the day after,

or at all events in three or four days, Camp VI will be established in a crevasse on the summit cap of the South Hidden Peak, ready to receive Ségogne and Ichac.[1] And then would come the final assault.

At Camp IV we lacked one item, the wireless set, left behind to allow more rope and provisions to come up, these latter being of more immediate and practical importance. Anyhow, the set will be sent up to-morrow . . . but alas !

June 22nd.—The storm broke during the night and in the morning the snow and wind continued, redoubling force towards midday. During the whole afternoon we were in a regular hurricane which shook the tents and us inside them. Eddies of snow even began to penetrate the interior of our tents, where incidentally it was freezing, but once the double flap was closed the tents were absolutely weather-proof. The canvas was of excellent quality and it was wonderful to see the way in which it resisted the terrific onslaughts of the wind which shook and worried it unceasingly. The only trouble was cooking in the apse of the tent, which we only succeeded in doing with difficulty. Deudon, who was suffering from an altitude throat, slept, or tried to sleep, in order to forget his pain ; I slept too, did the housework, read and wrote whilst waiting for the squall to blow over.

As for Allain and Leininger at Camp V they were no doubt 'whiling away the tedium' by countless matches of *combat naval*[2] testified to by the quantities of bits of paper found in their tent at the moment of the definite evacuation ; and at Camp II Charignon was biting his nails with impatience.

[1] Until the buttress had been conquered it was understood that no one but the attacking parties and the porters assuring the transport of provisions and equipment should be allowed on the mountain. Every place in the tents was reserved for those contributing actively to the advance.

[2] A game played on squared paper.

June 23rd.—The storm continued all night and the thermometer registered 32° of frost at Camp IV. In the morning it stopped snowing, but the wind still continued to sweep the slopes and clouds swirled around us, hiding the mountain from our sight. Towards noon, however, the wind died down and the porters, wishing to take advantage of the lull, asked permission to descend. I sent off seven keeping four of the best with me in order to be able to begin the attack again the moment this should become possible.

Like the marmots, Deudon lived on his reserves, eating nothing, only occasionally bestirring himself to announce that he was getting 'clogged up' and then falling asleep again. I slept too, did the absolutely necessary cooking, wrote to friends, drew up plans of provisionment for the continuation of the attack, and finally read one of the Gospels, presented to Deudon by a missionary near Kargil. Isolated from the world in our little tent, battered by the storm, how simple it was to appreciate and understand the indifference to worldly affairs counselled in the Sermon on the Mount.

June 24th.—The night was less cold, 12° or 13° Fahrenheit according to the thermometer. But the wind had once more redoubled its intensity. One of the tents, which had been left empty, was blown down. In the morning, however, the storm abated and one could even feel the presence of the sun behind the thick mist.

At Camp V, higher up and perhaps more exposed to the wind, the squall had been a real ordeal for our comrades. Subsequently they told us how they had been obliged to cling to the tent to prevent it from being blown down, and that during two days they had not been able to set foot outside. It was, therefore, with joy that they welcomed the break in the storm, and at noon they were able to get into telephonic communication with Base

Camp. The news that they received was bad; Ségogne announced the arrival of the monsoon and at the same time stated that according to Arlaud there would be nothing left to eat after the 6th or 8th of July—a statement that proved subsequently to be inexact, for, on our departure from Base on the 5th we had to abandon an important stock of food.

On hearing this Allain and Leininger decided to go down to Camp II, where they would be more comfortable, and to await there either the return of the fine weather or the final order to retreat. Passing Camp IV on their way down they gave us the news. At the mention of the possibility of failure Deudon and I started up as one man to protest, and I wrote there and then to Ségogne asking him to make arrangements to enable us to hang on longer.

June 25th.—During the night we registered 0° Fahrenheit. In the morning the mountain was still hidden and Camp IV was in a thick mist. Yesterday's news worried me and I wanted to talk with Ségogne, to be able to discuss matters. Certainly the weather was very bad, but perhaps he imagined it to be worse than it really was (actually, as I found out later, it snowed about twice as much down at Base Camp as at Camp IV) and feared the effects of the storm for us.

As there seemed to be a vague break in the weather I prepared to go up to Camp V, waiting first to see if this change for the better should continue. Alas ! on the contrary it only got worse again, and as it began to snow in a desultory fashion I went down to Camp III with my two best men. The descent of the snow-covered rocks was difficult, but all the same our small party got down to Camp III in pretty good time. Here a sad spectacle met our eyes—one tent had gone, and another had been blown down and was lying all draggled in the snow. But worse still the earphones and the mouthpiece of the radio-

telephonic set had disappeared. No communication therefore, was possible—a bitter disappointment for me.

June 26th.—In the morning we at last saw the sun shining on the Hidden Peak; the sky was clear except for a few threatening clouds still hanging over the Baltoro glacier. Very early, the impatient Charignon left Camp II with a few men to join me at Camp III, where I was still waiting, watching the snow melt. He brought up news: Ségogne maintained wholly what he had already said: *In view of the bad weather all idea of making the Hidden Peak must be given up and our aim henceforth be the South Hidden Peak if conditions permitted.*

So we went up together to Camp IV in order to be able to continue up on the following day if possible. The ascent was not very pleasant; the rocks were still pretty white and there was about 6 to 8 inches of fresh snow in the couloirs, but without hesitation Charignon cleared the way, cutting steps with ardour.

We enjoyed a pleasant evening at Camp IV; the sun was rapidly melting the snow, and only a few dusky clouds rose high in the sky over towards the Bride Peak; but in these we refused to see anything other than some extraordinarily fine light effects. A glow at once brilliant and soft flooded the glacier and the snow gleamed oddly beneath the waxy grey cap of clouds. At sunset, moreover, the wind changed and the menace of renewed storms seemed to vanish.

June 27th.—Bad weather: in the morning 2 to 4 inches of fresh snow on the rocks near the tents and another 6 to 8 inches fell during the evening. We began to weary of the continued bad weather.

June 28th.—In the morning the ceiling of clouds was at a height of about 23,000 feet; at times a few beams of sunlight pierced this opaque layer which, however, slowly descended on us till we were once more wrapped round in a thick blanket of

fog. The wind had dropped and all objects were hidden by the luminous mist which deadened every noise; even the sound of our voices appeared deep and grave as though in the presence of death. An impression of emptiness, of immobility, a soft and penetrating sadness, an atmosphere of weary disillusionment, without joy or sorrow, enveloped our camp.

But it was essential to get into touch with Base Camp to receive instructions; there was still too much snow for us to go up to Camp V and no one wished to return to Camp II as we knew that this would be the beginning of the end. We decided, therefore, to wait until the following day and then, if the weather was not too foul, we would attempt to reach Camp V.

June 29th.—The rocks were a little clearer though the sky was still grey; now and then a few snow-flakes came floating down, but we gave the order to start for Camp V. The weather was scarcely encouraging and the wind began to get up; however, our men started to get ready without a murmur and soon we set out in three parties. Deudon and Charignon took the lead to clear the route, which work they did splendidly—too well in places where, after their passage over certain pitches, the ice was smooth and slippery as glass. When we reached Camp V after a hard ascent it was noon—the hour for communication, and contact was immediately established.

I had a conversation with Ségogne while the wind howled and the hail stung. This way and that way, at large and in detail, Ségogne explained his point of view, but I must admit that I understood and appreciated his arguments much better when, later on, he put these before me whilst sitting in a comfortable shelter.

Ségogne refused to give me the permission which I asked for and, reminding me that I had given my word to obey,

finally gave the order to evacuate Camp V; Allain on his part would evacuate Camp III and come up to help us bring down the equipment from Camp IV. One of the tents was already down and the one that had resisted the storm was quickly dismantled; so, loading up the most valuable pieces of equipment, we began the unpleasant job of descending.

This time it was really the end, and we were sad and dejected; in the howling wind the slopes seemed steeper and the ice smoother than before.

Allain had evacuated Camp III, sending up (from Camp IV) Lagpa and another porter to help us; we loaded them and sent them down.

A weary evening at Camp IV. A sudden depression succeeded to the high nervous tension of the last few days. Deudon suffered from his eyes; I had a fever, and it was not till after midnight that we were able to sleep. The night was warm; it snowed heavily and on the following day when we awoke it was to find our sleeping-bags wet with drops of condensation from the roof.

June 30th.—At Camp IV our provisions and the neighbouring rocks were buried in 12 to 16 inches of fresh snow! There was no question of going down. It was warm, scarcely freezing, and we slept on in our wet eiderdown bags.

At the same time Allain and Leininger were, of course, unable to come up to help us and, leaving the porters at Camp II to await our arrival, they succeeded in getting down to the glacier in the evening.

July 1st.—The snow had stopped and through some breaks in the mist, which was beginning to thin, we caught glimpses of the Baltoro glacier; the sun tried to come out and, fearing another bout of bad weather, we decided to go down at once. We took with us the most valuable portions of the equipment;

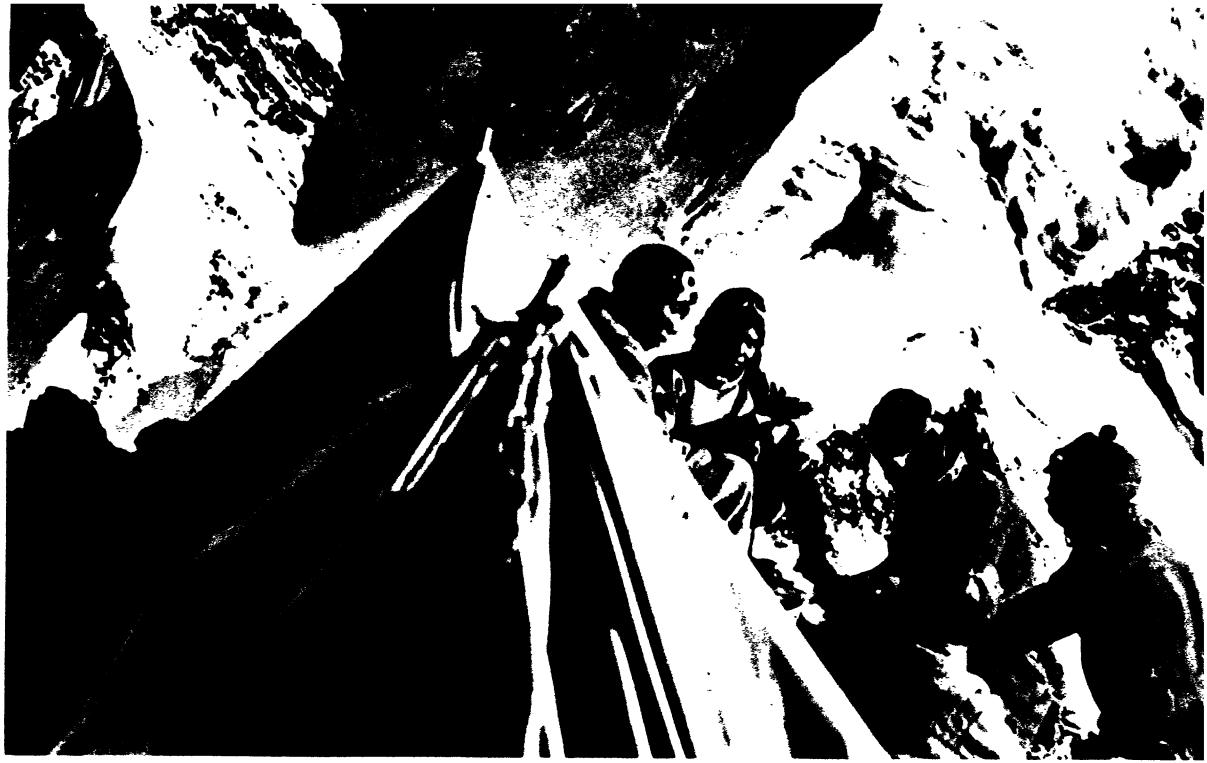
Camp V after the Storm

Base Camp and Hidden Peak

a. Avalanche on Golden Throne seen from Camp III

b. Camp I after a Snow-storm

Camp I and Queen Mary Peak



Camp II

Sherpa Porters at Camp II

Looking down the upper portion of the Baltoro Glacier

Between Camps III and IV

as well as 100 yards of rope which would be useful below Camp III.

Charignon and Deudon went first to clear the route; Pemba, Da Tentzing, Sona Topki and Tsing Temba followed on two ropes; I came last with Thouten. Everything was ready and, after a last look at this camp so full of splendid memories for us, we began the descent.

From the outset this proved to be really hard work: the rocks and the fixed cables were completely buried, and the couloirs full of about 2 feet of fresh powder snow already beginning to avalanche. I got down as best I could to Camp III, which my comrades had passed long ago. Thouten was extraordinarily slow and prudent and on that day I should have been the last to reproach him for taking so many precautions.

Beneath Camp III the rock arête was white with snow, but all the same not too bad. Whilst we made our way down, at first a gentle hissing and then a more distinct noise arose away to our right; the whole slope started to move and, amidst an eddying white cloud, an enormous avalanche rolled downwards. It was the first of the day but soon they thundered down one after another.

Without any very great difficulty we reached the head of the couloir leading down to Camp II: fortunately this was only a secondary couloir springing from the rocks of the arête which we had just descended, and this arête diverted the big avalanches down another way. Small packets of snow started sliding down from time to time, but these were fairly easy to avoid and even if one was overtaken by one there was no danger.

Our friends had placed here some 300 feet of fresh rope; and Thouten, holding on to this, started slowly down. There was evidently something not quite right, as my companion

advanced hesitatingly and very slowly. It was not long before I was to know the reason for his delay, for I was myself soon at grips with the same difficulties. The narrow gully in which the cable was fixed was of black ice and so hard that the nails of our boots did not bite at all; one slipped again and again, remaining hanging at arm's length to the cable. Sometimes packets of snow came slithering down and we had to cling hard, flattening ourselves against the ice to let them pass.

But there is an end to everything, and I finally joined Thouten at the foot of the cable. We then had to traverse to the left across an exposed slope: anxiously I followed the slow but sure progression of my companion. At the end of the rope's length he established himself firmly on some blocks protected from avalanches by a high projection of rock; and, taking every possible care, I rejoined him. The camp was now quite close and I was impatient to reach it and be once more on safe ground. Only one rope's length—150 feet—still separated us from the arête on which Camp II was placed, but we must be careful. Avalanches coming from very high up thundered down on the summit of this arête, smothering it, and spreading all over it in impetuous cascades of snow till, gradually broken up by this giant prow, the swirling eddies of white froth were diverted into near-by couloirs. Taking advantage of a lull, Thouten passed, and I watched his advance, which was far too slow for my liking; however, he soon reached a safe spot and it was my turn. From the bottom of my heart I was truly thankful—thankful to find my comrades and more egotistically to find myself safe and sound.

But sad news was awaiting us at the camp: Sona Topki and Tsing Temba had fallen. They were just reaching the foot of the fixed cable when Temba, who was last, slipped down the rope and fell on to Sona Topki, sweeping him off his feet.

From the camp the horrified Charignon had one swift and terrible glimpse of them lying on their backs, without making any attempt to protect themselves, in the middle of the avalanche that they had started by their fall; they shot by, heading inevitably for the rock bar some 90 to 100 feet high which cuts the couloir at the level of Camp II. Hastening to watch the sequel in the hopes of some miraculous intervention, Charignon had only seen clouds of white foam disappearing into the thick mist. A moment later, however, through a break in the mist he had caught sight of forms moving near the *bergschrund*: he was determined to believe in an unlooked-for rescue, but the Sherpas and myself gave them up for dead.

A sad afternoon passed in the shadow of sorrow and oppression. Death had passed close by and our men, usually so gay and blithe, were dejected and silent; no one laughed; few words were spoken and then in low tones as if in a cemetery. We scanned the base of the slope with the glasses, recalling from time to time the merits of the victims; and in the tragic and oppressive calm of the afternoon the only sound was the great booming voice of the avalanches, deep, full of menace and almost uninterrupted.

The mist finally lifted and the glacier was disclosed, all white in the last rays of the setting sun. The solemn beauty of the vision, and the mighty calm of this tranquil spectacle helped to divert our thoughts a little from our sad reflections. At 6 p.m. we hastened to the telephone for news, but the batteries were used up, and after trying vainly for half an hour we had to give up. About 7 p.m. we saw figures making their way up to Camp I; through the glasses we recognized Arlaud by his peculiar headgear. If the Doctor was going up it meant that there was at least one still alive. The Doctor entered one tent, came out soon after and disappeared into another. Against

all probabilities our two Sherpas must be alive. We called the porters and passed them the glasses; they quickly confirmed our hopes. Happy voices and smiles replaced the mournful silence of the afternoon and it was amidst a cheerful hum that we fell asleep that evening.

July 2nd.—We had to leave early in order to complete the traverse of the big couloir before the avalanches began. It was the only really exposed place of the route but the danger was absolutely certain the moment the upper slopes were struck by the sun. Our unwieldy party—about fifteen men all told—was slow getting under way and it was not until 7 a.m. that we left, after having hesitated as to whether we should throw the tents that we were unable to carry down the couloir. Once more leading the way, Deudon hewed steps with a will and we found ourselves united on the left bank of the couloir before the critical moment.

Slowly, with infinite precautions, which we were not accustomed to seeing them take, the Sherpas descended the fixed cables and the first were already far ahead while I was still sitting on the rock above the wall—on that rock by which we had passed so full of hope a month ago.

On the way down we met three men sent up by Ségogne to help us; they had had to battle with the soft snow and now awaited my orders. I had not the courage to go up with them to finish the evacuation of Camp II: that which had only a monetary value did not seem to me to be worth fresh risks and fresh efforts. I gave them my sack to carry and we all went together down the route which now became easier and easier.

Every one was down on the glacier; alone at the foot of the couloir I stopped one last moment and I saw as in a vision the intense and joyous existence of the past month; joy, certitude, hope, gradually giving place to weariness and discourage-

ment. All that remained to me was the consolation of still being alive, poor comfort in truth for one who had had such a glorious dream.

And, without another look, I jumped the *bergschrund.*

All was over.

V

The Return

WE RECEIVED BY WIRELESS AT CAMP V ON THE 29TH OF JUNE the not unexpected order to retreat. I had been prepared for this by a conversation on the telephone with de Ségogne a few days before whilst anxiously waiting, alone and depressed, at Camp IV, where I had watched the snow falling incessantly for four days.

Now that defeat had become an established fact we were overcome by an intense feeling of depression. We had failed.

That hardy fighter Neltner who had been my companion at high altitudes has, in a preceding chapter, told how the descent to Camp I was effected. After the difficulties of this descent, made in an atmosphere of overwhelming despondency, it was with great relief that we found our companions safe, as well as the two Sherpas, who had had such a miraculous escape.

We could not question the wisdom of our retreat; the improvement in the weather which followed our return to Camp I did not last long and it was evident that an obstinate determination to continue could not have led to success. So we had to bow to the inevitable, though most unwillingly. The pleasure of finding ourselves on easy ground again, and all the unfamiliar comforts—being able to breathe without effort at the level of the Baltoro glacier (16,000 feet)—having a tent larger than a dog-kennel—being able to smoke a pipe without having to relight it fifty times from lack of oxygen—

were not sufficient to make less bitter the thought of failure. This thought was always with us, filling the background of our minds with a disturbing lament—sometimes deadened but more often despairingly present: it was the leitmotiv of our return.

On the 3rd of July de Ségogne, Azémar and Ichac left Base Camp for Srinagar in order to arrange various details connected with our journey back to France. Carle had already left a fortnight before on account of ill-health; so we were now only seven sahibs—Streatfeild, Arlaud and the members of the climbing parties, Allain, Deudon, Leininger, Neltner and myself. The 3rd and 4th of July were occupied with preparations and with the packing and weighing of the loads for the Balti porters, who arrived on the 4th and left with us the next day. We busied ourselves in sorting out the heaviest and least valuable goods which would have to be abandoned; for our two injured Sherpas were unable to move and had to be carried on stretchers, a task which would account for sixteen Baltis. The first thing to go, notwithstanding the loud protestations of Streatfeild, was a certain object of which he was in charge and which had been lent by one of his compatriots—the portable W.C., to give its right name.

The removal of our camp was responsible for some funny incidents, chiefly connected with the arrival of the Baltis. The poor men threw themselves on the abandoned goods, trying to hide the treasures they found under their torn and dirty clothing. I shall never forget the delighted and self-satisfied air with which one goitred Balti gloated over his finds—two or three worn-out wireless valves! I felt curious to know what possible use he would find for them. Several electric torch batteries and various harmless medical preparations—anything dangerous having been carefully destroyed—had already given great joy to our Sherpas. But the finest scene of pillage took place at dawn,

just before our departure. Arlaud had waited until the last moment to make the necessary sacrifices from the food supplies. This led to a riot, not only the Sherpas and the Baltis but even the sahibs taking part in the scrimmage. Did they fear that Arlaud would unduly restrict their food? One stuffed into his sack a bottle of champagne, one a tin of potted meat, another a pot of jam. It would really have been unbearable to leave behind these tit-bits which up till now had been rationed out to us so carefully for fear either of our being over-fed or of the supplies running short.

The morning light had hardly touched the summit of Bride Peak, and its extraordinary flutings of snow were still hidden in darkness when we left the site of this camp where, forty days earlier, we had arrived full of hope and enthusiasm. We were now in full retreat.

We longed to get away from this grand but oppressive scene, where every peak seemed to mock us. Nothing remained but to go: and we started quickly down the interminable moraine along which we must now toil and stumble without any hope to support us.

On the way up we had covered the distance from Shigar to Base Camp in twelve stages. On the return we took only nine days. We left early in the mornings and halted only at nightfall, in spite of the difficulties of the march, which were greatly increased by the transport of the wounded Sherpas. The reader may well imagine what a journey this was for our two porters, lying all day strapped on to stretchers, each carried by four men, among seracs, down ice-slopes and steep slabs and over crumbling moraines and loose rocks, which in places obstructed our way along the valley.

The successive camps on our return to Askoley were first on the moraine a little below Concordia, then at Rdokass,

Paiju and Gora. The last of these camps—Gora—was pitched on a stifling afternoon by the banks of the Dumordo, a tributary of the Braldo. On the way up we had forded this torrent, but after the rain and the avalanches of snow, it was too deep and rapid to think of crossing by this means and we were obliged to retrace our way for a mile or so along the left bank in order to find a rope bridge. The crossing of this bridge produced fresh difficulties in the transport of the injured Sherpas, who had to be carried over on the backs of porters—a particularly delicate manœuvre, which demanded of the men who performed it a courage and strength worthy of the greatest admiration.

On the 9th of July we arrived at Askoley, thankful that the necessity of changing porters would give us a day's rest. The injured men were far more in need of rest than we were after the severe jolting they had endured during the earlier stages. Our troubles, however, were not yet over. Two months earlier we had been able to make our way up the valley, sometimes on the shingle of the dried-up bed of the river, sometimes on the sharp scree along the banks.

We now received a note from Ségogne, whose party, three days ahead of us, had encountered serious difficulties between Askoley and Gomboro. The river had risen, partly covering the tracks. The way was frequently cut and they had often been obliged to take to the torrent itself, wading waist-deep in the ice-cold water sometimes for a distance of 100 yards, and then being only too thankful when the violence of the current, although not so strong near the banks, did not terrify the porters. Several times, whilst exposed to the dangers of falling stones, it was necessary to rope the porters before they would decide to brave the fury of the current.

Ségogne spoke also of rivers of mud of a bituminous substance carrying great blocks along with it. These blocks accumulated

at intervals, forming a kind of dam which stopped the flow momentarily and afforded a means of crossing before the mud continued again on its irresistible course.

Thus forewarned by the experience of our friends, we preferred to take another way, even though this meant our having to climb up several hundreds of feet above the immense rock walls which descended in smooth sweeps to the water's edge.

On the 11th of July, after a particularly tiring day—so long that most of the porters did not join the party until the following morning—we arrived at Folio, a small village nestling among green trees and fields hundreds of feet above the torrent. The next day, after having followed the left bank of the Braldo for some way, we prepared to cross to the other shore by the rope bridge of Hoto-pakore. Several porters had already reached the far side when one of the two cables forming the hand-rails broke and two Balti porters were left stranded in the middle of the bridge clinging desperately to the remaining cable which swayed perilously from side to side. To the instability of the broken bridge was added the effect of a violent draught, caused by the rapid flow of the Braldo, penned in here between two walls of rock. It was a moment of terrible anxiety, for a fall into the water meant certain death. Two Sherpas, leaving their loads, advanced one from each side, and supplied a human link, thus enabling the trembling Baltis to regain the bank, though not without fear and difficulty. There could be no question of taking the caravan across; so we decided to continue on the left bank despite the fact that this entailed an ascent of over 3,000 feet to reach the upper edge of a tremendous rock wall falling in a series of impassable slabs right down to the torrent. It was a laborious ascent, up the interminable zigzags of a crumbling track; the way was often blocked by smooth steep blocks and we expected every moment to see our porters

slip, heavily laden and badly shod as they were—some even being without boots at all.

At the end of this stage, which was as disagreeable for its ups and downs as it was for the dreariness of a landscape without any vegetation, we welcomed with joy the appearance of a tiny oasis, the fresh green of its shrubs and fields surrounding a magnificent tree—a species of walnut—the first large tree we had seen for many weeks. Opposite us on the other bank of the Braldo lay the fields of Dosso Nihil, a village by which we had camped on the way up. The leg of mutton, alternating as usual with the leathery chicken of the country, was the evening's *plat de résistance*; but Arlaud also generously distributed the contents of a box of *marrons glacés* which were welcomed with shouts of approval.

The next day's journey was comparatively easy, for apart from one short ascent we kept fairly close to the Braldo. In the morning we arrived at the junction of the Braldo and the Shigar valleys and were soon pitching our camp in the fields of Yunno, the first village of any size that we had yet come to. Here we had to settle accounts with our porters, which gave us an opportunity of taking a number of good photographs of them.

The ponies, who were to carry our luggage on the remaining marches, were contentedly cropping the luxuriant grass close by, when, suddenly taking fright, they went off at a gallop; two or three village women were threatening them with long goads. The women seemed so truculent that our Sherpas hesitated to interfere. We ourselves were watching the scene with amusement, when suddenly Captain Streatfeild, indignant that women should dare to chase our ponies, rushed angrily at the delinquents and disarmed the ring-leader, who was threatening him with her stick. This victory enabled our ponies to

return tranquilly to their pasturage, indifferent to the clamour of the furious viragos.

The next day we had to descend the river to Shigar, using zaks, whose speed was much praised in a note left by Ségogne. We watched the boatmen preparing these zaks—rafts made like hurdles—about 12 feet by 8, supported by a couple of dozen goat-skin floats. When we arrived the rafts were lying upside down with the Baltis crouching round busily inflating the floats by energetically blowing through one of the legs which was then tied up. Up-ending the rafts, they tipped them into the water in the shelter of a small creek. The hurdle, which now became the deck, was about a foot above the water; there was no question of standing on these thin and slippery poles, one had just to sit down knowing full well that at the first eddy the water would splash through the open raft wetting our nether parts.

We embarked on three of these rafts, the sahibs occupying two, the third being reserved for the wounded Sherpas. With the aid of long poles the boatmen steered their zaks out into mid-stream. And then the fun began. Crossing whirlpools, riding up waves, sometimes 3 or 4 feet high, narrowly escaping rocks, we sped down, carried along by the current like an arrow.

The dexterity of the men, sometimes occupied in setting the course of their zaks, sometimes in blowing up the floats without stopping the rafts, aroused our curiosity and admiration. We were soon soaked by the water which splashed up between the poles and the floats—but what matter? Anyhow, we thus avoided a weary day's march.

We were soon down at Shigar, but before we could pitch our camp we had to wait some time for the arrival of the porters and ponies, although these had started some time before us. We received an invitation from the Munchi—the big noise of the village, a former civil servant of Kashmir—who, having

retired to his own country, now lived there as a prince. We drank his cinnamon tea and ate his fried pastries and cakes with all the more satisfaction in that we knew he was giving a very trifling return for what he had made out of us; we had in fact learnt that he had levied a tax on each of our porters, which must have brought him in a nice little profit.

The next day we made a short but sporting stage to Skardu. The zaks covered a distance of 10½ miles in 1 hour 10 minutes. The speed of the current and the height of the waves, especially at the confluence of the Shigar and the Indus, much impressed us. We finished the day's journey by crossing the Indus, very wide at this point but still very swift; in spite of the strenuous efforts of the boatmen, who poled vigorously—oars seem to be unknown here—we were rapidly carried down-stream. At Skardu we took possession of the huge bungalow where we had only to stretch out our hands to provide ourselves with an ample supply of apricots. Although we had been warned by our friends Roch and Belaieff, who had been quite ill after a surfeit of this fruit, it was so long since we had tasted such delicacies that we literally gorged ourselves—and for once our greed received no punishment.

On the 16th of July we left the oasis of Skardu and penetrated into a region that was new to us.

On the way to Base Camp we had crossed the Zoji-La and joined at Karhal the Indus valley which we had followed as far as Skardu. But on the return journey we were able to economize in both time and fatigue. Thanks to the summer heat, the Deosai, now cleared of snow, offered us a shorter route over its immense deserted plateaux: a route which would permit us to reach Srinagar in eight days.

For the last time we contemplated the magnificent picture of the grey deserts and mountains; and leaving Skardu with its

fields and trees, we started out on a day of torrid heat for the Deosai.

We passed at first through a narrow, evil-looking gorge. Higher up we came upon two or three lakes; this was the first time we had seen clear water apart from a few small springs. We continued to ascend the valley by paths, sometimes difficult for the ponies, or by tracks across the pastures, until in the evening we reached a pass which marks the beginning of the immense plateaux of the Deosai.

Like the Zoji-La the Deosai corresponds to the main Himalayan fold, which here loses its majestic character. In spite of their altitude, which on an average is over 13,000 feet, these plateaux do not give the impression of high mountain country. They are vast, gently moulded steppes which remain under snow for ten months of the year and which defy the passage, and in a general manner the existence, of man.

With the coming of the summer and the melting of the snows, this route is followed by caravans taking advantage of the short period of respite from impossible conditions to carry goods to and from Srinagar and Skardu. The first of these caravans had preceded us by only a few days, and there was still some snow about, which hindered the advance of our ponies.

A strange country, this, through which we must travel for two days—a country of high Alpine meadows abundantly watered and full of flowers. Absolute silence reigns for hours on end. Sometimes we met caravans of natives following more slowly the same route as ourselves. Not a single dwelling, not a sign of life apart from a few rare birds and enormous marmots. But I nearly forgot one species which showed too much life to our great discomfort—the mosquitoes with which these damp regions are infested.

The track we followed was obliterated at times by swamps

and streams large enough to make our ponies hesitate. From time to time grim milestones lay by the side of the path—skeletons of horses, generally picked clean by ravens, their twisted attitudes bearing witness to the terrible death-agonies they must have suffered.

On the 18th of July we completed the crossing of the Deosai and reached the Sangri La, a pass only slightly above the general level of the plateau but still retaining on its northern slopes considerable masses of snow; our ponies frequently sank in up to their withers, struggling violently to free themselves, to the great detriment of their loads and their riders.

A rapid descent during a storm brought us to the green fields of Burzil, where the rich flora recalls that of the Lautaret and the Guisane valleys; mountain lilies, columbine, edelweiss, fleshy leaved plants, gentians, and masses of all sorts of field flowers blossomed on every side. I despaired of being able to collect a specimen of each for my collection. Three times I returned to the bungalow laden with flowers, and late that night I was still occupied in putting them between sheets of blotting-paper.

We were now in a very different district from that of the Indus valley, which is as arid as the valleys we now followed were rich in forests and fields. Picturesque hamlets—the houses built of roughly hewn tree-trunks—dotted our route, and we almost fancied ourselves in some Swiss valley. Pines and deodars reared their long straight trunks to the sky, while at their roots ferns and white columbine grew in profusion. I have a wonderful memory of this valley, which reminded us successively of many an Alpine region, for we saw unfold before our eyes valleys resembling those of the Oberland, the Valais and the Haut Faucigny.

On the 20th of July after leaving the Gurrais bungalow we abandoned the Kishanganga valley and continued towards the

south. That evening we camped in a field at the foot of a magnificent forest and the next day we crossed the Kuljan Gali, a pass of about 11,000 feet, from which we could see the graceful outlines of Nanga Parbat—our last sight of the great Himalayan peaks. Our final halt was ideal; the Tragbal bungalow offered us its shelter in a forest glade like a garden, on the brow of a hill overlooking the Jammu valley, with the Wular lake lying partly hidden in haze.

On the 22nd of July we arrived at Bandipur on the border of the Wular lake, where Major and Mrs. Hadow most kindly came to welcome us. We embarked on a house-boat, and at a very slow pace—far too slow to our liking—went down to Srinagar, where we found Ségogne, Azémar and Ichac.

We said good-bye to all our companions; little Jimmy our interpreter; the sirdar Ishii, the worthy leader of the Sherpas; our cooks, our shikaris, our sweeper; all our brave and devoted Sherpas, who proudly raised their first acquisitions—their magnificent felt hats. Then followed the farewell dinners given to Major Hadow, representing the Himalayan Club, and to our helpful compatriot Peychaud, who had so generously placed at our disposal his influence and great knowledge of the country.

A last work—the packing of the things we were taking back with us, and then the final farewell and departure from Srinagar.

The Expedition was over. We returned to France through places whose names, remote and wrapped in mystery, had long been calling to us: Lahore, Agra, Delhi, Benares, Calcutta, Madras, Tanjore, Trichinopoly, Kandy, Colombo. The beauty and charm of all these changing scenes could not make us forget that the mountain had defeated us. But was it really the mountain? No, it was its ally the monsoon, implacable adversary of Himalayan expeditions. We still had one consolation, the hope that some day we should return and succeed.

APPENDIX I

The Use of Skis in the Himalaya

THE SKIS—WHICH WERE TO RENDER GOOD SERVICE TO THE Expedition—were of special Norwegian make. Constructed of three thicknesses of wood—a light wood sandwiched in between outer surfaces of hickory—they gave a great degree of rigidity for a comparatively light weight. In spite of the fact that up to now short skis had always been preferred in the Himalaya we did not contemplate using them; the very slight advantages such as lightness, facility of porterage and transport, etc., that they offer over skis of normal length are not sufficient to compensate for their lack of stability.

In the Himalaya, as in the Alps, the advtantages atributed to short skis often serve as a pretext to hide the lack of skill and technical ability of those who favour their use. Happily the majority of the members of the 1936 French Expedition were good Alpine skiers, which allowed of the use of skis of normal proportions. The bindings were of the Kandahar type, the straps being adjusted by means of a lever attached to the ski in front of the binding. Above a certain altitude every effort causes panting and additional fatigue. The Kandahar binding, which can be opened or closed with two fingers without having to squat down, offers undoubted advantages over bindings adjusted by lateral levers at the heel. The sticks chosen were long, but light, in order to save the work of the arms as much as possible. Seal skins were replaced by plush skins stuck on with the usual waxes. As in the Alps and Pyrenees between May and July, powder snow is not met with here owing to the intense heat of the sun during the day. Nearly everywhere we found the type of snow which in Europe is known as 'spring snow', and we em-

ployed the usual waxes which were just as satisfactory in the Himalaya as at home.

On the 13th of April the members of the Expedition were invited by Major Hadow to visit the snow slopes of Gulmarg near Srinagar. Gulmarg, which might well be called the 'Megève of Kashmir', is a winter as well as a summer station situated at a height of 8,200 feet, in a clearing in the midst of a forest of deodars. The slopes above Gulmarg which are rather monotonous, offer descents of about 5,000 feet. Some months previously this district had been the scene of a very serious accident: an avalanche had buried the hut of the Ski Club of Kashmir, killing the occupants.

The season was exceptionally late; large quantities of snow had fallen up to the month of March and the tremendous size of the avalanches caused catastrophes in several of the Kashmir villages.

Skis were used on many occasions from the moment we reached the snows of the actual Himalaya. Those who were entrusted with the supervision of the caravans of heavily-laden porters, walking in the snow, had to give up all thought of this pleasure; they would not have been able to do their work efficiently had they succumbed to temptation and left the ranks of the porters. A comparison of the time taken by skiers, with that taken by the men who had to cross the Zoji-La on foot shows that a party composed exclusively of skiers gains at least one day's march out of three. It may be noted, incidentally, that the attempts made to teach the rudimentary principles of ski-ing to the Tibetan (Sherpa) porters were a total failure.

On the 28th of April, taking advantage of a halt at Dras, Dr. Arlaud and Leininger made the ascent, on skis, of a nameless summit of about 14,700 feet which rises to the south of the village; the descent was made on spring snow in excellent condition.

The next stage, Dras–Chimcha–Karbu, was made on skis by most of the members of the Expedition, which saved them floundering about in soft melting snow over a distance of more than 12 miles. After this skis were not used again until we reached Base Camp.

Not until three days after reaching the Baltoro glacier, that is to say half a days' march from Concordia, did we again find fresh snow; up to this point the glacier was almost entirely covered with stones and gravel. Although it would have been most agreeable

to put on skis here, there was no possibility of our doing so; for we were all engaged in the supervision of the porters exhorting them to go on and trying to prevent the frequent halts they made on one pretext or another, which, on several occasions, held up the entire caravan.

The first party which left Base Camp in the direction of the buttress of the Hidden Peak took skis with them. Above the Base the glacier was entirely covered with fresh snow, which, however, rapidly melted. During the continual goings and comings between Camp I and the foot of the buttress skis proved invaluable for crossing the marshes of melting snow which separated us from the buttress. It was owing to his not being on skis that Carle took the forced bath which so seriously affected his health.

After the 1st of June skis were employed very successfully in the course of many reconnaissances to the upper basin of the Duke of the Abruzzi glacier.

A careful examination of the Desio map shows the presence of a deep-cut glacier immediately to the east of the big south-east buttress of the Hidden Peak—the buttress chosen as the line of attack of the Expedition. A reconnaissance of this glacier was made on the 1st of June by Jean Arlaud, Marcel Ichac and Captain Streatfeild, in order to make sure of the possibility of this route as a line of attack if the buttress proved impracticable; and also to try to discover the nature of the ground separating the summit of the buttress (or South Hidden Peak) from the principal ridge descending from the Hidden Peak itself. Owing to the shape of the mountain this portion of the proposed route was invisible both from Base Camp and from Camp I.

The three skiers left Camp I at 6.15 a.m. in very fine cold weather. The glacier—which presents certain features recalling the glacier du Milieu of the Aiguille d'Argentière—winds in between the rock walls of the South Hidden Peak and the ice walls of the Urdok Peak. The slope is steep and regular, and whilst we were able to remain in the shade we mounted rapidly; but as soon as we reached that part of the glacier which was exposed to the sun, the effects of the altitude were immediately felt and our pace, which up till then had been equal to a normal pace in the Alps, slackened considerably.

At a height of 20,500 feet (attained about 9.45 a.m.) the glacier flattens out, but the remaining part of the route towards the arête of the Hidden Peak appeared to be threatened by enormous bars of seracs. The way was certainly possible, but very dangerous. On the other hand the portion between the South Hidden Peak and the south-east South Hidden Peak seemed possible, not only by the crest of the ridge but also, and apparently more easily, by some snow ledges lower down on the eastern slopes.

The descent was made on hard frozen snow troughed by glacier rivulets and we found it more tiring than the ascent. Below 18,000 feet the snow became excellent. We were down at Camp I by midday.

A week later, on the 8th of June, Dr. Arlaud and Captain Streatfeild left Camp I at 5 a.m. and set out in the direction of the Conway Saddle, situated between the Golden Throne and the Queen Mary Peak at an altitude of 21,000 feet; it was explored for the first time in 1892 by Sir Martin Conway. This pass was used as a base for the operations of the Dyhrenfurth Expedition, which remained several days there. The glacier rises gently. After 1½ hours the skiers reached the first slopes of the col, which were cut by walls of seracs that had to be avoided by making long zigzags. Thanks to the excellent condition of the snow the steep steps were surmounted without the use of ice-axes. At 8.30 the immense terminal plateau was reached. The heat of the sun was overpowering and this, coupled with the effect of the altitude, caused the pace of the skiers to flag considerably; so the pass was not reached until noon. But the descent was excellent. From the camps on the buttress the members of the attacking parties were for many days able to make out our ski-tracks winding in and out amongst the seracs of the Conway Saddle. The whole descent took only an hour.

With the return of the fine weather on the 18th of June, the attacking parties were once more advancing on the buttress. For some time Arlaud and I had been planning to go and explore the upper part of the glacier (called the Chogolisa glacier on the Desio map) which lies between the Golden Throne and the Bride Peak. This glacier had, so far, only been explored by the Duke of the Abruzzi's party during their famous attempt on Bride Peak which was aban-

doned only a few hundred feet beneath the summit. In Dyhrenfurth's book mention is made of an attempt in this direction, but it was given up before reaching the upper plateau : probably on account of the tremendous walls of seracs.

On the 18th of June at 8 a.m. Arlaud and I left Base Camp accompanied by our Sherpas Sona and Tchang Tsering. We had some difficulty in crossing the glacier owing to the large glacier streams which flowed along the troughs between each line of moraines. After having rounded the base of the precipices of the Golden Throne we mounted up in the direction of the seracs ; these form a giant step with an immense *boulevard* separating the upper from the lower portion of the glacier.

At a height of about 17,400 feet we stopped and, after having pitched our tent on a serac, we sent the porters back to Base Camp. All day the heat was stifling and then, as always in these regions, at sunset it became very cold. The serac on which we were installed gave out ominous crackings all night.

Next morning we left at 5.30 a.m. ; the snow was frozen hard and carrying our skis we climbed up rapidly, without experiencing any exceptional breathlessness. Just when we thought to be clear of the seracs we found that an immense depression still separated us from the upper plateau. At this point the glacier was more chaotic than anything we had seen hitherto.

We had hoped to be able to reach the plateau near the slopes of the left bank (on the Bride Peak side) but little by little, we were forced to traverse back in the opposite direction looking for a passage. This brought us right up to the foot of the precipices of the Golden Throne, which we reached after jumping crevasses, straddling ice ridges and descending ice slopes, being all the time considerably hindered by our skis, which were fastened to our rucksacks. We finally reached the upper plateau by an ice chimney, but we were still separated from the upper plateau by some steep regular slopes cut by large crevasses. When the sun reached us we were at a height of 19,600 feet and it was only 8 a.m. The Bride Peak, as majestic as ever, was visible ; but its east ridge sloped accommodatingly towards the Chogolisa pass. From this pass the summit ridge rises up to form an unnamed intermediary summit of 22,170 feet

which is separated from point 23,790 feet of the Golden Throne by a col christened, in anticipation, Kondus Saddle, on the Italian map.

It was towards this hitherto unexplored col that we now advanced. Two miles of glacier at an easy angle separated us from our goal; but the terrible heat, due as much to the direct rays of the sun as to the reverberation of the new snow, sapped our strength. We had to collect all our energy to continue. At 1,600 feet below the col we left our skis, hoping by so doing to make things easier as the last portion of the glacier is absolutely level. According to the Desio map we were at a height of 21,500 feet. The view from this point was by far the finest and most extensive that we had had so far. The sky was a perfect blue, except for a few ominous clouds away to the south that were spreading over the Indus valley. For the first time we saw the summits of the eastern Kara-koram which surround the Kondus and Siachen glaciers: and to the west the well-known view of the majestic Baltoro glacier unfolded itself before us. The overhanging cornice of this col prevented our approaching near enough to be able to judge of the possibility of descending towards the Kondus and Siachen glaciers. That part of the slope which we could see was continuously steep and certainly too difficult for a party of porters.

We cast longing glances up to the summits of the Golden Throne; the slopes of the nearest peak of which stretched invitingly towards us. In the Alps we should have been on the summit in an hour and a half, but here there was no question of our attempting to continue. Even the unnamed peak, whose graceful ridge festooned with cornices rose only about 650 feet above us to the left, was more than we were capable of, so exhausted were we by the heat, the altitude and the reverberation.

We regained our skis: Arlaud ate with an appetite which I could only admire. It was not without some misgivings that, at 2 p.m., we commenced the descent, but we had a wonderful surprise, for all fatigue disappeared as soon as there was no need to make any effort. The snow was regular, and we slid with extraordinary ease down the gentle slopes. In a few minutes we were at the point where we had put on our skis in the morning. Conditions had

changed: where, on the way up, we had crossed the crevasses without fear we now found them extremely dangerous. They were covered with a thin layer of melting snow and prudence dictated the use of the rope; it was by slow stemmbogens that we reached the most crevassed portion amongst the seracs. The snow was ideal and we accomplished this part of the descent without falling once. At the point where we had negotiated the band of seracs in the morning our tracks had disappeared and, for more than an hour, we marched up and down, like caged beasts, looking for the way of escape. We had to take our skis off and every other step we sank waist-deep into the hidden crevasses. When once the right way was found we had an easy descent to our little camp, which we reached at 5.25 p.m. We left at 6.30 and got down to Base Camp at 8 p.m. Our first words were of warning—preparing our companions for the bad weather, still distant, which we had seen approaching from the south. Our fears were justified, for two days later the monsoon broke on the Baltoro glacier, crushing the hopes of the Expedition.

APPENDIX II

Geological and Geographical Notes on the Baltistan District

THE KARA-KORAM RANGE IN GENERAL AND THE PEAKS OF THE Baltoro basin in particular are the best known of the Western Himalayan mountains. They have been explored by several expeditions either principally or exclusively of a scientific nature. One may mention those of Conway, Younghusband, and the Duke of the Abruzzi before the War and, quite recently, those led by the Duke of Spoleto, assisted by Desio and Dainelli (1929). Broadly speaking, everything is known about this district, and the itinerary as far as our Base Camp had already been followed by scientists who had no other aim than that of scientific research.

I had therefore a comparatively limited field for original observations.

I studied more particularly:

1. The movement of the glaciers.
2. The composition and formation of the rocks of the Hidden Peak.

Before I mention the few new results of my observations it is necessary to give a general outline of the geology of the region to situate it in the general scheme of the Himalaya as a whole, and also to describe briefly the districts through which we passed. For this I have constantly referred to the Geological Survey of India and to the accounts of our predecessors.

The Himalaya are schematically divided into three parallel bands (running from SSE. to NNW.), which from south to north are as follows:

1. *The Sub-Himalayan zone*, consisting of Tertiary and Quaternary deposits, where detrital formations, accumulated at the foot of the chain, are of considerable importance.

2. *The Himalayan zone* proper, composed of an extensive series of non-fossiliferous rocks, often metamorphic, surrounding a crystalline axis which forms the main line of summits and which can be traced from one end of the range to the other.

3. *The Tibetan zone*, lying to the north of this axis and extending some distance into the borders of the high plateaux of Central Asia. This region contains a fine series of identified and classified rocks, in many places fossiliferous, extending from the Cambrian to the Tertiary periods. Granite also is frequently apparent, especially in the western portion of the range, with which we are chiefly concerned here.

Much folding is apparent in the whole district. The series are broken by many faults, sometimes separating the successive zones one from another. The most regular of these breaks are met with in the interior of the Sub-Himalayan zone, and separate from the rest of the chain the alluvial soil composed of elements broken away from, and accumulated at the foot of, the Himalayan range whilst the latter was in process of formation. This separation does not occur in Kashmir. Here there is a doubling back of the Himalayan folds towards the west, where they join with the Hindu Kush and the mountains of Afghanistan.

In this zone also the maximum vertical uplift is found behind the Himalayan axis in the detached arm of the Kara-koram, which clearly belongs to the Tibetan zone, the folds of the Tibetan plateau being prolonged into the Kara-koram. The geographical separation between Himalaya and Kara-koram is the Indus valley. This river for more than 180 miles follows a synclinal Eocene zone which has been noted between the regions of Kargyl and Hanle (south of the Pakong lake). On the other side of a large unknown area, this zone appears to pass near Gangtok on the northern borders of the Himalaya. Towards the east therefore this limit has a tectonic importance, but in front of Kashmir the granitic series occupy a large space and one has, consequently, few tectonic landmarks. The syncline of the upper Indus appears to continue in the direction of Dras and the Burzil pass, thus annexing to the Trans-Himalaya a good part of the Deosai. Moreover, the question as to whether the deep groove of the Indus to the west of Kargyl has a tectonic origin, or is due to simple erosion has been, and still is, much under discussion.

In Kashmir the distinction of the Himalayan from the Tibetan zones is very difficult, the Sub-Himalayan being the only clearly individualized zone. From the borders of the plain it appears with its schists and nummulitic limestones and above all its enormous series of red bands (conglomerate sandstones and marlstones) through which the Jhelum cuts its passage. The road from Rawalpindi to Srinagar runs along this gorge. Leaving the latter at Uri, one enters into the Primary non-fossiliferous Himalayan zone which soon becomes covered with recent deposits. The plain of Srinagar with its lakes (the remains of an enormous bed of water which formerly occupied the whole basin), is set in a Primary series dominated by traps of the later Palaeozoic age, forming notably the Haramokh (16,600 feet) and Kolahoi (17,867 feet) districts. These two massifs correspond to the opposite slopes of an anticlinal, which, having undergone deep erosion in the Sind valley, exposes a core of Primary schists.

The route to the Zoji-La hardly touches these traps, which are already visible quite close to Srinagar, in the hill of Gagribal, for instance, which dominates the town to the north-east. They consist of very mixed basalts, sometimes porphyroid, sometimes amygdaloid, containing abundant chlorite and epidote which frequently gives them a greenish colouring. These, which form a very thick bed (more than 3,000 feet) belong to the lower Permian or Permo-Carboniferous age.

The schists, over which we travelled for about 30 miles, were semi-metamorphic and were piled up regularly in the bed of the valley, and traps appeared on the summits. Here and there (particularly near Gund) we observed polished streaked surfaces denoting glacier action, whilst up to a high level above the bed of the valley recent detrital deposits (alluvia) were apparent, amongst which limestone fragments of organic detritus (probably Triassic) were found.

The anticlinal closes together a little above Kosaryal, and the river, flowing through narrow gorges, traverses the upper beds which are inclined at an angle of 60°–70° towards the north-east. We crossed detrital schists of eruptive matter very probably thrown out by basaltic volcanoes, and afterwards the ordinary traps also coming from these same volcanoes.

As soon as we were clear of the traps the gorge petered out and

the valley opened out widely in a Triassic syncline, which it henceforth followed in a general south-easterly direction. We went along this broad depression of schists and soft limestones to Baltal.

Beyond this village we left the principal valley and ascended a lateral valley leading to the Zoji-La, the vast indentation of which showed, thanks to a new anticlinal, the presence of Triassic and Palaeozoic beds.

After Minimarg we returned to a Triassic zone which brought us very nearly to Sarai, a little up-river from Dras. Beyond this the river flows over Cretaceous lavas until it reaches the Dras plain, which is covered with alluvial terraces and formidable moraines. The importance of the Quaternary deposits at once strikes the eye of the traveller accustomed to the Alps: moraines and alluvium are found here in quantities showing the tremendous work of erosion still actually in progress. These detrital deposits form huge banks of scree which, lying loose on the slopes, render the making of tracks difficult—more particularly in the Indus valley and the Kara-koram range. With the melting of the snows big mud torrents often occur, which destroy everything in their passage; we saw a fine example of this on our arrival at Askoley.

Beyond Dras the way continues between the red walls of cretaceous lavas before penetrating into the granitic massif of Baltistan. This Cretaceous at Dras appears to prolong the Eocene syncline of the upper Indus which forms the northern limit of the Himalaya; we now enter the Kara-koram, geologically if not geographically.

As in the rest of the chain, the granites (which are the cause of much controversy) can be split up into two principal groups:

(*a*) *Himalayan granites* containing biotite but not amphibolites; their age has not yet been definitely determined but they are quite recent, probably Eocene.

(*b*) *Trans-Himalayan granites* containing amphibolites, also recent; it was thought for a while that these granites, which are frequent in Tibet, were the result of an alteration of the Himalayan granite, the latter having absorbed limestone sediments. But these granites have since been found in exactly the same form over too great a surface to allow of this hypothesis. Their age is not known definitely, though it appears to be close to that of the upper Cretaceous.

These two types of granite are met with in the region spoken of here; the first is abundant in the Kara-koram proper, whilst the second makes up the Baltistan massif.

This massif is very rich in metamorphic schist enclaves, and if this is not generally shown on the maps it is only because these are, so far, very sketchy. Actually whilst making one's way along the Suru or the Indus valley it is hardly possible to cover more than a mile or so without meeting with a considerable outcrop of more or less metamorphic schists. These are chiefly dark in colour and up-ended, causing narrow gorges and ravines with steep walls to which the track clings above the torrent (see Plate No. 15). A few specimens picked up above Karmang show that these schists are hard and break off in rough slabs, containing hornfels or adinole between the planes of parting.

The granite itself is grey; it contains mica and amphibole, and is sometimes associated with diorite, but in many places appear intrusions of lighter granite with mica only. This is the Himalayan granite which occurs in places all through the Baltistan district, as for instance at Tolti (Dainelli).

The Baltistan district ends in the neighbourhood of Skardu, which lies near the centre of a large basin (18 miles by 5) at the foot of an enormous rock. The upper part of this rock appears to be covered with conglomerates of glacial origin, and on the summit itself, nearly 1,000 feet above the valley, stratified lacustrine deposits have been observed (Godwin Austen). This basin must have been entirely occupied by a lake prior to the Glacial Epoch. The glaciers have, at all events, played a predominant part in the existing formations, and traces of their action are numerous, polished rocks and remnants of moraines being not infrequent. Moreover, under the nondescript débris of the moraines, which cover the terrace on which Skardu is built, beds of marlstone curiously folded in places are visible (notably under the village itself); the yielding character of the marlstone beds is not sufficient to explain this aspect and the folding is very probably due to the movement of the glaciers which covered the bed of the basin. The generally accepted hypothesis at the moment is that the Skardu glacier originated in the Kara-koram and flowed into the plain by the Shigar valley.

As I have already indicated when speaking of Dras, moraines and alluvial formations are constantly met with in this region. Their deposits (clays, sands, and conglomerates) are met with very high up on the slopes of the Indus valley, mainly between 500 and 650 feet up, but occasionally much higher. Deposits of clay have been noted over 1,500 feet above the present level of the river and sands and conglomerates over 3,000 feet above the bed of the valley. These figures show the tremendous erosion due to the action of the river and the uplift of the region since the end of the Tertiary age. Between Skardu and Shigar the river flows at the foot of the gneissose cliffs of Marshkala before turning abruptly in a north-westerly direction.

Between Shigar and Askoley Dainelli gives a schematic section explaining the roughly parallel courses of the Shigar and the upper Braldo by the presence of Devonian and Silurian synclines. We did not follow the route to the Skoro-La and I only observed the rocks bordering the valley. My observations neither confirm nor contradict those of Dainelli; in any case the rocks we encountered appeared to be highly metamorphosed and their age must be very uncertain. But I agree with the general order of superposition indicated by Dainelli; the anticlinal zones, as given by him, show an abundance of granitic injections, most often pegmatitic.

The broad Shigar valley is encumbered with alluvium and tremendous cones mark the junctions with the valleys of tributary rivers; one of these cones, a little beyond Shigar, measures 2 or 3 miles across. Beyond Yuno, on the other hand, the narrow gorges offer at many points a convenient opportunity for observation of the series of gneisses, although the slopes are frequently covered by enormous banks of detritus.

From Yuno to the elbow of the Gomboro we crossed a great series of gneiss with the strata sloping in a north-easterly direction. These schists are of varied types, often spotted or of augen type; they sometimes present well-foliated formations having the structure of mica schists; they had one common character—the almost total absence of garnets, which is a distinguishing mark from the gneisses found more to the north near Askoley and Paiju. Injections of pegmatites and veins of quartz are not uncommon; the latter

show much folding, suggestive of injection into a semi-fluid substance, as may be seen remarkably well on some of the polished slabs.

Beyond Gomboro the path following the right bank runs mainly over recent deposits, which lie loose on the slopes, forming an unstable ground where stone falls are frequent and where the torrents often occasion big mud avalanches.

On the contrary, as far as Chongo on the left bank, a highly calcareous series is to be seen which includes mica schists, generally very rich in garnets, and accompanied by some amphibolites. These beds are much folded and generally up-ended; they can be observed splendidly in the high wall (slabs at 60°–70°) situated a little below the sulphurous spring of Chongo.

The village of Askoley is built on an elevated terrace and dominated by a wall of curiously folded gneiss. The types met with here are often highly calcareous: amphibolites, rocks rich in garnets or hornblende needles, limestones containing minerals and rocks formed of a curious mixture of calcite and brown mica are frequent. Bands of cipolin also are by no means uncommon.

The imposing marble doorway which now gives access to the Biafo glacier was made by the torrent from the glacier as it cut its passage through one of these cipolin bands.

The Biafo moraine, which we traversed, is rich in blocks of gneiss, amphibolites and cipolins; and besides fairly numerous blocks of granite there is a notable abundance of schists, only slightly metamorphic, in close proximity to phyllites. The presence of the latter indicates the existence in the Biafo basin of a semi-metamorphic zone, which is consequently of a superior level to that of the Braldo gneisses.

Similar beds also appear in the valley a little above Bardumal, where the quartzites form steep banks which are easily seen. This is the continuation of the band already noted on the Biafo glacier.

Beyond this synclinal the gneissose series starts again (gneiss containing garnets and amphiboles), and a little before Paiju one enters the zone of the Himalayan granites which surround the lower part of the Baltoro glacier and form the steep crags and towers dominating the little woods of Paiju. The granites are essentially

micaceous, with a rather coarse grain; they are accompanied by porphyroid granites, which are not uncommon in this district.

These granites lie in thick layers and hang in enormous masses with the strata sloping regularly to the north-east; they form the fantastic needles which border the right bank of the Baltoro as far as its junction with the Mustagh glacier. The elegant form of these pinnacles has sometimes caused them to be considered dolomitic or calcareous (cf. Plates illustrating the account of the Dyhrenfurth Expedition). Yet, if one examines the rocks of the Baltoro moraine along the right bank, one finds a profusion of granites and no limestone at all; besides this, the roughly marked strata continue towards the west into the Paiju, the granitic nature of which (after examination of the scree and pebbles brought down from this mountain by the torrents) is indisputable. Such pinnacles are, moreover, not unknown in granite—the best examples being the Chamonix Aiguilles and the peaks of the Bregaglia district.

On the left bank near Liligo and Rdokass there is a preponderance of granites and pegmatites, although gneisses are not unknown. Farther down-stream, however, less metamorphosed schists are to be found, forming ruined slopes which I was not able to approach; nevertheless in the 'Coomb of the Ibex' (near the camp situated half-way between Paiju and Rdokass) I picked up schists containing andalusite which show marked effects of local, as well as very slight regional metamorphism.

When one examines these rocks in detail one perceives that the granites contain a high proportion of quartz (about 50 per cent.); the biotite, with a small proportion of muscovite, is dispersed in little flakes. Frequently these granites show themselves to be slightly gneissose. Real gneiss is also found as well as augen gneiss which in biolite with feldspar eyes about half an inch across.

Near Rdokass, especially a little down-stream, examples of injections containing pegmatites attain large proportions, the most striking feature being the abundance of garnets which sometimes form a considerable part of the rock.

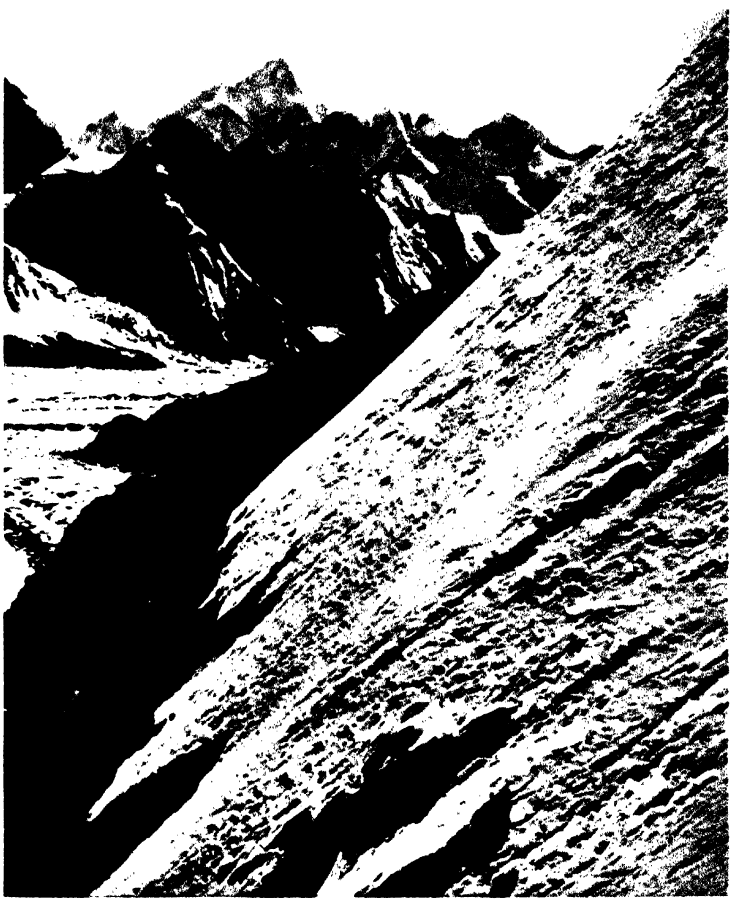
Beyond Rdokass and its granites, our route lay up the middle of the glacier, where it was scarcely possible to collect any rock. Observations were therefore limited almost exclusively to the study of

the blocks of the moraines and to the examination of the walls with the glasses. At the confluence of the Baltoro with the glaciers descending from the Masherbrum the moraine includes practically no semi-metamorphic elements but contains on the contrary an extraordinary abundance and variety of granites, revealing the importance of these rocks in the Masherbrum *cirque*. The structure and tawny colour of the colossal pillar which supports the snowy summit-cap of this magnificent mountain leads me to think that here, too, there is granite or gneiss. If this is so, the Siluro-Devonian schists, stated by Dainelli to be on the south of the granites and gneisses, would be farther to the south, on the Shyok side.

The moraines which, from the confluence of the glaciers as far as Concordia occupy the centre of the glacier, and which come from the slopes of the Gasherbrum and the Broad Peak, are on the contrary very poor in crystalline and crystallophyllitic rocks; they contain chiefly a large proportion of semi-metamorphic components. Moreover, these formations may be more closely studied by examining the successive moraines. This was done by the Italian expeditions, and I myself did so again for the portion of the glacier above Concordia. On the march we followed two successive moraines, one coming from the region of the Hidden Peak and Conway Saddle, the other from the Golden Throne—Chogolisa massif. The first, as was to be expected, was essentially calcareous, but, besides the pure limestone which we were able to examine at our leisure on the buttress, it was not uncommon to meet with limestone conglomerates and breccias. These formations appeared to have been only slightly metamorphosed and there was therefore a possibility of finding fossils, though personally I found none.

The veins of limburgite met with on the ascent of the buttress were also represented by some detritus in the moraine—but only in relatively small quantities, which shows the slight importance of these injections. Some of the blocks are interesting to study; one sees limburgite mixed up with granite pebbles, proving the recent age of these lavas, which came into place after the eruption of the Himalayan granites.

The moraine coming from the Golden Throne is, on the contrary, almost exclusively schistose; the schists are dark, almost black,

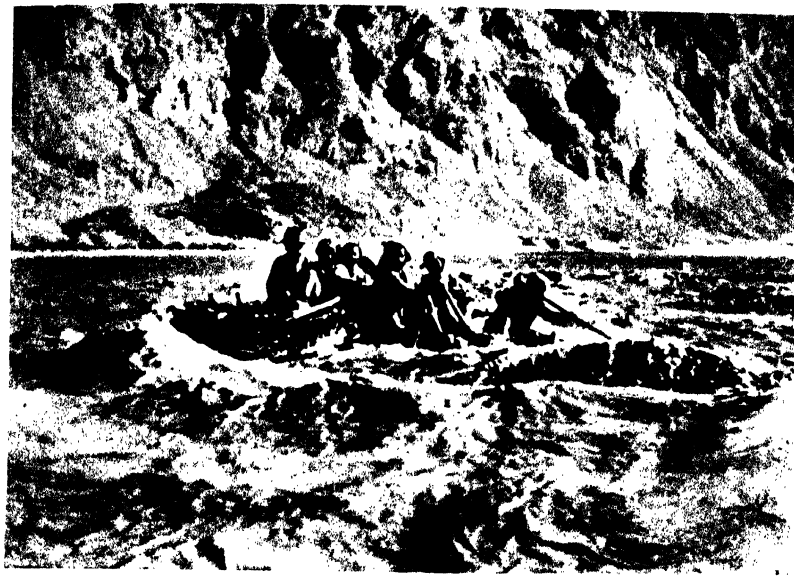


Beneath Camp IV

a. Receiving the Order to retreat

b. Giving the Order to retreat at Base Camp

The Traverse near Camp II

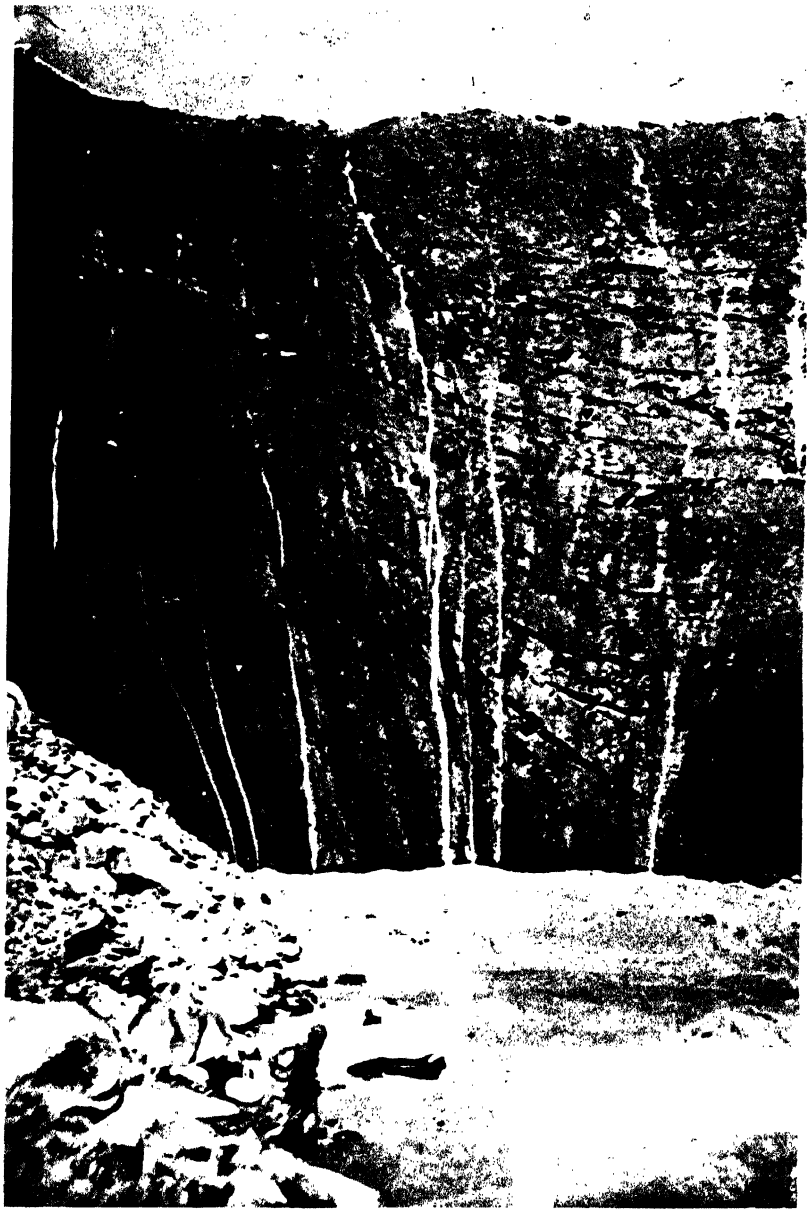


a. Crossing the Braldo on a Zak

b. On the Deosai Plateau

Camp pitched by Arlaud and Ichac on the way to the Kondus Saddle

The marble gates of the Biafo Glacier



The Snout of the Biafo Glacier

shiny and semi-metamorphic; they split into plaquettes with a clean and fairly regular cleavage.

Besides these black schists we met with a few red schists and sandstones, sometimes giving place to conglomerates and detritus of lava veins. The separation between limestones and schists is fairly well defined in the walls on account of the marked difference in colour between these two formations. The dividing line passes beneath the summit of Gasherbrum VI (22,976 feet) and then runs up to a good height in the rocky wall in the direction of Concordia. The schistose bands appear to continue beyond this last point before branching out into the buttresses of Crystal Peak.

NEW OBSERVATIONS

The Movement of the Glaciers.—During the last Italian expedition to the Baltoro (1929) Professor Desio, cartographer and topographer of the expedition, marked a certain number of the blocks situated just in front or on the snouts of the Baltoro and Biafo glaciers; and on our departure he very kindly sent us the list of the blocks with their positions.

I looked for these blocks on our return but of those listed I could find only one for certain, and the marks which it bore were half-obliterated. I think that the disappearance of these marks, made seven years ago, accounts for my not having been able to find the others, as the notes communicated by Professor Desio were extremely precise regarding the situation of the blocks.

On the snout of the Biafo glacier in particular I was able, with my friend Deudon, to find some enormous blocks which, in position, dimension and type of rock, corresponded with those of Professor Desio's list, but failing to find the marks, I could not identify them with certainty.

Baltoro Snout.—I found a large block of gneiss which from information given by Desio, was in 1929 placed against the actual ice snout of the glacier; in July, 1936, it was still against the blocks marking the old snout, but the ice of the glacier itself appeared only at a distance of about 95 yards (measured with a rope). The Braldo, which rises a little higher up, runs along this advanced tongue of the

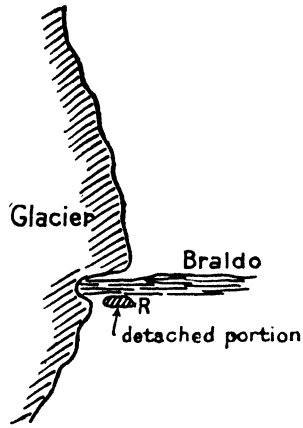


FIG. 1

Sketch of the snout of the Baltoro glacier

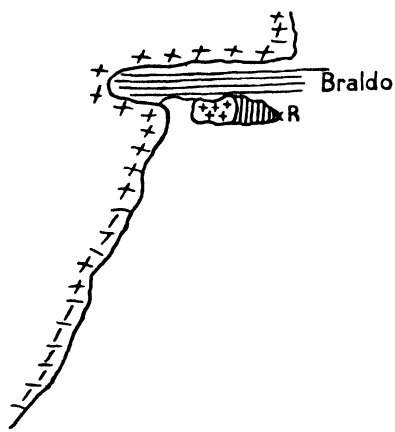


FIG 2.

Detail of detached portion

Ice covered with rocks

Blocks of moraine

R Block marked by Desio

glacier, cutting a trench that lays bare sheer walls of ice extending uninterruptedly from the covering scree to the bed of the stream.

The case is in fact rather peculiar and deserves close examination: the block marked by Desio in 1929 was, in 1936, placed against a mass of moraine covering a sort of hummock of ice and stones about 160 feet high and 150 to 200 yards in length; this detached portion of the glacier was separated from the main mass of the glacier by an interval of about 60 yards. The glacier must therefore have receded, as it has abandoned this portion of its snout, which is now stationary and slowly melting. It is, however, difficult, from the length measured, to deduce the approximate rate of retreat. What interval should be measured? The distance between the Desio block and the first appearance of the ice, between this block and the actual snout of the glacier, or between the actual snout and the abandoned portion? In any case, the last of these measurements gives the minimum retreat of the glacier during the past seven years at this spot; this minimum is, as we have already seen, about 70 yards. Obviously one cannot apply this result to the whole front of the glacier, which may have undergone a certain deformation, but a general recession seems fairly certain.

The Biafo Glacier.—I found two enormous greenish blocks which appear to correspond to those indicated by Desio but, as I have already stated, I was not able to identify them with certainty. If these are really the blocks marked by Desio, here also there would have been an appreciable retreat.

Notes on the Hidden Peak and Remarks on the Baltoro.—The buttress up which we climbed consists of a mass of well-defined and steep beds of limestone which prolong those constituting the western side of Queen Mary Peak. I was unable to find any fossils, and their age must be inferred by their position in the prolongation of the beds of Queen Mary Peak where Dyhrenfurth found fossil anthraolitic remains. These beds, which take a definite north-north-west direction, contain, in places, veins of a dark, almost black, rock in which one can distinguish with the naked eye numbers of black mica flakes. The microscope shows it to be a kind of limburgite with countless crystals of black mica and augite, embedded in a semi-amorphous paste abounding with microliths of augite.

These beds appear to continue to the summit of the Hidden Peak, beneath which, with the glasses, one can see a definite synclinal fold.

Topography.—I had occasion to use the theodolite and plane-table in the neighbourhood of Base Camp and Camp I. First of all it was necessary to determine the position and height of these camps and then to verify the altitude of Queen Mary Peak, over which there had been considerable controversy. Dyhrenfurth considered that the height of this peak was much under-estimated and that the highest summit of Queen Mary Peak exceeded 25,200 feet. I was unable to observe this summit but I could at any rate make observations on the lower western summit. I operated from three different stations on the glacier, the positions and heights of which had been determined by comparison with the triangulated summits of the chain. These operations, carried out on the return from the assault, were rendered arduous by the refraction effects of the fresh snow, and were consequently not very accurate. It was, moreover, impossible to use measurements of less than 10′. The figures that I obtained have been communicated to M. Zurbuchen, the eminent geodesist, who made the calculations for the Italian map of the Baltoro and who has kindly agreed to take charge of our calculations.

Height of the Camps.—With the plane-table and level I calculated a height of between 15,750 feet and 16,000 feet for Base Camp. A mean figure of 15,900 feet may be adopted.

Similarly the figures obtained for Camp I vary between 16,270 feet and 16,570 feet. A mean figure of 16,400 feet may be adopted.

For the high camps I had to content myself with barometric readings, and calculations with compass and pocket level.

The difference of altitude between Camps II and III, measured many times with the barometer, was between 975 feet and 1,140 feet and a series of five observations made with the clynometer on summits with known heights (Golden Throne; Gasherbrum, summits 22,970 and 22,980 feet; points 20,430 feet and 20,830 feet on the north ridge of Bride Peak and on Bride Peak itself) gave only slightly varying heights for Camp III: measurements on Bride Peak gave 19,850 feet whilst the four others gave 19,630 feet. We can thus

assume a height of about 19,690 feet for Camp III and of about 18,700 feet for Camp II.

From Camp IV an observation on point 20,430 feet gave a slightly negative result and the height of this camp must therefore be in the neighbourhood of 20,500 feet, a figure that corresponds fairly well with that which one might deduce from the length of the fixed ropes. One can also estimate the approximate height of Camp V by this means in place of trigonometric measurements or barometric calculations which are too liable to variation according to the weather. This height would be about 21,700 feet, making the highest point attained by the Expedition 22,400 feet.

Meteorology. Temperatures Observed.—We had with us maximum-minimum precision mercury thermometers, which were placed at Base Camp under the shelter of boards where the air circulated freely. The readings were taken daily by Azémar who also noted the figures of the hygrometer.

The following are the main results obtained.

In fine weather the maximum temperature in the shade was about 10° C. (50° F.) to 12° C. (53° F.); in cloudy weather the maximum was scarcely above 0° C. (32° F.) and often less.

At night the most frequent minimum temperatures observed were from − 5 to − 7° C. (23° F. to 19° F.) the absolute minimum noted being − 9° C. (16° F.).

In fine weather the hygrometric state varied regularly; it decreased rapidly as soon as the sun began to touch the glacier, at noon reached a minimum of 40 to 50, and then commenced rising rapidly after sunset to figures of about 60 to 70.

At an altitude, owing to the lack of any shelter for the thermometers, we took no readings during the day, contenting ourselves with taking the minimum readings during the night. These were most often around − 10° C. (14° F.) but fell twice, at Camp IV, well below this to − 19 to − 20° C. (− 3° to − 5° F.) during the bad weather from the 15th to the 18th of June; and to − 17° C. (1° F.) on the 22nd of June on the arrival of the monsoon.

APPENDIX III

Diet, and Medical Notes

THE ORGANIZING COMMITTEE OF THE EXPEDITION ENTRUSTED me with the study and preparation of the food supplies. I put before all else the principle of a strictly hygienic diet and to this principle I intended to adhere even at the expense of being called a 'food dictator' and of hearing, later on, sarcastic allusions made to the scantiness of some of the meals or to the lack of certain appetizing products of attractive appearance.

I was, in fact, convinced that many of our predecessors had been handicapped by not having followed a sufficiently strict diet, and that many of the troubles put down to the altitude were in reality due to unsuitable food.

The research done by Professor Mayer of the Collège de France on the perturbations and the proportions of acid and alkaline substances contained in the system caused by rarified air, and the observations of my colleague Le Mihauté during the French Expedition to Greenland were of the greatest help to me. I myself had fifteen years' experience of camping in all parts of the Pyrenees in winter as in summer, and I had specialized, medically, in the hygiene of sport, particularly on the subject of suitable diets. I think I may say that I had the absolute confidence of the Organizing Committee.

I must confess that I considered the information of previous Himalayan expeditions on this subject of comparatively little importance and subsequent experience showed that in this I was justified. Conditions are very different in the various parts of the range; and taking into account the discrepancies in the dates and compositions of the parties, I still hold that the best advice to those who follow is not to pay too much attention to the advice of their predecessors.

I determined to utilize to the maximum, during the march to Base

Camp, *all* the available fresh produce that could be obtained locally, even if of an apparently negligible quantity; and to make up with large quantities of the following products, which would also take the place of fresh food at the high-altitude camps:

Corned beef (the 'Singe' of the French Army)
Sardines in oil, mackerel in oil or butter
Tinned salmon and tunny-fish
Dried vegetables
Vermicelli, macaroni, spaghetti, &c.
Semolina, wheat, barley, haricot beans, lentils, and green wheat
Dried fruit—prunes, figs, raisins, apples, pears, peaches, apricots, walnuts, pea-nuts
Jams
All descriptions of preserved butter (salted, half-salted, pasteurized)
Sugar
Chocolate
Condensed milk, sweetened and unsweetened
Gruyère cheese
Sweet biscuits
Biscuits of the ship's biscuit type and *biscottes* [1] to take the place of bread
Cassoulet toulousain [2]
All kinds of preserved vegetables.

Reserved for the midday snacks:

Ham and *saucisson.*

To have in reserve in order to be able to vary the menus:

Petit salé [3] with cabbage, *sauerkraut*
Porridge
A variety of ready-made soups
Fruit preserved in syrup [4]

[1] Twice-baked bread.
[2] Hash of haricot beans and goose.
[3] A kind of boiled salted bacon.
[4] These were not in the principal list on account of their weight.

Honey, nougat
Raviogli, caneloni [1] (tinned).

I also resolved:

to make very moderate use of preserved pork and mutton, tripe, tongue, calves' head, &c., of which one tires quickly;

to forbid at an altitude of over 16,000 feet all acid foods, lemons, lemon-juice, oranges, tomatoes, jam made of acid fruit, acid drops, garlic, onions, vinegar, mustard and condiments;

to prohibit absolutely: all preserved food with insufficient guarantees of preservation, such as: fish preserved in white wine, crustaceans tinned, or having undergone too much culinary preparation; jellied beef, rabbit or other tinned foods presenting danger of putrefaction; game, hare paste, tinned sausages;

to make up for the insufficiency of vitamins at high altitudes by absorbing, daily, special tablets prepared by the Byla firm;

to take no drink other than tea, cocoa, *génépy* [2] and fresh water, the water during the march to Base Camp being sterilized with special army tablets and filtered.

There could be no question on account of the weight of taking any wine other than a few bottles of champagne. The consumption of spirits would be limited to the strict minimum and reserved for cases of exhaustion, except for a small medicinal tonic with the evening meal.

The proposed arrangement of the meals was as follows:

During the March to Base Camp.—In the morning, before leaving, a substantial breakfast of tea, chocolate, milk, butter, honey, jam with biscuits or *biscottes*;

In the middle of the morning a light lunch of preserved fish, ham, *saucisson* or cold meat, cheese, jam or dried fruit and biscuits, with some dried fruit and chocolate to eat on the march.

On arrival at the end of the day's march tea with sweet biscuits and *pain d'épices*.[3]

The important meal of the day would be in the evening and would consist of soup, meat, and vegetables, sweet and dessert or two

[1] Patties made of the same mixture as macaroni, &c., and stuffed with meat.

[2] A species of Artemesia from which a kind of tea can be made.

[3] Spiced cake, rather like a mild ginger-bread.

desserts, preceded by a medicinal tonic and followed by an infusion of *génépy*.

At Base Camp.—The same, with the addition of soup or macaroni at the midday lunch.

During the Attack.—The same as for the march, the midday lunch being simplified if necessary and the evening meal being reduced to soup (of meat extract and semolina), tinned dish (*cassoulet*) or meat and vegetables separately, cheese, jam, or dried fruit soaked in water; the reduction in the quantity being balanced by the high caloric value of the food (butter, cheese).

Keeping in view all these different points, I drew up the following diet sheets (see page 170).

The rations in this table represent 4,500 to 5,000 calories.

The goods were packed in six different categories of cases of varying sizes and weights:

V. (Valley)—march to Askoley;

B.A. (low altitudes)—march from Askoley to Base Camp;

C.B.—Base Camp;

A.—Assault;

B.A.R. (low altitudes on the return)—Base Camp to Askoley;

V.R. (return valley)—Askoley to Srinagar.

Each series included cases marked H, or hermetic, for food liable to be damaged by damp, which were lined with tarred paper, and cases marked O, or ordinary, for preserved food in tins.

All the cases were stamped with the date on which they were destined to be consumed, so that with two cases, one marked H and one marked O, of the same series of letters and numbers, the eleven members of the Expedition had at their disposal all the food they needed for two or three days, according to circumstances. All the menus had been drawn up in advance to ensure a constant change. The cases for the march and for Base Camp generally weighed 55 lbs. and those for use at high altitudes 26 lbs. for the H's and 55 lbs. for the O's. These last were intended to be opened and the contents divided up in the rucksacs. The provisions for the 'tigers' were put in cases, each of which contained only one kind of food.

The main part of the food was presented by French firms, the only items that had to be bought before leaving France being butter,

	March and Base Camp		Assault	
	Grammes	Ounces (approx.)	Grammes	Ounces (approx.)
Meat and eggs	200	7	50	2
Meat and vegetables (either 250 grs. (9 ozs.) of *Cassoulet* or 100 grs. (3 ozs.) of corned beef and 150 grs. (5 ozs.) of peas, &c.	—	—	250	9
Fish	75	3	50	1¾
Dried vegetables or macaroni	30	1	25	1
Fresh or tinned vegetables	100	3½	—	—
Dried fruit	60	2	50	1¾
Cheese	60	2	80	3
Butter	60	2	100	3½
Jam and honey	100	3½	100	3½
Sugar	50	1¾	60	2
Condensed milk	80	3	30	1
Chocolate	35	1¼	35	1¼
Sweetened cocoa	20	¾	20	¾
Tea or other infusion	10	⅓	10	⅓
Flour	10	⅓	—	—
Biscuits, sweetened or unsweetened	250	9	250	9
Meat juice	10	⅓	10	⅓
Salt and condiments	10	⅓	10	⅓
Grape juice	25	1	—	—
Medicinal tonic	30	1	30	1
Total	1,315	43	1,160	41½

corned beef, dried vegetables from Holland and Italy, gruyère cheese, the *charcuteries* [1] and dried fruit. The biscuits and *biscottes* were provided by the firm of Heudebert on excellent terms.

[1] Produce from the pork butcher.

We put off buying tea, rice, some of the jam, oat-flakes and condiments until our arrival in India. Experience proved that this was a mistake.

As a precaution I submitted my plans to all the members of the Expedition, asking them to let me know if there was anything that they objected to. But if I had cut out all that they did not fancy we should have had nothing left to take with us, except perhaps the sugar !

However, I agreed to make some concessions. On the request of Allain and Leininger, the oat-flakes were promoted from the list of accessory foods to the principal list, and mustard and garlic powder were given the right to appear as far as Camp I : it was even rumoured that a jar of pickles had strayed up on to the buttress !

The result was the following list of food for the sahibs during the whole expedition, and for the ' tigers ' whilst on the buttress only :

	Kilogrammes	Pounds
MEAT		
Seasoned beef	200	440
Ham	35	77
Saucisson	30	66
Foie gras	2	4½
Chicken in jelly	6	13
Calves head *à la tortue*	10	22
Boudin noir *	20	44
Pork, roast or otherwise	15	33
MEAT AND VEGETABLES		
Cassoulet (hash of goose and haricot beans)	100	220
Boiled bacon and cabbage	12	26
Sauerkraut and meat	3	6½
FISH		
Sardines	136	300
Mackerel	102	214
Tunny	32	70
Salmon	44	96

* Sort of ' black pudding '.

	Kilogrammes	Pounds
MACARONI, &C., DRIED VEGETABLES, FLOUR		
Macaroni, spaghetti, vermicelli, &c.	75	165
Rice	50	110
Semolina (of different flours)	25	55
Dried vegetables	30	66
Flour	25	55
TINNED VEGETABLES		
Peas	125	275
French beans	32	70
Mixed vegetables	29	54
Haricot beans, flageolets	75	165
Mushrooms	11	24
Whole tomatoes	25	55
Tomato sauce	10	22
DRIED FRUIT		
Almonds	25	55
Figs	25	55
Raisins	20	44
Apples, pears, peaches, apricots	75	165
Pea nuts	25	55
Walnuts	20	44
SWEET FOODS		
Sugar	277	609
Condensed milk (sweetened)	150	330
Chocolate	180	396
Nougat	4	9
Eleska (cocoa powder)	200	440
Sweetened cocoa	26	57
Sweet biscuits, spice-cake	188	413
Jam, honey, fruit preserved in syrup	615	1,353
Grape juice	25	55
Unsweetened biscuits and *Biscottes*	367	807
Butter	179	394
Oil	48	106
Gruyère cheese	110	242

	Kilogrammes	Pounds
Tea, *génépy*, maté	38	84
Meat juice and concentrated soups	58	128
Condensed milk (unsweetened)	45	99

RECONSTITUTING FOODS

Tonimalt	24	50
Ovaltine	50	110
Condiments, spices, mustard	10	22
Salt	20	42
Vinegar	4	9
Lithiné †	20	42

† Tablets used for rendering water more agreeable to the taste.

Alcoholic drink, which was used partly for presents and partly for dinners, etc.:

72 half-bottles of Champagne
12 bottles of Picon
12 „ „ Dubonnet
24 „ „ Tonique Laroche
24 „ „ Cointreau
12 „ „ Old Brandy
12 „ „ Cordial Médoc.

The whole weight amounted, with the cases and packing, to 4 tons 16 cwt., of which 4 tons 12½ cwt. would leave Srinagar *en route* for Base Camp. We also reckoned on buying on the spot 15 sheep, 120 chicken, 60 dozen eggs, and as large a quantity of potatoes and fresh vegetables as possible, and this project was carried out.

The above plans subsequently underwent important modifications. During the sea voyage and on the journey over-land in India my companions got so accustomed to an English breakfast that they insisted on 'chota-azri'.[1] Thus at Base Camp and during the march it was a common spectacle to see every one (after having partaken of tea in the tents), sitting down to a meal of fried eggs, liver, grilled sheep's kidneys, stewed and dried fruit, spice-cake, &c., the

[1] Breakfast.

whole preceded by the familiar English plate of porridge mixed with milk, and concentrated soup tablets or tonimalt.

At the end of the day's march, or at 4 p.m., the simple tea which I had provided for developed considerably, and I watched with misgiving the consumption of certain categories of food taken from cases, the opening of which, at this stage, was not at all in the programme. Sometimes this little meal was supplemented with pastries and dried fruit offered by the Rajahs whom we visited on the way.

Some of the members found the light midday lunch a hardship as, though it was constituted of food of a high nutritive value, the small volume did not give the sensation of a full stomach. I must point out, however, that most of the party were blessed with a prodigious capacity. Had we not witnessed on board the *Viceroy of India*, Deudon and Ichac ordering the steward to serve them with all the twenty-two courses of the ' copious but disappointing ' lunch and then finish their meal with four or five bananas ? During the marches Deudon, once he had dealt with the regulation snack, accepted with pleasure the invitation of the Sherpas to share their dish of rice (which they prepared to perfection). During the return march it was quite a usual thing to partake of a chicken and a dozen eggs in addition to the normal menu.

The consumption of chocolate was prodigious : we had plenty of it and the daily ration of $1\frac{1}{6}$ ozs. was frequently increased to a whole slab of 9 ozs.

Tastes changed with the passing of the days, and the morning porridge which had been welcomed by all at first was soon spoken of with scorn as the ' bill-sticker's breakfast '. Even Allain and Leininger, who had been the fervent champions of this product, grew tired of its insipid stickiness, scarcely disguised by the addition of milk, chocolate or Tonimalt. They preferred ham or *saucisson*, and when Base Camp was evacuated 132 lbs. of Quaker Oats were abandoned on the glacier.

The vegetarians became omnivorous ; and towards the end the most determined teetotallers welcomed the bottles of *apéritifs*, Cognac and liqueurs, and even went so far as to mix themselves cocktails.

During the thirty-six days of the march to Base Camp we found, in the villages, more than we had hoped for or the experience of the

previous expeditions had led us to expect. Sheep, chicken, and eggs we could procure everywhere at very reasonable prices,[1] and we might easily have suffered from poisoning due to an excessive absorption of substances containing nitrogen, if I had not insisted on our adhering to the established plan. At Kargyl we obtained cabbages, onions, and beans. In most of the villages of the Indus valley and even in those of the Braldo valley on the return, we found radish leaves with which we concocted abundant salads.

As for the potatoes, they were the occasion of quite a little drama. We had been able to obtain some at Kargyl and we had hoped to be able to lay in a good stock at Skardu. But Mr. Kaysar Sing, being informed of our approach, had made a corner in the potato market with the intention of selling them to us at about ten times their value. The tah-sildar begged us not to be a party to this extortion, and we left for the Baltoro glacier with only the dried potatoes which we had brought from France.

Now, whilst the sahibs resigned themselves to this privation, several hundred pounds of these precious roots were bought at the maximum price for the ' tigers '. The disgust of Allain and Leininger may well be imagined when, at Camp I, they saw the Tibetans regaling themselves on an appetizing dish of fried potatoes whilst we only had our dried produce.

It was chiefly at the higher camps that tastes changed, and sometimes the sahibs were seized with irresistible ' longings ' of a nearly pathological nature. They were sick of macaroni, farinaceous foods, dried fruit, and biscuits; moreover, these foods were difficult to prepare as the stoves, which were on the petrol-gas system, refused to work above Camp I. Meta could only be used from Camp II upwards. But it was just these foods which were sent up regularly, as they were grouped in cases of 25 lbs., each very conveniently making one porter's load. Meanwhile the tins of preserved food sometimes strayed from their proper destination, for the ' tigers ' also showed a lack of appetite for their customary fare and more

[1] Sheep: from 4 rupees (Gund, Kargyl) to 7 rupees (Dras, Olthingtham). Chicken: from 1½ rupees (Metaïan) to 8 annas (Askoley, Folio). Eggs, a dozen: from 8 annas (Metaïan, Tolti) to 4 annas (Shigar, Askoley).

appreciation of the sahibs', with the result that by the seventh day on the buttress 300 days of the sahibs' provisions were consumed instead of 70 !

The ' longings ' of the sahibs were for fruit preserved in syrup, nougat and chicken in jelly—just those items with which we were the least provided—or else for pickles, piccalilli and English sauces, all of which were forbidden on account of their acidity.

On the ski tours with Ichac or Streatfeild we took practically nothing but chocolate and *biscottes*.

The most anxious time for the ' food dictator ' was the monsoon period. The men down at Base Camp, confined to their tents, lost all appetite. They turned against everything: dried vegetables, dried fruit, macaroni, and above all the mutton. We left a flock of sheep at pasturage at Rdokass as the Dyhrenfurth Expedition had done before us, and every fourth day the dakman, who was entrusted with the mail, also brought up two selected sheep, one for the sahibs and one for the ' tigers '. It was almost impossible to cook meat at high altitudes and the staff at the Base had to consume all the sahib-mutton by themselves in four days. By the twentieth day we were already sick of this strong-flavoured meat, which made its appearance at every meal, and we had, little by little, to leave it to the ' tigers '.

Some of the party munched chocolate all day long with the result that, in the evening, they came dejected and without appetite to take their places in the Mess-tent. Only a roast leg of mutton could entice them out of their apathy, but this needed a break in the snow-storm and involved the burning of cases.

We should have welcomed some eggs. But we had only brought 60 dozen from Askoley and these were reserved for sweet dishes and sauces. Mayonnaise flavoured with garlic, corned beef and onions fried in butter and *croque-monsieur* [1] were always greatly appreciated.

Ichac occupied his spare time by making a gastronomic map of France. We evoked the culinary riches of this or that town, but what we all dreamed of was a good beef-steak and chips, a dream

[1] Sandwich of bread with ham and cheese, the whole fried in butter.

impossible of realization for many months, as in Kashmir the cow is sacred, and we should have to await our return to the heart of India, in territory under British administration, before being able to satisfy this longing.

Diet for the 'Tigers'.—The 'tigers' provisions were superior in weight to those of the sahibs. We had, actually, by contract, to supply them daily with:

Atta (flour)	12	ozs.
Rice	12	„
Dhal (lentils)	8	„
Ghi (boiled and clarified butter)	2	„
Sugar	4	„
Salt	1	oz.
Masala (curry-powder)	½	„
Tea	½	„
Total	2 lbs. 14	ozs.

They also had *tsampa* (barley flour baked in the sun) for high altitudes (the quantity not being specified), as well as potatoes, onions, and mutton. During the march they bought their own eggs and milk. We also supplied them with fifteen cigarettes per day.

On the mountain a part of these provisions were replaced by sahibs' food, but a part only, and this was a mistake.

Provender for the Baltis.—'Provender' is really the only suitable word; one can scarcely apply the word 'provisions' to the flat cakes of barley flour cooked on hot stones at Paiju which, during the whole march on the glacier, were the only sustenance of these poor creatures.

We had agreed to provide them beyond Rdokass with ½ litre of unsweetened tea in which to soak their cakes for the evening meal; and at the camp between Rdokass and Concordia we put all the cooking apparatus and stoves into operation to heat the 65 gallons of water necessary. All the 'tigers' helped with the work. But when the tea was ready the Baltis refused to drink it, for it had been prepared by Buddhists, and the rudiments of the Mussulman religion

which they practised forbade them to accept anything coming from people of any religion other than their own.

Kitchen Equipment.—Our great novelty was the series of high-pressure saucepans which rendered possible the cooking of the toughest Kashmir mutton in spite of the rarified atmosphere. The stoves burning petrol or paraffin gas refused to work above Camp I. At Camp II (18,700 feet) we found that the only thing that would work was meta, with the special stoves for use with this fuel; but it was inadequate for heating the heavy altitude pots. The 'tigers' became rapidly expert in the use of the stoves and pressure cookers, the whistles of which, announcing that the food was cooked, pleased them greatly.

Fuel.—During the march to and from Base Camp we generally found wood and we had to use petrol or paraffin only occasionally. In the Coomb of the Ibex and at Rdokass we made fires of the roots of giant *génépi* plants which grow to extraordinary dimensions in the Kara-koram, forming regular bushes.

For Base Camp and Camp I we had a stock of 130 gallons of petrol and 65 gallons of paraffin. We took the paraffin with us on account of information given by previous expeditions: petrol, so we were told, lost one-third of its volume by evaporation. We found this to be inexact: petrol contained in tins with soldered caps did not lose an ounce of its weight. But the paraffin did not burn satisfactorily, and to be able to utilize this we were reduced to making a mixture of two-thirds petrol and one-third paraffin, a mixture which the 'tigers' did not appreciate as they were quick to perceive the difference in the combustion.

The Personnel.—We had two Sherpa cooks, Songlu called the 'ineffable', and Dhambi nicknamed 'Alfred Couttet', two Kashmiri cooks called Hamdu and 'big Ramona'[1] who had taken part in the Nanga Parbat Expedition. All of them were very expert in preparing omelettes, chicken *cocotte* and in the cooking of rice.

We had also as helps the sweeper or 'chota Ramona', and the little shikari, Hadu. But wherever I went I myself took a hand

[1] Called 'big' Ramona to distinguish him from the chota, little Ramona, who performed the duties of sweeper.

in the cooking, having had to give up trying to initiate them into the mysteries of making mayonnaise or Mornay sauces, which were tremendously appreciated.

Notes

We experienced great trouble with those of our cases which had plywood bottoms and lids, with sides of thin wood. Forced out of shape on the backs of the porters, banged against the rocks when carried by ponies, the nails fell out and the sides came apart, so that at each halt they had to be repaired.

In spite of the addition to the weight, all plywood should be condemned and the thickness of the wood increased, and the whole case circled with metal bands.

The system of putting the perishable goods and tinned foods into separate cases turned out to be deplorable for the provisioning of the buttress, as invariably only one of these categories was sent up whilst the other got left behind. Each case should contain everything necessary for as many complete man-day rations as would make up a total weight of 25 lbs. And above all else the metal-bound cases should, under no circumstances, be opened before required for use. Ham, *saucisson*, and cheese must be excluded on account of the special care and attention needed for packing these goods.

The ' tigers' ' food at the higher camps should be exactly the same as the sahibs' (except for their ' tsampa ') experience showing that at high altitudes they preferred the sahibs' food to their own.

Identical cases to those of the Europeans should therefore be prepared for the Sherpas and the apportioning out of the contents supervised.

The cases containing kitchen utensils, accessory foods such as flavouring, condiments, &c., which must be opened daily, should have their straps riveted on, as we found that all loose straps and separate bands disappeared one after the other.

Stoves with two flames should not be utilized as the Sherpa or Kashmiri cook always lights both even if he only needs one, thus occasioning a good deal of waste.

For the march, the provisions were grouped together for all the

eleven sahibs. In reality we were more often than not divided up into parties of two, three or four: this should be foreseen and the necessary splitting-up of food and equipment arranged for.

As regards the provisions themselves, we lacked fruit preserved in syrup; in spite of its weight this food should be used extensively at the high camps where it is difficult to cook the dried fruit. The eggs which we brought to Base Camp kept very well and we could have done with more of them.

We lacked products of the 'Antésite' type, for flavouring the water which, when obtained by melting snow in aluminium saucepans, has a disagreeable taste.

At Base Camp we often bitterly regretted not being able to have a cup of coffee after the midday lunch. Coffee had been excluded on account of its weight and price, as had many other little luxuries. It is probable that the next expedition, particularly if it includes a number of the same men, will have to allow for a few extra expenses which had to be left out of our budget. Contrary to the experience of many previous parties, the health of the French Expedition remained, in general, excellent. We were bothered with no digestive troubles after our departure from Srinagar until our return to this town. Dysentery, which had badly tried the Dyhrenfurth Expedition, was unknown to us, and yet on the return march we gorged ourselves on blackberries and apricots. The strict diet that my companions had, willy-nilly, to put up with was no doubt largely responsible for the perfect regularity of their intestinal functions at the Base and the higher camps. On the other hand, once back in India most of us suffered from the heat and a too-strongly-spiced nourishment.

We also escaped marsh fevers and malaria by which certain of our predecessors had been troubled.

The only ones who had any trouble were the two doctors. Jean Carle developed an abscess in the jaw and had to be sent back before the arrival of the monsoon. For myself, my sight became progressively impaired with the coming of the monsoon and I did not regain my normal vision until our return to Srinagar, after I had had special treatment by a Hindoo. My trouble was spotted keratitis accompanied by iriditis, probably due to an excess of nitrogen in

the blood on account of the altitude, and also to the reverberation of the sun.

Our glasses were not dark enough, and during our trips on skis Ichac and I were more exposed to the sun's rays than were the attacking parties on the rocks of the buttress.

We all suffered, to a greater or lesser extent, from the dryness of the air which caused irritation of the throat. Charignon suffered most: a persistent ulcerated throat kept him down at Base Camp much longer than he could have wished.

At 16,400 feet we lived in a practically aseptic atmosphere: wounds never suppurated, but organic reaction was slow and cicatrization lengthy; any affection contracted on arrival at the Base remained stationary in spite of medical attention. It is easily understandable that with this sluggishness of the organic tissues, pneumonia due to exposure must almost always prove fatal as on the German Expedition to Nanga Parbat.

The acclimatization amongst the sahibs was most satisfactory. Only the first night spent at a higher altitude than the previous one was liable to be restless, but the second night was good, in general, with the aid of one or two tablets of aspirin.

A paradoxical fact was that the ' tigers ', born and generally living between a height of 10,000 and 13,000 feet, suffered from the depression of the high camps far more than we did. It is probable that, owing to their permanent dwelling at a definite height, they do not possess the elasticity of reaction of European mountaineers, who, in the same day (as during winter ascents of Mont Blanc) are accustomed to a change of level of over 12,000 feet, both on the ascent and the descent.

With the exception of headaches we experienced no unpleasantness resulting from the altitude, chiefly because we took as many as thirty-six days to go from Srinagar at 5,200 feet to Base Camp at 16,400 feet, and on the buttress it was exceptional to ascend more than about 2,300 feet in one day. It was the skiers who, in this respect, suffered most, as they were obliged sometimes to endure rapid changes of altitude, amounting to about 4,000 or 4,300 feet.

During our reconnaissance on skis on the north-east glacier of the Hidden Peak, Ichac, Streatfeild and I went up to nearly 21,000

feet without difficulty, but on the way down a descent of under 1,000 feet was enough to make us pant violently for breath. This symptom disappeared later on during the trip to the Conway Saddle (Streatfeild, Arlaud, from 16,700 feet to 21,000 feet) and to the Kondus Saddle (Ichac, Arlaud, 17,380 feet to 21,300 feet), when we acquired a physiological balance sufficient to enable us to descend almost as regularly as on our French ski-runs at home.

We possessed two pieces of Draeger oxygen apparatus (aviation models), and tubes of oxygen and carbogen. This was not for the attacking parties, but was reserved for the treatment of pneumonia, frost-bite and possible asphyxia: actually we did not have to use them.

The 'tigers' were more sensitive than we were to the heat and the sun's rays. If they neglected to put on their balaclavas or their glasses, even for only a very short time, they were liable to sudden attacks and to conjunctivitis. This was noticeable from Askoley onwards, that is to say, above an altitude of 10,000 feet. The sahibs were not subject to these complaints unless they had been gravely negligent.

Our troop of 612 Balti porters whom we employed during the glacier stages nearly all suffered from conjunctivitis, and each evening large numbers of them came to have their eyes attended to.

Although the sahibs rarely visited the infirmary at Base Camp at the daily hours for consultation (10 a.m. and 5 p.m.), there was always a goodly attendance of 'tigers' or Baltis. But those of their troubles which were of a digestive nature were cured by a good dose of Epsom-salt.

We had, in all, three men seriously hurt. Pasang was hit on the 9th of June by a falling stone which caused a fracture of the tibia, and was brought down, after having had his leg set, from Camp II to Camp I on the back of the devoted Giudu. Sona Topki and Tsing Temba during the evacuation of the buttress on the 1st of July, fell some 2,200 feet. This fall only resulted in shock, which kept them prostrate and incapable of walking during the twenty-one days of the return march. Sona Topki suffered from slight congestion of the lungs and Tsing Temba from serious contusions of the pelvis.

Some of the Sherpas were subject to malaria, and our interpreter Zigmey Tsering had several attacks on the march as well as at Base Camp.

Our medical equipment was presented by the French Laboratories. It was contained in five cases, making a total weight of 275 lbs. not including the two Pourchier sledges, the two beds for the infirmary, and the oxygen apparatus. It contained about all we needed with the exception of throat lozenges (distributed too generously during the march), aperients for the 'tigers' and the natives, throat paints, and above all collyrium sufficiently powerful for the treatment of serious ophthalmic affections. All our intestinal medicines, laxative or antidiarrhoetic, remained unused. We learned by experience that it was advisable not to distribute anything other than Epsom-salt in the villages through which we passed; this seemed to satisfy the clientèle who rushed to consult the doctor on his arrival. It was just those medicines asked for which were afterwards most required. Generosity had to wait until the return.

As regards dental attention, all the sahibs had had their mouths overhauled before leaving France and, except for Carle, none of us had any trouble with our teeth. Our personnel were not so fortunate. However, one extraction from the mouth of the Goffercheick (head porter) cured our men individually and collectively, once and for all, of their toothaches, past, present, and future.

APPENDIX IV

Camping and Mountaineering Equipment

I STUDY AND PREPARATION.

THE CHOICE OF THE CAMPING OUTFIT AND EQUIPMENT OF THE Expedition was far from being merely improvised; it was, on the contrary, dictated by close on ten years' experience.

Early in 1928 a group of climbers, who were accustomed to camping in the mountains, realized that, by certain alterations, it would be possible to render the equipment at their disposal much more efficient for the special conditions of ground and weather met with in the mountains. At this date camping was only practised by a relatively restricted number of people and of these an extremely small proportion practised high-mountain climbing; it was only natural that the manufacturers did not see the use of paying much attention to the construction of models specially adapted for this purpose when they had practically no clientèle for such goods.

The study of the type of equipment required was a long job; up to this time the few Alpine campers (chiefly those who practised before the War), used a very heavy type; far from all help, with the disagreeable possibility of having to weather bad storms, they considered that only by strengthening each part of their equipment could they obtain the necessary security. But in 1928 the conditions of Alpine camping, for various reasons, underwent considerable changes. Except in special cases, climbers were no longer accompanied by numbers of porters: for the sake of economy and mobility, and from a desire for simplicity, they preferred to be capable of carrying everything they needed in their own sacks.

Faced with the impossibility of being able to use a heavy equipment, they approached the problem from the other end: starting

from the basis of an extra-light but otherwise normal camping equipment they sought to adapt this for high-mountain use, without too seriously increasing the weight.

The first improvement aimed at was to render the floor of the tent absolutely watertight, as, to economize weight, the mountaineer would have to live on the floor without beds or chairs. Until now the ground-sheet was not attached to the tent, but was fixed to it, after it was pitched, either by pegs or tapes. As the join was not very perfect, the inside surface of the ground-sheet invariably got wet on snow and, owing to the low temperature, remained so for the duration of the stay, thus causing much discomfort. The first modification was, therefore, to sew the ground-sheet to the lower edges of the walls of the tent in order to render the whole absolutely watertight.

On account of this necessity certain light, practical models, such as the ' Itisa ', with one pole and one guy-rope, had to be abandoned. This model is polygonal at its base and, owing to the number of the sides, the joining of the ground sheet to the walls of the tent is difficult. The ' bonnet de police ' (peaked cap) form was also set aside subsequently on account of the acute angle formed by the tent canvas and the ground-sheet, which caused the two surfaces to touch during heavy snowfalls and resulted in damp and discomfort. The general unevenness of the ground in the high mountains and the frequent impossibility of planting the pegs at a definite spot rendered indispensable the presence of several guy-ropes which, by the possibility of tension and the mobility of anchoring, overcame the difficulties. We had, therefore, to adopt tents with ' walls '. Almost immediately after trial the pyramid tents with one support and with a square or rectangular base were abandoned, the minimum height of 5 feet 7 inches, necessary to render these habitable and to give an adequate slope to the roof, offering too much resistance to the wind. The Canadian model with two poles was finally chosen by elimination. For a party of two mountaineers the following sizes were judged the best: height 4 feet 1 inch; width 3 feet 11 inches; length 6 feet 6 inches. Each tent was provided with an apse 1 foot 8 inches deep, consisting of three flaps with space to shelter two rucksacks.

The adoption of the Canadian tents with walls also permitted

another great improvement. The ground-sheet was continued up the sides of the tent, thus itself forming the walls; and a series of hooks allowed of its being taken apart if necessary for drying or packing purposes. Thus the tent became still more watertight, and the campers could lean against the walls without danger, as they were protected from any dampness as well as from the wind. Above all, with this device the tent could be sunk in the snow and thus gained a far greater stability.

The shape and arrangement of the mountain tents being pretty well settled, there remained the question of the material and accessories.

For the canvas of the tent itself a few conclusive experiments almost immediately eliminated linen as being too heavy, and silk as being too expensive and apt to pucker in use. Finally, a cotton balloon-cloth was chosen. There was still one question of the utmost importance to be settled: how to assure the water-tightness of these dwellings. The materials can be classed in three categories: watertight fabric, the pores of which are completely covered with rubber or other preparations; proofed fabrics, the threads of which have been impregnated with some oily or salt solution; and absorbent fabrics, which suck up water like blotting-paper, but through which, when once stretched out obliquely, the water cannot penetrate.

The watertight fabrics were eliminated at once as, besides their weight, they presented one other serious inconvenience, that of not letting through any air. Tents of this material must be provided with a system of ventilation which renders them untenable on days of high wind, too hot on sunny days, and too cold at night. At one time we preferred the proofed fabrics; and they are, moreover, the most generally used even now. They have one serious drawback—the difference of temperature between the inside and outside surfaces, which causes condensation, little drops of moisture forming on the inner surface and creating an unhealthy dampness. When the differences in temperature are considerable, these drops fall from the walls of the tent on to the campers.

On the other hand with thin materials, if the interior surface of the canvas is touched when wet or the canvas simply rucked, a leak is caused by capillary attraction. The only remedy is to bring the

drop to the ground by a slow and prolonged pressure of the finger down the wall of the tent. Absorbent material has not this disadvantage. It also allows the air to penetrate (as proofed materials by no means always do), thus allowing the camper to close the tent completely if he so wishes, and at the same time it is sufficiently hermetic to exclude the wind.

When stretched at an oblique angle in relation to the horizontal it is not permeable. On touching the interior surface of the canvas, one feels the damp, but on removing one's finger no leak ensues. Whilst being lighter than any other, absorbent material requires no special care. This, then, was the fabric which was finally adopted. Varying weights of from 2 to 4 ozs. per square yard were employed according to the use to which it was to be put.

The ground-sheet, on the contrary, must be of a mackintosh material with the pores entirely blocked. Even in fine weather on a normal site the ground is always damp at night; how much more so, therefore, on snow. After having tried in turn oiled, impregnated and rubbered fabrics, we chose finally two thicknesses of cotton material (weight 2 ozs. per square yard), one on the straight and one on the cross, stuck together with a lead solution. This, whilst being exceptionally strong, was of approximately the same weight as ordinary materials.

Provided with poles made of rice-wood and with long 'duralumin'[1] pegs, this Canadian tent was given many trials: during winter camping at Mont-Revard and in the Tarentaise, camping on the snow on the Trélatête and Trient glaciers and on the Bedière, and finally during the French Expedition to the Caucasus in 1933. On these occasions the campers were able to ascertain for themselves that both the shape and the material of these tents was perfectly adapted to their needs.

When, in 1933, it was decided to organize a French Expedition to the Himalaya, and a Sub-committee for Camping was created by the Club Alpin Français, this sub-committee was directed, among other things, to examine the question of the necessary equipment.

To start with, it was decided to try out the above light-weight

[1] A special very hard type of aluminium.

models, as the quantity of equipment that would have to be carried by porters made it imperative that each component part should be as light as possible.

It has already been seen that the design for the mountain tents was fairly well advanced. A new arrangement, however, was thought of which improved it considerably. Some of us had noticed that, in extremely cold weather, it was very agreeable to camp in two Itisa tents, one of 5 feet and another of 5 feet 6 inches, placed one over the other. The air chamber thus formed between the two canvases prevented, in part, the contact of the warm air of the tent with that of the cold air outside; it was consequently possible to regulate the temperature more easily and the camper was also far more efficiently insulated from the cold.

We could not use this device in the mountains on account of the shape of the Itisa tents, as has already been pointed out; the idea had, therefore, to be adapted to the Canadian tents. After many experiments the simplest method was adopted, which consisted of lengthening and doubling under the flies, joining them to the edges of the ground-sheet. Two apses (of two flaps each) completed the so-called 'isothermal' tent; and a complete air chamber separated the inside of the tent from the outside atmosphere. To make it lighter, a cotton fabric of 2 ozs. per square yard was used for the tent, and one of 1 oz. per square yard for the flies. Poles of duralumin had just made their appearance on the market and after trial these were soon chosen; their lightness, the interchangeability of the different parts, and their power of resistance were all invaluable qualities for the mountain camper. We were assured, by specialists on the subject, that the risk of being struck by lightning was not increased by their use. A clever arrangement of a duralumin tube running horizontally along the angle of the roof of the tent gave additional stability.

The main lines on which the 'isothermal' tent was to be constructed being settled, we concentrated on the smallest details. Curved pegs were made with flukes to prevent their being torn out of the ground, and more than twenty different kinds of fastenings for the doors were tried before those with triangular press-buttons were chosen. The tapes, guy-ropes, and tighteners were all subjected

to many trials. It was decided to damp and stretch the cotton tapes before making up the tents, to employ only guys of plaited cotton and brass tighteners. The materials used both for groundsheets and tents were submitted to severe tests; they were plunged wet and dry into the tanks of the Frigidaire factories, where they were subjected to a temperature of — 23° F. for a period of several days. Each sample was then carefully taken out, numbered, and sent to the laboratory of the Chambre de Commerce de Paris, where the resistance and give of the warp and the woof were tested. Specialists in aeronautics studied the effects of wind on the surfaces of the different-sized ' isothermal ' tents. All these experiments were noted and discussed.

Meanwhile the members of the sub-committee, during their travels abroad, made many visits, and studied German, English, and Italian equipment. This examination showed that French equipment was sufficiently perfected for us to do without foreign aid.

Finally in 1934 a large camp, with different types of equipment, was established in the Mont Blanc district in the Combe Maudite, at a height of about 10,000 feet. A period of bad weather permitted a very thorough testing of the various outfits. In 1935 the same models were used by the second expedition to the Caucasus, which, as is well known, experienced continuous bad weather. Having come through the various trials with flying colours, these models, which had proved sufficiently comfortable for a long stay, were definitely proposed to the members of the Organizing Committee, by whom they were accepted. In Part II of this chapter, Pierre Allain gives the different measurements of the tents used and his opinion regarding the utilization of the equipment.

So much for the history and study of the Expedition tents. These, and the bivouac equipment, with which we shall now deal, were the two innovations which the French Expedition introduced into Himalayan exploration.

The history of bivouac equipment is a simpler matter. It was not till 1930 that the Zdarsky sleeping-bag was imported into France—the first model of its kind to be put on the French market. Shaped like a rectangular envelope, open down one of the long sides, and made in a light waterproofed cotton fabric, the Zdarsky sack sheltered

the mountaineer from all weathers. It was designed to be used in a sitting position. As it prevented loss of heat only to a very small degree, and caused disagreeable condensation, it was evidently far from the ideal. It was not till 1930 that a member of the Club Alpin Français studied the problem thoroughly, considering as essential the preservation of heat, the protection of the body from all weathers, and the suppression of the condensation caused by the climbers' breath in a totally enclosed space.

A sort of jacket and sleeping-bag was constructed, made of silk and stuffed with eiderdown, which constituted the lightest equipment possible that would preserve the heat of the sleeper. A cushion for the hips, or a little pneumatic mattress in double-rubbered silk, insulated the climber from the hardness and the cold of the ground. A large and roomy *cagoule* [1] and a closed tubular sack for the legs completely protected the sleeper from all weathers. The fabric was similar to that used for the pneumatic mattress. This invention, called 'Integral Bivouac', had many advantages over the Zdarsky sacks. Certain of the parts of which it was composed could be used by the mountaineer at other times than during the actual bivouac: for instance, the eiderdown jacket replaced woolly pullovers, and the *cagoule* served as a rainproof coat. As well as affording protection from all weathers, this equipment preserved the heat of the body which the Zdarsky sack could not do. The fact that the climber breathed outside, considerably lessened condensation.

On principle, of course, a Himalayan expedition should not need bivouac equipment, but the worst should be foreseen, and in the event of the tents being put out of action by gales, it would be expedient, for reasons of security, that the climbers should have reserve protection at their disposal. The French Expedition was, therefore, provided with this equipment.

A question of primary importance was that of sleeping. For reasons of economizing weight, camp-beds were ruled out even at Base Camp. They were advantageously replaced by large pneumatic mattresses with pneumatic pillows attached: 6 feet 6 inches long,

[1] A waterproof coat with sleeves and hood, reaching to the knees where a running tape allows of adjustment as required.

they completely insulated the sleeper from the ground. For use at high altitudes small pneumatic mattresses of rubbered silk were designed on suitable lines, after many trials. Sleeping-bags either of pure eider- or of goose-down were made. Each party of two mountaineers was provided with individual sleeping-bags, closing with a running cord, and with another sack, also of down, having room for two. The successive layers of down and cotton conserved the heat, whilst the system of two sacks remedied the lack of eider at the seams.

The choice of personal equipment for the climbers was also the object of much careful study. We always kept in view the principle that several layers of light material should be used in preference to one layer of thick and heavy material. The minimum equipment for the climbers consisted of woollen pants and shirt, pullovers of cashmere, a suit of the thinnest quality Bonneval cloth, and trousers and *cagoule* of very smooth gabardine to prevent the snow clinging. In addition, each member of the Expedition could use his eiderdown jacket and *cagoule* of rubbered silk provided for the bivouac. For head-gear hats of raffia, berets and balaclavas were supplied. Thus clothed, the mountaineer should be able to support all weathers comfortably and be able to regulate the amount of covering necessary according to circumstances.

Boots were of one piece without seams; they were not lined in order that the disagreeable condensation which ensues when remaining stationary for any length of time after walking should be avoided. As they were designed on the large side, the climber could wear three pairs of stockings and socks. Roomy canvas gaiters prevented the snow from sticking to the leather. The soles were nailed with tricounis and hobnails, which gave an excellent grip on all kinds of snow and rock.

Actual mountaineering equipment proper had not to be much altered, that already obtainable being perfectly suitable: ropes of twisted hemp of various diameters, dolomitic pitons of steel for rock and ice, steel crampons with ten long points, ice-axes, perfected as regards their shape and material by the G.H.M., and glasses, round in shape, and of special glass for reverberation were used.

In Part II of this chapter Pierre Allain will describe the uses to which the whole of this equipment was put in the Himalaya.

II. UTILIZATION

In an Expedition of this type the equipment plays a very important part, and on its perfection depends, to a great extent, the success of the enterprise. Consequently the matter was very carefully gone into.

Questions relating to camping outfits, clothing, footgear, and pitons and ropes, &c., for the buttress were studied by the sub-committee of the C.A.F., of which Raymond Gaché was the President.

Without previous direct experience and making many innovations, we arrived at an equipment designed and constructed along principles which will serve as a model for the next French Expedition to the Himalaya.

There was complete liberty of dress during the march from Srinagar to Base Camp. The members of the Expedition made a motley display, according to their habits and tastes in dress. But from Base Camp onwards all whims and fancies were forbidden and we adopted the equipment provided: flannel shirt worn by preference over a vest (of linen, cotton, or silk); one or two light pullovers; an eiderdown jacket; a *cagoule-anorak* (*Nivose*)[1] of fine proofed linen, and another *cagoule* of completely waterproof material (*Allain*), the composition of which will be described later; for the legs, trousers of the same proofed linen as the *cagoule-anorak*, but made with two thicknesses (in case of tearing) to be worn over woollen pants and flannel trousers; two pairs of thick socks; 'Drevon' boots for ourselves and 'Trappeur' boots for the Sherpas; and woollen and leather mufflers. It may be added that the finest reds, blues, and greens enlivened the monotony that the use of a single colour might have caused. Naturally we regulated the use of this equipment according to the weather conditions and temperature.

Two types of tents were provided: one for the march and Base Camp and another for the high camps.

In the first category were Canadian tents with flies, apse and big

[1] See note, page 190.

awning, height: 5 feet 10 inches; length: 9 feet 9 inches; width: 6 feet 6 inches; to hold two sahibs. Tents for the porters, without apse or awning and with three poles, were designed to hold five Sherpas or Kashmiri servants. We had also an infirmary tent, a small and a large mess tent. This last was quite an edifice: it was divided into three compartments 6 feet 6 inches square, the two end divisions having an interior awning. One compartment was for the kitchen, one for the dining-room, and the middle one for a sort of ante-chamber between the two.

All these tents had horizontal cross-bars between the two supports; these ensure a good set and resist satisfactorily heavy snowfalls. One great advantage of these cross-bars is that they do away with the necessity for strong longitudinal tension; this is of the utmost importance on snow covered ground where the fixing of the pegs often raises little problems which are rather ticklish to solve.

The fabric used for these tents weighed respectively 5 ozs. per 39 square inches for the outer canvas, and 4 ozs. for the inner awnings. In the second category of tents there were two models—two sizes to be more exact. The smallest and most numerous were the Canadian types with an apse at either end. In one of the flaps of one of the apses the door was cut in a triangular opening which gave access to the inner tent of a rectangular shape. The groundsheet curved up, forming walls reaching 12 inches high along the sides and 4 inches high at the ends, where it fastened with press-buttons on to the entrance flap of the inner tent. Outside height 3 feet 7 inches: interior height 3 feet 1 inch; length 6 feet 6 inches plus the apses which were 2 feet 6 inches each; interior breadth 3 feet 3 inches.

Only a few of these tents, of which we had about sixty, were provided with cross-bars. The other tents, which were bigger but of the same model, were destined chiefly for Camp I. Their height was 4 feet 8 inches; length 6 feet 6 inches plus two apses of 3 feet; breadth 4 feet 4 inches.

The fabrics used weighed 4 ozs. per 39 square inches for the exterior and 3 ozs. for the interior.

The tents were all made of light-weight material and we may congratulate ourselves on thus economizing in transport.

We had made careful study of the material used (Maison Sauvegrain). It was woven on the same principles as the fabrics used in military aeronautics, and was extremely strong—mounted on strong tape (Jamet et Peyron) this canvas gave us every satisfaction.

All the duralumin [1] used for supports, pegs, &c., as well as for the windlass of which I shall speak farther on, was very kindly presented by the Société Française du Duralumin.

Besides the eiderdown jackets and other warm clothing with which every member was provided, we each had an individual sleeping-bag of silk and eiderdown (26 oz. Allain), and a double sleeping bag (43 oz. Peyron) of the same materials, for every two members. Small, extra light, (13 oz). pneumatic mattresses (Sleeping), completed the sleeping equipment for use at high altitudes.

Thus for a very reduced weight, a high degree of comfort was ensured, and in spite of the smallness of the tents we were able to live on the buttress for nearly a month without any discomfort or real inconvenience. When we descended, however, we found again with pleasure (although only for a short time) the more roomy sleeping-bags and the larger mattresses of Base Camp. This normal camping outfit appeared to us of princely comfort.

The mackintosh material of which the ground-sheets and the Allain *cagoules* were made were of two categories:

1. Two thicknesses of cotton material (one on the straight and one on the cross) stuck together with a rubber solution. Weight 9 ozs. per 39 square inches. Used generally for all the ground-sheets of the big tents of the Base Camp type.

2. Two thicknesses of silk—same construction as the preceding but with a weight of 4 ozs. per 39 square inches. Used for all the ground-sheets of the high-altitude tents, the *cagoules* and the leg-bags. Both these types of material are extremely strong.

At Base Camp we had very comfortable camp slippers of crêpe and lamb-skin, in which we could take little walks near camp with our feet warmly protected. We also had over-boots of canvas—a thick proofed canvas, which, although provided for the purpose of pro-

[1] Specially hard and strong aluminium.

tecting our boots from contact with the crampons at high altitudes, served mainly as extra protection worn over our camp slippers.

During a part of the march to Base Camp and on the buttress, our Sherpas used rucksacks with frames of the classical type which they found very satisfactory. For ourselves, extra light sacks were provided (10 oz. Allain). During the whole time spent on the buttress, these sacks were used for carrying our own personal equipment such as eiderdown jacket, silk and eiderdown sleeping-bag, *cagoule*, &c.

A generous stock of tools and general repairing outfits were provided, hammers, pliers, wire, string, leather, rivets, eyelets, vice, files, &c. Nothing was lacking, from the punch to the Bunsen-burner. The Himalaya generally speaking, and the far Kara-koram particularly, are districts in which it is not advisable to find oneself lacking for the smallest thing. The ironmonger is a long way off! . . .

The actual mountain equipment proper had been very carefully thought out. Three thousand three hundred yards of rope figured on the list, in equal lengths of 8 mm., 10 mm., and 12 mm. diameter, and 2,200 yards were fixed on the buttress by means of pitons, by loops of rope, or simply over rock belays.

The ropes of 8 mm., which in classical mountaineering are usually only used for roping down, were chiefly used for the climbing parties. Falls from a height were not likely, and the equipment was new.

For the fixed ropes, 10 mm. turned out to be the best thickness; it was lighter than the 12 mm., and was easier to hold on to than the 8 mm. The 10 mm. will probably be taken by the next expedition for equipping the buttress and for the necessary replacing of the ropes already fixed; but 8 mm. will remain the diameter of the ropes of the climbing parties.

Strong, light, ice pitons, and rock pitons constructed along the same lines were invaluable. But the little rope ladders made of electron [1] and steel cable which were very light and strong proved useless. They had been provided in case we should meet with walls of seracs or difficult *bergschrunds*, but the glacier and the couloir by which we gained access to the buttress were relatively easy, and

[1] A special metal.

we had no call for these articles, which remained rolled up and were never taken beyond Camp I.

The Simond ice-axes and crampons gave every satisfaction.

A little explanation is required regarding the duralumin windlass. We had thought that certain of the rock pitches on the buttress might present such difficulties for our porters as to make the use of this apparatus worth while.

Our suspicions regarding the nature of the ground turned out correct and as the Balti porters would not venture with their loads between Camps I and II we decided to put up one of the windlasses. After working hard for three days, we found, when all was ready to make fast the lower end of the carrying cable (which was already fixed at its upper end), that in spite of its total length of 250 yards, it was still too short by 25 yards; the cable would not completely clear the rocks, and could not therefore be used for the traction of the loads.

Meanwhile our Baltis had got so accustomed to the ground that they now consented to go up as far as Camp II. We therefore abandoned the installation of the windlass; if it had been necessary it could have been moved and put up at another point where the length of 250 yards would have been sufficient.

The windlasses, which were entirely made of duralumin, were extremely light and could be taken to pieces; they would certainly have given excellent service had there been need or opportunity for their use.

The Expedition failed: it has been shown elsewhere why and how. I think it may be said that neither equipment nor participants were at fault.

APPENDIX V

Photographic and Cinematographic Equipment

AT FIRST SIGHT THE CONDITIONS FOR PHOTOGRAPHY OR CINEmatography appear exactly the same whether in the Alps or in the Himalaya.

From the photographic point of view the main differences are that great care is necessary in the calculations of the time exposures, in order to avoid over-exposures due to the combined importance of the factors of altitude and latitude. Above all, infinite precautions must be taken to reduce to the minimum the injurious action of the heat on the emulsions, once these have been exposed.

For cinematography the same precautions must be observed, only with still greater care, as it is much more serious to spoil a film than a photograph. The difficulties begin with the choice of an equipment, which must be extremely light and at the same time resistant, while ensuring the perfect unrolling of the reel. Actually the lightest apparatus are worked by a clockwork spring but these are so sensitive to cold that below a certain temperature they are liable to stick up altogether. It is impossible to use heavy, electrically driven apparatus, either on the march or whilst climbing at high altitudes as owing to its weight and bulk it takes too long to get into position and working order.

Finally after many trials, begun in 1934 whilst turning the film entitled 'Aiguille Verte' the following apparatus was adopted:

1. An extra-light Kinamo model with a mechanical motor, using reels of 82 feet. This apparatus was destined for use at very high altitudes.

2. Bell and Howell apparatus, hand-driven but heavier, with interchangeable lenses. This was intended principally for use on the

march; the films were 65 feet long and could be re-loaded in full daylight.

3. A Cinex apparatus, lightest model with an electric motor, fed by 16-volt accumulators, and using reels of 196 feet.

In practice our fears concerning the working of the models with mechanical motors turned out to be justified. Up to 9 a.m. in the mornings these would not work unless they had been warmed for several minutes or had been rolled up the whole night in the cinematographist's sleeping-bag. In spite of these precautions it frequently happened that the speed of the motor slowed down, which explains the rapid and jerky movements of the climbers in some of the scenes of the film.

On the other hand, the model with the electric motor worked at all temperatures, thanks to a large excess of power. Although this apparatus, owing to its weight, was never taken beyond Camp I, its steadiness was such that with the help of a very powerful telephoto lens (focal length 180 mm.), it was possible to take close up views of the ridges of the Hidden Peak and the neighbouring summits. The accumulators ran down rapidly on account of the cold; they were re-charged by means of a generator composed of an alternator worked by a two-stroke motor. This worked splendidly at 16,000 feet without any special adjusting. The whole plant weighed 55 lbs., to which must be added a rectifier of 13 lbs.; the accumulators weighed 25 lbs., the tripod 20 lbs., and the cinema apparatus itself, in a case with four reels, 22 lbs.

These figures show the great weight of just one apparatus; but the results were so good that never at any moment did we regret having taken it with us for it invariably worked, whatever the temperature.

At these altitudes the light, in the middle of the day, is so strong that even with a red screen—coefficient 8—one has frequently to stop down to F10 for an exposure of one-sixtieth of a second; this shows the extent to which calculations valid for Europe are liable to be upset.

Photographs and cinema films run the greatest risk of damage when these have been taken out of their soldered cases and exposed.

On the return march, which took a month, the loads, carried by

porters, were exposed to the sun and despite all precautions some of the rolls were badly damaged by the heat. The danger of the loads falling into the water during the fording of the rivers was also by no means negligible; the damp is, of course, just as detrimental as the heat. During the march to Base Camp we had great difficulty in keeping the sand out of the cameras and cinema apparatus and daily cleaning was absolutely indispensable. Although the photographic emulsions were subjected to the same conditions as the cinema films, they suffered much less damage, as we were able, thanks to the system of runners, to send them back every week to Srinagar, where they were developed immediately; the cinema reels had to wait several months after our return to France before being developed, owing to customs difficulties.

The best proof of the progressive deterioration of the film, in relation to the distance covered, is the state in which the different scenes were found after development. Whilst the sections taken in Srinagar, and left there, had been damaged hardly at all, those portions taken during the march to Base Camp had already slightly deteriorated although they had been left for a time at Shigar where they were protected from the sun and the heat. It was the portions taken on the glacier and on the buttress of the Hidden Peak that suffered most and in which there was the maximum deterioration: greyness, exaggeration of the grain, &c.

To sum up, provided one has isothermal packing, cinematography in the Himalaya does not offer any technical difficulties other than those with which the film operator meets when working at high altitudes in the Alps.

We never felt the need for a second operator as the pace of the Expedition was sufficiently slow for there to be no danger of missing any important event. At the same time one of the Sherpas, who was promoted to the rank of operator's aid, rendered great service in getting the apparatus into position, as well as in cleaning, and in supervision during the transport.

In concluding, one unforeseen and unexpected fact may be mentioned: when proceeding with the development of the short trial pieces of the film at Base Camp, it was found impossible to obtain sufficient obscurity. Even on moonless nights an appreciable amount

of light filtered through the walls of the tents. A dark room, large enough to allow of the necessary manipulation, would have been necessary.

The Expedition brought back from the Kara-koram a total of 26,250 feet of film and nearly 4,000 photographs.

APPENDIX VI

Report on the Use and Working of the Military Wireless Telegraphic Equipment lent by the Ministère de la Guerre to the French Himalayan Expedition 1936

ER40 SETS

EQUIPMENT USED: ER40[1] SETS.—THE MINISTÈRE DE LA GUERRE lent, in March 1936, to the Expedition:

1. Two receiving and transmitting ER26 bis Méhariste sets with all the regulation accessories, plus two generators with air-cooled motors of 0·5 and 1·5 h.p.

These two sets were left at Srinagar for the duration of the Expedition and were not used. It proved impossible to find an operator, or any wireless station whatever, which would have been capable of picking up the messages sent with them. Moreover, the distance which the messages would have had to travel (250 miles), over two mountain ranges of 23,000 feet high, would certainly have been too great for the power of the sets. The experience of the Citroën Expedition to Central Asia, which in these regions had never even been able to establish connexion between their wireless cars, although provided with a far more powerful equipment than we had, did not encourage us to encumber our party, already overloaded, with apparatus which it would not have been possible to use.

One of the motors was, however, taken for the purpose of charging the accumulators of the cinematographic apparatus. This motor was employed constantly during the march and at Base Camp (15,900 feet), and worked perfectly. It remained in the open on the snow, without any other covering than a piece of tarpaulin, during nights when the temperature descended to 4° F. As soon as it was warmed by the sun, it started up absolutely normally. We never had to use the special Therm'X starter.

[1] E.R.=Emitting-Receiving.

2. Six ER40 sets: these, as well as the spare parts provided specially for the whole ER40 equipment, were supplied each with four supplementary sets of valves and batteries and one supplementary set of earphones and microphones.

The valves were of the TM2 and TMBF type.

The current was obtained from Eler cells, which only require filling with water before use; high tension 15 milliamps., 80 volts; heating 5 volts.

Five of these sets were used daily for a month between Base Camp and the high altitude camps.

State of the Equipment on Arrival at Base Camp.—The six ER40 sets with the spare batteries, valves and generator, after transport from France to Kashmir by ship, rail and lorry, were then brought to Base Camp (over 370 miles in one month) partly by ponies and partly by porters. On arrival this equipment was in a perfect state and could be used immediately, without overhauling, except for the valves. These had suffered somewhat from jolts received during porterage.

About 75 per cent. of the valves, principally the metal cased ones, were unusable. The rest worked normally.

Conditions under which the ER40 Sets were Employed.—The ER40 sets served to connect Base Camp with the altitude camps. Base Camp was established on the Baltoro glacier at 15,900 feet. The altitude camps were situated on a very steep (between 50° and 75°) rock buttress about 4 miles, as the crow flies, from the Base, and spread out between heights of 18,700 and 21,700 feet.

No communication was ever established between the Base and Camp I, which was placed in a slight dip of the glacier at the foot of the mountain, and was consequently hidden from sight. On the other hand communication was established between Camp I and Camps II to V which were not hidden from sight. Camps II to V being also in view of Base Camp the connexion with these last was perfect.

Frequently the sets of three or four camps were in operation at the same time, either listening to orders from Base, or communicating between each other. All the sets then functioning were audible to one another.

Working of the Sets.—Base Camp communicated with the altitude camps three times daily: at 8.30 a.m., 12 noon, and 6 p.m. I did not notice that connexion was better at any special time of day. The influence of atmospheric conditions seemed also to be negligible. In all weathers, even during heavy snowfalls, connexion was always easily established. If we received no news from the high camps during five days, this was because our friends were unable to leave their tents owing to the cold and the wind.

At night the average temperatures were 14° F. at Base and between 5° and − 5° F. at the altitude camps; at noon, exposed to the full force of the sun, it reached between 40° and 50° F.

The cold had no influence whatever on the working of the sets or on the continuity of the current supplied by the batteries. I had feared that hard frosts would cause interruptions in the current from the Eler batteries. However, nothing of the sort occurred, and the batteries which I used worked without any breakdowns. The series of batteries employed furnished about thirty hours' service, and were replaced after this more as a precautionary measure than out of necessity.

It must be noted that the greatest care was always taken over the priming of these batteries. The valves—those which arrived in good condition at Base Camp—worked perfectly.

The microphones and earphones gave us no trouble at all; and no bad results were occasioned by the condensation of breath owing to the cold. One or two of these parts did not work, but as we had a plentiful supply I did not trouble to examine them.

The general construction of the ER40 sets supplied to the Expedition was perfect. The fact that *not a single connexion of the five sets employed had ever to be tightened up* speaks for itself.

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