THE 1954 ITALIAN EXPEDITION TO THE KARAKORUM AND THE CONQUEST OF K2

By Professor A. DESIO

The idea of an Italian expedition to K2 came into my mind as far back as 1929. In that year I had taken part as a geographer and geologist in the Duke of Spoleto's expedition, and had examined that enormous mountain from a climbing point of view.

That expedition had also left several scientific problems open, which it was of great interest to clear up and solve.

It was in 1936 that, with some friends, I set out to consider the matter seriously: but only in 1939 did I succeed in laying down the plan with the support of the Italian Alpine Club. The war suspended all such activities. In 1949 I began to glimpse the possibility of realising my dream, but serious difficulties, especially of an economic nature, were still in the way. Finally in 1952 the Italian National Olympic Committee placed the necessary funds at my disposal for a preliminary reconnaissance in Pakistan for collecting essential data for organising the expedition. But an unexpected obstacle dashed my hopes: permission had already been granted by Pakistan to Dr. C. Houston, head of an American expedition, and for supply and transport reasons another permission could not be issued for the same year. I returned to Italy after having submitted a request for authority for a preparatory journey in 1953, and for an expedition to the Baltoro mountains in 1954, with two programmes, one scientific and the other mountaineering. The latter included the ascent of K2. The negotiations, lasting almost a year went through varying vicissitudes, but in the middle of July, when things looked very black, I learned that the permit for the preliminary expedition had been granted.

My own optimism had in the meanwhile induced me to undertake certain preparations and to seek the necessary financial help, which was, in fact, supplied by the National Research Council.

At this point a few words on the geographical situation are advisable.

The Karakorum range is on the same latitude as Gibraltar, and is in a broad sense the section of the Himalayas furthest from the sea. For these reasons its climate is somewhat different from that of the Himalayan area best known to the public, i.e. that of Nepal, where rises Mount Everest. The monsoon only affects the Karakorum range to a small degree, and it reaches it with its humidity very much reduced, having to a large extent lost it on the mountain ranges and plateaux nearer the sea. The climate is consequently drier, as is seen from the steppe-like and, indeed, desert landscape prevailing in that area, except

in the irrigated districts, where the vegetation is extraordinarily flourishing, so that we come upon smiling verdant oases rich in cereals and fruits.

The Baltoro Glacier and K2 (28,250 ft.), the second highest mountain in the world, rising at the end of that glacier are in Western Karakorum, reached through Pakistan, and more precisely from Skardu. Skardu is also the last inhabited centre towards the north which can be reached by mechanical transport.

As I said before, the government of Pakistan had in the middle of July granted me permission for the preliminary journey. Within ten days I had to organise and forward the stores to Pakistan. For the mountaineering part of the expedition I secured the help of Riccardo Cassin, whose expenses were provided by the Italian Alpine Club. On August 20 I left Italy by air for Karachi, whence I proceeded to Rawalpindi, where I met the Houston expedition on its return from K2, and thence to Skardu, the starting point of the caravan route for the Karakorum range.

Before proceeding to K2, I visited, on the invitation of the representative of the Pakistan government, the valley of the Stak, an affluent, on the right bank of the Middle Indus, to study the problem of a glacier which had advanced about eight miles in the course of three months covering the whole valley, and seriously threatening the underlying villages. Thence, over two passes more than 13,500 ft. high, I joined the main route to K2, reaching Askole, the last inhabited village, 9,700 ft. high, on September 18. I then proceeded to the Baltoro Glacier and its chief tributary, the Godwin Austen, reaching the slopes of K2 at about 15,300 ft. on September 26. After carrying out a reconnaissance under the Abruzzi spur, I returned to Skardu, and four days later reached Rawalpindi, returning to Italy two months after my departure.

We have to remember that during the last half-century, K2 has been attempted five times. The first attempt was in 1902 by the International expedition Eckenstein-Pfannl-Guillarmod ; the second was that of the Duke of the Abruzzi, which during 1909, opened the way along the South-east ridge, then called 'Abruzzi Ridge.' The other attacks were by American mountaineers directed by C. Houston (1938 and 1953), and by Wiessner (1939). These expeditions were able to reach the 'shoulder' of the giant, and Wiessner reached a height of about 27,500 ft. These expeditions were saddened by the death of five persons, two of them Americans.

On my return I learned that the Pakistan government had granted me the desired permission.

The plan of the expedition provided for two parties, a mountaineering and a scientific group, the former with the task of undertaking the ascent of K2, the latter with that of completing and extending the research carried out by earlier expeditions, and particularly by the Italian expedition of 1929.

My financial plans were based on two important grants, one from the National Research Council and one from the National Olympic

Committee. The remaining sum was raised by a subscription of the Italian Alpine Club. The Club, in fact, appointed an *ad hoc* Committee, consisting of its leading members to co-operate in the mountaineering part of the undertaking, and when, owing to bureaucratic difficulties the contribution of the Research Council had to be temporarily suspended, the Committee, chiefly through the Vice-President, Dr. Vittorio Lombardi, who from the very first had lent me valuable assistance, intervened to organise the financial side of the enterprise.

The preparations were based on a fundamental plan, in which I provided in detail for all the various operations and their respective dates from November 25, 1953, to the day of conquest of K2, and thence on to our return to Italy.

I here only record the general time-table of the expedition, with reference to the mountaineering part of the undertaking, adding that for each of the four phases of which I shall speak very detailed time-tables existed, but for reasons of brevity I shall not go into them.

1*st Phase :* Organisation. Preparations for the expedition carried out in Italy from November 25, 1953 to March 31, 1954.

2*nd Phase :* Further preparations. Transportation of the members of the expedition and luggage from Italy to the base camp. Acclimatisation and training. General test of the materials *in loco*. From April 1 to June 15.

3*rd Phase :* Attack. Fitting out the camps on the Abruzzi spur of K2. Transfer of supplies to the higher camps. Final attack. From June 10 to July 20.

4*th Phase :* Return journey. The return to Italy of the mountaineers from July 21 to August 16.

With regard to the scientific activities, all operations as far as Skardu had been arranged in common with the mountaineering party. From Skardu the scientists, in small parties, were to carry out their work independently, at first in the Stak area and then on the Baltoro, where a meeting had been arranged for July 20.

All preparations were carried out, as a rule, at the dates previously decided. Only the attack on the summit of K2 underwent a considerable delay owing to the exceptionally protracted bad weather at the time. Before telling the story of the expedition, I shall say something about the technical and organisational conceptions applied in the attack on K2.

(*a*) The ' heavy ' structure of the expedition, i.e. its organisation in such manner as to make it possible to remain for a considerable length of time at high levels.

(*b*) Complete equipment with pitons and fixed ropes along the whole route of the ascent, from the base on the Abruzzi spur to the ' shoulder ' and beyond. We had, in fact, nearly three miles of rope with us.

(*c*) All the camps were provided permanently with all necessities for the mountaineers according to prearranged plan.

(*d*) A higher camp was only occupied when the preceding one had been adequately equipped and provisioned.

(*e*) Transfer of the loads on the Abruzzi spur by means of windlasses and telepherics whenever possible.

I shall now introduce my comrades and collaborators :

Prof. Paolo Graziosi, 48 years of age, Professor of Ethnography in the University of Florence, Ethnographer.

Prof. Antonio Marussi, 46 years of age, Professor of Geophysics in the University of Trieste, Geophysicist.

Dr. Bruno Zanettin, 31 years of age, Professor of Petrography at the University of Padua, Petrographer.

Captain Francesco Lombardi, 36 years of age, Geodetical Expert and Topographer of the Italian Military Geographical Institute, Topographer.

Dr. Guido Pagani, 37 years of age, assistant in the Civil Hospital of Piacenza, Medical Officer.

Then the mountaineers:

Erich Abram, 32 years of age, of Bolzano.
Ugo Angelino, 32 years of age, of Biella.
Walter Bonatti, 24 years of age, of Monza.
Achille Compagnoni, 40 years of age, of Cervinia.
Cirillo Floreanini, 30 years of age, of Cave del Predil.
Pino Gallotti, engineer, 36 years of age, of Milan.
Lino Lacedelli, 29 years of age, of Cortina d'Ampezzo.
Mario Puchoz, 36 years of age, of Courmayeur.
Ubaldo Rey, 31 years of age, of Courmayeur.
Gino Soldà, 47 years of age, of Recoaro.
Sergio Viotto, 26 years of age, of Courmayeur.

Mario Fantin, accountant, 33 years of age, of Bologna, cinematographer.

The selection of the scientists was carried out directly by myself according to their particular tasks. The names of the climbing party were originally suggested by the Italian Alpine Club Committee for the expediton.

On the basis of a first general examination, twenty-three men were chosen who seemed best suited for the work. They were informed by myself in Milan on December 15 of the conditions and requirements necessary for taking part in the expedition : they were all volunteers and therefore received no pay ; all were subject to disciplinary regulations. After this meeting, when I illustrated the climbing problems of the Abruzzi spur of K2 with colour slides, the first medical examination and physiological tests of the candidates were held in the clinics of Milan University. A first selection was made on the basis of this test.

As none of the candidates had taken part in mountaineering expeditions except in the Alps, and also in order to test some of the materials for the enterprise, I arranged two winter camps for the candidates at high level, one of them under the Piccolo Cervino at the height of about 11,600 ft., and the other on the Monte Rosa group between the Gnifetti refuge hut and the summit (15,217 ft.).

During the period in camp I had arranged for various climbing and glacier exercises under the control of an officer of the Alpine Military School. The first camping period took place during the second half of January. The mountaineers were first subjected to further physiological tests and examinations at the Turin University Institute, and the tests were repeated at a height of 12,000 ft. at the end of the exercises.

On the basis of the physiological test and the report of the military observer, the Committee proceeded to the final selection of the mountaineers, whose number rose from eight to eleven, as in the meantime I had been informed that it would be practically impossible to recruit Sherpas.

The second camping period, designed primarily as a first test of acclimatisation, worked out according to plan between February 16 and 26, plus an extra week for some of the men.

During the two camping periods tests of various materials were also carried out. The tents, for instance, were specially made on the lines of those used by the Swiss and the British on Everest. The first model had been used during the preparatory expedition of 1953, and after that experiment it had been improved on the basis of the experiences of the camp on the Piccolo Cervino, where the temperature had always remained very low. For example, for the inner lining of the tents several different materials were used, such as cotton, wool, silk and nylon ; thermometers had been installed and compared with others outside : ropes, portable receiving and transmitting radio sets, a light telepheric, various garments of wool, cotton. etc., were also tested. The last test was carried out in the Monte Rosa camp. The oxygen open-circuit respirators, of which two types were adopted, one Italian and one of foreign manufacture, required particular study by the special subcommittee ; the provisions were selected by a committee of manufacturers, mountaineers and physiologists ; the boots were prepared by a committee of technical experts, perfecting the British type with opossum lining for the approach and the Swiss type of reindeer skin for the highest levels ; for fuel to be used for cooking provisions, tested in a decompression chamber, propane was chosen, in containers which could be used as cooking ovens and lamps.

About the middle of March a good part of the materials lay ready for shipment in the underground vaults of the Geological Institute of Milan University, which was the headquarters of the expedition.

The cases were packed by members of the expedition, with the help of a few friends ; I had arranged that the cases were, for the most part, to reach their destination without being opened at Skardu or at the base camp. They were thus numbered in black, red, green or blue according to contents and destination. We also had different types of packing material : canvas bags, small cases of plywood, and boxes of waxed cardboard with special internal insulating material. Italian industries, technical experts and skilled workers did all in their power to help us in this delicate preparatory phase.

On March 30 everything was ready ; this heavy luggage, weighing over 13 tons, was shipped at Genoa and escorted by two members of the expedition as far as Karachi. Early in April, I sent Dr. Zanettin by air to Pakistan, with the task of organising the landing of the material and its forwarding to Rawalpindi. I left Rome by air on April 13, while the bulk of the party joined me at Karachi a week later.

Thanks to the customs' facilities accorded us by the Pakistan government and the generous collaboration of friends residing at Karachi, the heavy luggage, arriving on April 13, was forwarded at once to Rawalpindi. Here the weather, unfavourable for the flight to Skardu, held us up for several days.

During this period our expedition was joined by Colonel Ata Ullah, of the Pakistan Medical Service, as Government observer, three Pakistan officers (Major Beshir, Captain Butt and the engineer officer, Munir), to assist us in the organisation of transport as far as the base camp, and the assistant topographer, Bashadjan.

Finally, on April 27, the weather having improved, all the luggage and some of the members of the expedition reached the Skardu oasis on the left bank of the Indus by air.

While we were providing for the organisation of the great caravan for the transport of the 500 loads to the base camp, with the help of the local authorities and above all of Ata Ullah, we took the opportunity for a first flight around K2 with the same plane and the same crew which had conveyed us thus far. With a perfectly clear sky and limpid atmosphere the aeroplane took off from the emergency landing ground of Skardu at 6.30 A.M. on April 30, and rose in broad spirals over the vast sandy plain where the waters of the Shigar join the Indus.

On reaching 21,000 ft. we flew towards the village of Askole and the great mass of the Baltoro Glacier, reaching Concordia where the two principal branches join. After attaining our highest ceiling of 22,500 ft., we turned towards K2 rising up on our left. The conditions of the mountain, especially in its highest part, did not appear different from those reproduced in the photographs which Houston had kindly presented to me.

Soon afterwards we passed over Windy Gap and reached the great Gasherbrum and Urdok Glaciers, barring the Shaksgam Valley, of which I had made a topographic survey during the 1929 expedition. This experience of 25 years ago proved very useful, as it enabled me to find my bearings and to direct the route amid the very complicated network of valleys, crests and glaciers. On reaching the Shaksgam Valley, we diverged towards the Sarpo Laggo Glacier, already well known to me, and on reaching the level of the characteristic Muztagh Tower, it was fairly easy for me to find the pass of the same name and to return to the Baltoro and thence directly to Skardu after a two-hour flight. This aerial view of the territory to be explored gave me data on the snow conditions of the Baltoro which appeared covered with snow only above the 13,000-ft. level.

Meantime, we had provided for recruiting 500 coolies in the environs

of Skardu. I subdivided them into three echelons, entrusting the commands to Soldà, Compagnoni and Angelino respectively, assisted by the Pakistan officers and the head-man Sadiq and by ten Hunza bearers, especially recruited by Ata Ullah to help in transport at high levels.

The three echelons left Skardu at one day's distance from each other between April 30 and May 2. I left with the last but speeding up my march I gradually got ahead so as to see personally how the caravan was proceeding. At Askole, Ata Ullah had secured the large supplies of flour necessary for proceeding through uninhabited territory. Coolies consume nearly two pounds per head each day, so that the daily requirement amounted to half a ton. For the journey there and back the consumption of over eight tons of flour had been provided for at Askole, which covered several trips as far as Urdukas at a height of 12,000 ft. and a three-days' march from the base camp. There were days in which my marching caravan on the Baltoro amounted to nearly 700 men. In addition to these, three smaller caravans, sometimes independent of each other, sometimes united, operated in the Stak area on scientific work.

It is easy to imagine what problems of supply occupied my mind, and how anxious I felt when, on reaching the Liligo halting-place on May 9, on the left side of the Baltoro, it began to snow. The Baltis were not provided with winter outfit, nor could I provide it for such a large number of men. On the following day the march on the glacier took place under a heavy snowfall and in an icy temperature. Luckily, at Urdukas there were good natural shelters and fuel. But as the snow showed no sign of stopping, the coolies refused to proceed further.

Every day's delay created new transport complications owing to the supply of flour, but on the other hand it was not possible to forge ahead with such a large number of men in a snowstorm.

The first desertions then commenced, fortunately not very numerous. In the early afternoon of the following day, leaving a good part of the mountaineers at Urdukas for the first period of acclimatisation and training, when the weather cleared up a bit, I was able to get the caravan going again. The snow continued to increase on the ground as we proceeded, which made our progress laborious. On the morning of May 13, after two icy nights spent by the men in limited moraine spaces, the wind cleared away the clouds and the sun came out to warm us up; but at the same time it created further difficulties with the blinding glare of the snow. We had a supply of snow glasses but not enough for such a large number of men ; during the flight over the Baltoro, all this area had been clear of snow. On the morning of the 14th the situation was anxious, as the Baltis seemed determined to leave us. After long negotiations, however, we succeeded in inducing them to proceed, but some of them left us, dropping their loads along the track.

In the afternoon we reached Concordia, the magnificent mountain amphitheatre at the confluence of the two great arms feeding the

Baltoro. K2 arose majestically on the background of the Godwin Austen Glacier, nearer to us and above us rose another 24,000-ft. peak, Falchan Kangri (Broad Peak) and Gasherbrum with two more 24,000-ft. heights, largely hidden by their younger brother. The spectacle was magnificent, but wintry.

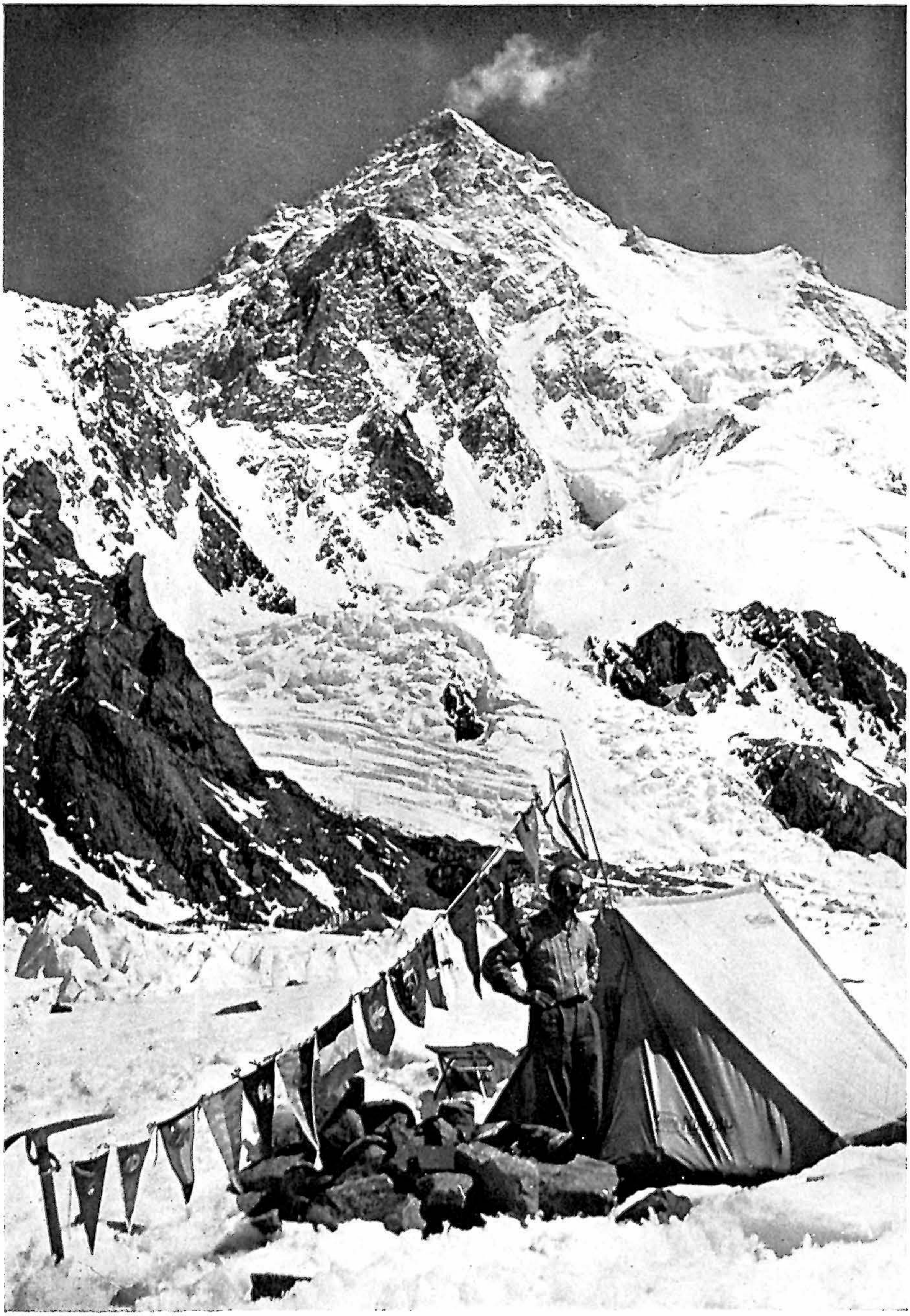
On reaching the halting-place, at 14,000 ft. and at only five hours from the base camp, the unexpected happened. All the Baltis exhausted and burnt by the sun, laid down their loads, raised vigorous protest and set forth in small groups on the way back.

Compagnoni, Gallotti, Ata Ullah, the three Pakistan officers, eight Hunzas and only one Balti, besides the caravan head-man, remained with me. I was perplexed and disconcerted, unable to restrain that mass of exasperated men. I at once sent the Pakistan officers and the head-man back to Askole with the task of recruiting and sending me as many coolies as possible.

On May 15 on a bright sunny day, I reascended the glacier to the foot of K2 to choose a site for the base camp : the general plan for the expedition provided for the formation of the base camp by that date. On that occasion I only set up one tent as a gesture.

The weather broke once more and it began to snow obstinately ; in two days the snow stratum had risen to two feet. Finally on May 19 a caravan of fifty Baltis led by the mountaineers who were at Urdukas, unexpectedly arrived, and the next day we succeeded in getting it to push ahead with Compagnoni, Puchoz, Gallotti and Rey towards the base camp. On their return, however, the fury of the weather not only prevented us from sending back the caravan to the base camp with further supplies, but put us into serious difficulties owing to the scarcity of flour. As soon as the weather cleared it was necessary to send them back down the valley. Only on May 25 did the weather mend, and on the following day, by mobilising all available men, I myself removed to the base camp, remaining in touch with the Concordia camp by wireless, but not with Skardu, with which I had never been able to establish connection.

The temperature during those days kept very low : the thermometer dropped to four degrees below zero Fahrenheit. The next day I sent Compagnoni, Gallotti, Puchoz and Rey on a reconnaissance on to the Abruzzi spur. They returned the same evening and told me that they had found the sites of camps 1 and 2 of the American expedition. During the following days other coolies came to Concordia with Soldà, carrying all the luggage left along the route, and on May 28 the other mountaineers reached the base camp with Ata Ullah and a caravan of 105 Baltis. The latter completed the transfer of the baggage next day to the base camp, while on May 30 we succeeded in inducing sixty-two of them to proceed to camp 1, where we conveyed a good part of the materials and provisions for the attack phase. The last day of May all the mountaineering group were finally gathered together with myself at the base camp, and the baggage had also arrived complete. The bad weather had delayed our general plan for fifteen days.



K2. FROM THE BASE CAMP.

[*To face p.* 8.

The reconnaissances carried out on the previous days on the Abruzzi spur, had in the meanwhile enabled us to identify the most favourable tracks along the snow slope east of the spur for employing the windlass which we had brought out from Italy with the object of dragging up the materials by means of a special sledge formed with a pair of skis. The first experiment was carried out on June 2 between camps 1 and 2, and gave excellent results. During the following days nearly all the mountaineers, divided into two parties commanded by Compagnoni and Soldà, and a part of the Hunzas were distributed between camps 1 and 2, to provide for the transport of the materials by means of the windlasses. Until June 4 the weather remained favourable, and transport proceeded very speedily, but the next night the sky became cloudy once more, and in the morning gusts of fog, accompanied by snow, involved the whole of K2. This was the beginning of a period of atmospheric disturbance lasting an exceptionally long time. In spite of the unfavourable weather, transport operations on to the Abruzzi spur proceeded, although more slowly. In the meanwhile, on May 29, camp 3 had been set up, whereas the American camp 2 had been abandoned in order to establish our own at the higher level of the sledge route. On June 14 Compagnoni carried out a reconnaissance to camp 4, also examining the conditions of the rock face dominating it and which must be overcome to reach the site of camp 5. The ' Bill Chimney,' which furrows the wall was all encrusted with ice, but did not necessitate the employment of the rope ladders which we had brought with us, while the utility of the light telepheric, already used as a windlass lower down, was a boon. Two days later Compagnoni, Gallotti and Puchoz again climbed up to camp 4 to carry up tents and supplies. The two latter descended to camp 2 the same day, where Puchoz began to suffer from throat trouble, while the others returned to the base camp. Throughout this period the weather had remained unfavourable, with wind, snow and a low temperature. During the night from the 20th to the 21st it snowed unceasingly and Puchoz's state of health at camp 2 got suddenly worse, with symptoms of pneumonia. In spite of the assistance of the doctor and the large available supplies of medicines and oxygen, he suddenly expired at one o'clock on June 21.

The next day we all descended to the base camp and a violent snowstorm broke out. The disappearance of one of our team filled our hearts with deep sorrow. For three consecutive days the storm continued to rage blocking us all in our tents. Only on the 26th was there a slight improvement, which enabled us to recover the body and convoy it to the base camp. On the 27th we all ascended in procession from the base camp to the spur at the confluence between the Godwin Austen and Savoia Glaciers, where we buried Puchoz near the monument erected the previous year by the Houston expedition in memory of Gilkey.

It was necessary to react immediately against the prostration caused by the loss of one of our team and to resume the operations on the Abruzzi spur. Could there be a better way to honour Puchoz's memory than to attain K2, the peak for which our friend had sacrificed himself ?

The weather remained comparatively calm during the two following days. On the 28th all the mountaineers and the Hunzas resumed their posts in the various camps on the Abruzzi spur and proceeded with the transport operations. But on July 1 the weather broke once more, the wind began to blow hard and the snow to fall.

Life in the tiny camps, spread out like eagles' nests on the Abruzzi spur, was terrible. The continuous and violent shaking of the walls of the tents, the difficulty in cooking the simplest meals, the prolonged immobility of the men in a very narrow space, the intense cold, all this was terribly wearing physically as well as mentally. Taking advantage of occasional short pauses in the storm, the wall above camp 4 was scaled and the telepheric planted near its higher edge. On July 4 Compagnoni, who had been entrusted by myself to lead the final attack, together with Abram and Gallotti ascended to camp 5 where the first tent was pitched. Two days later Abram and Gallotti ascended to camp 6. As had been arranged, every removal from one camp to a higher one was accompanied by the placing of pitons and fixed ropes along the ascent route so that with the conquest of camp 6 the whole route from camp 1 was marked by an uninterrupted sequence of fixed nylon ropes. These ropes provided security for anyone having to move along the Abruzzi spur and made it possible to descend rapidly to the base camp even in bad weather.

The ropes that had been left in several spots by the expedition of 1953 had not been used for prudential reasons, except for two coupled together, just below camp 7. On July 6, a few minutes after Floreanini had started the descent, the ropes slipped off their anchorage and the consequence was that Floreanini flew down, tumbling on a heap of snow and ending his downfall 800 ft. below, bruised and bleeding, but without breaking any bones. Needless to say, the two ropes were immediately replaced with materials out of our supply.

During the following days the weather continued generally unsatisfactory, but nevertheless a tent was pitched on camp 6, and on July 18 a roped party, consisting of Compagnoni and Rey, followed by Bonatti and Lacedelli, after overcoming serious difficulties due to the abundant snow, finally succeeded in climbing on to the shoulder, reaching as far as the American camp 8 and laying 700 yds. of fixed ropes along the ascending route. Meantime, on July 17, thanks to the help of a U.N.O. wireless operator stationed at Skardu, we succeeded for the first time in getting into touch with that station and thus with the rest of the world.

During the following days the weather underwent alternating phases of improvement and storms. Taking advantage of the more favourable moments, camp 6 was transferred 300 ft. higher up in order to eliminate the American camp 7, regarded by us as far too dangerous, while transportation towards our camp 7 was being effected first by Abram, Bonatti, Lacedelli and Gallotti and then by Compagnoni, Floreanini and Rey and some Hunzas.

On July 28 the weather improved considerably, of which fact the mountaineers took advantage to establish camp 8 a little below a point

marked 25,492 ft. under another wall of ice, and there a tent was pitched, where Compagnoni and Lacedelli remained. The decisive moment was approaching, as the weather was definitely turning fine. The next day the two mountaineers in vain attempted to establish camp 9; the difficulties caused by the wall of ice and the abundant snow limited their reconnaissance, which was, however, repeated the next day. At the same time the four men who were at camp 7 had set out with two oxygen respirators, a tent and a supply of provisions for camp 8, but only Bonatti and Gallotti succeeded in reaching it. In the course of the evening two Hunzas, Mahdi and Isakhan, also reached camp 7. On July 30, while Compagnoni and Lacedelli, after overcoming the ice-wall, reascended the shoulder and went on to set up camp 9—consisting of a very high tent, under the wall of rock which cuts the terminal cupola of K2 at about 24,000 ft.—Bonatti and Gallotti descended to camp 7 to fetch the respirators and then started off again at once with Abram and two Hunzas, with loads of supplies and propane, a liquid gas. After reaching camp 8, at about noon, Bonatti and Mahdi pushed on almost at once, with the respirators, towards camp 9. When night fell they were still on the march, but they succeeded in identifying the camp and calling out to their comrades. The two men higher up shouted to them to leave their loads and descend, because below them there were some extremely dangerous slopes which could not be negotiated in the dark. On the other hand, Mahdi was no longer in a fit state to go on. The two men did not dare to risk a descent, but dug a hole in the snow and passed the night in it, starting off on the return trip at dawn.

Compagnoni and Lacedelli, after descending in the early hours of the morning to recover the respirators, resumed the ascent.

The first and serious obstacle that they had to face was the very steep couloir that notches the rocky wall put as defence of the terminal dome of K2. Direct attack seemed impossible owing to the abundant snow. The first attempt was carried out on the rocks to the left, but Compagnoni was driven back, falling down into the soft snow, fortunately without any serious consequences. The attempt was repeated by Lacedelli who overcame the rocks and reached the steep snow-covered slope above, where he yielded the lead to his companion.

Another menacing high wall surmounted by jutting pinnacles leaned over the two men. They first overcame some difficult slabs covered with unstable snow then, leading through, after hard work in deep soft snow which reached their hips, they had to move to the left along the rocky crest that forms the side of the highest southern wall of the mountain.

Fog came up. They proceeded, almost blinded, along rocks encrusted with ice until they were compelled to move again towards the central portion of the ice-bank that forms the terminal dome on slopes covered with snow, very steep and dangerous. A gust of wind swept the fog away allowing them to see a series of humps which seemed to be near the summit.

At this moment the two men felt a sudden sensation of suffocation, a strange warmth in the whole of their bodies and a sense of weakness in their legs. When they succeeded in overcoming this feeling of dismay, they realised that the oxygen of the respirators was finished. They removed at once their masks and deeply breathed in the icy air to the full. Having ascertained that they were still masters of their energies and that their minds worked normally, they resumed climbing with great effort. Every moment it seemed as if the summit was only a few yards away, but as soon as they had reached the top of the dome, another appeared in front of them. The fog had disappeared and a bitter wind cut their faces. It was 6 P.M. when the two climbers saw the slope gradually slip away from their eyes while the horizon was opening out in every direction.

At last, the summit !

Filled with joy they embraced each other and raised the flags of Italy and Pakistan and also dropped the respirators (which they had carried up so as to save themselves from the effort of removing them and to avoid causing avalanches in the unstable snow by their movements). They remained half an hour on the top to take photographs (which proved most successful).

When they set forth on the downward march night had already fallcn, and the difficulties and dangers which they had to face proved very serious. The soft snow lying on the very steep slopes beside the couloir threatened at every moment to avalanche. The descent proved extremely risky and was carried through under the menace of over-hanging séracs. With the help of God also this terrible obstacle was passed and then they reached the ice-wall. It was absolutely impossible to find the way down in such profound darkness. After many attempts Compagnoni plunged forward dropping 45 ft., but slipping into the soft snow he managed to escape. It was a terrible moment. Finally at 11 P.M. they caught sight of the near-by camp 8 where their comrades were awaiting them. It was safety at last.

The next day the weather changed : the wind whistled menacingly and the clouds chased each other swiftly across the head of the conquered giant, while the snow began to eddy through the air. At dawn on August 1 the whole party began to descend from the shoulder, abandoning, according to instructions, everything which was not absolutely indispensable. But all was not yet over : suddenly Compagnoni slipped, tumbling and rebounding about 600 ft. down ; he would have finished on the Godwin Austen Glacier below had not a small wall of fresh snow stopped him. Having collected themselves after this incident, the party resumed the descent.

Thanks to the fixed ropes, Compagnoni reached camp 4 at 11 A.M. to be attended to by the doctor of the expedition, his fingers having been affected by frost-bite. Soon afterwards the others arrived, except the Hunzas who stopped at camp 5. Lacedelli, too, had had one of the fingers of his left hand frost-bitten, while Mahdi's toes had been more seriously frost-bitten during the bivouac under camp 9.



K2. THE SUMMIT.

Floreanini and Rey departed the same evening of August 1 from camp 4, and were able to announce the victory at the base camp. The next day, while the storm continued to rage, all the mountaineers and the Hunzas descended to the lower camps and then to the base camp. The mountaineering phase of the expedition had thus been successfully brought to an end.

But the expedition as a whole was not ended. The scientific programme had still to be carried out. During the three months which the mountaineering enterprise lasted, the scientists—Prof. Marussi, Dr. Zanettin and Captain Lombardi—had carried out a large-scale topographical survey of the upper valley of the Stak, with particular regard to the famous Kutiah Glacier, a geological and petrographic study of the whole area, and a series of astronomical, gravimetrical and magnetic stations, not only in the main points of Pakistan, but also in the above-mentioned territory. The work had been then extended to the Turmik Valley, and the geological survey also to the upper Shigar Valley. Owing to the difficulties of communications with the scientific party, while Zanettin, in harmony with the general programme, reached me at the K2 base camp on July 17, Marussi and Lombardi only arrived a month later when I was about to abandon the Baltoro.

A week after the conquest of K2, while base camp was being transferred to Urdukas, I left the K2 area, together with Zanettin, to carry out a geological survey on the upper Baltoro. Having reached Urdukas a week later, I was present at the passage of the climbers on their way back, and then I went with Zanettin on to the Younghusband Glacier, the largest one still unexplored of the Baltoro, which I ascended as far as its head, where I went over a pass (which I named Moni-la), about 17,000 ft. high, and which leads to the Moni Glacier, an affluent of the Sarpo Laggo which I had already explored and surveyed in 1929. After a rapid visit to the Muztagh Glacier, I then descended to Askole, while Zanettin explored another branch of the Baltoro, the Vigne Glacier. Then I organised a light party to carry out a series of summary geological surveys in the basins of the Biafo and the Hispar, two of the chief glaciers of the Karakorum.

Marussi and Lombardi then reached the K2 base camp, where some tents, fuel and abundant supplies still remained, and carried out a topographical (photogrammetrical) survey of the great mountain, passing thence on to the upper Baltoro, where in 1929 it had not been possible to carry out a detailed survey. I left Askole for good on August 30 to ascend the Biafo Glacier, while Zanettin by the Skoro-la descended the Shigar Valley, where there remained some geological problems to be studied, and thence returned to Rawalpindi via Skardu. In five days I ascended the whole of the Biafo; after going over the Hispar pass (16,900 ft.), on September 4, I commenced a rapid descent of the glacier of the same name, leaving it on the 7th for a short stay at the first permanently inhabited village. Then, through the small States of Nagar and Hunza and along the Hunza river, I reached Gilgit on the 14th of the same month. After two and a half days of geological

excursions in the neighbourhood, I returned by air to Rawalpindi, where Zanettin joined me.

During the preceding two months another scientist of the expedition had reached Pakistan, Prof. Graziosi, with the task of carrying out ethnographic studies among the peoples of Hunza, Chitral and the Astor area and palethnological investigations in the Peshawar, Rawalpindi and Lahore areas. For reasons which remain unknown, Prof. Graziosi was not granted permission to carry out his ethnographical studies, but fortunately his palethnological researches achieved full success. Before returning home I took a trip by car, chiefly for geological purposes as far as Kabul, the capital of Afghanistan, and paid a hasty visit to Delhi to conclude definite agreements for the gravimetrical connection between that city and Karachi.

During this period Marussi and Lombardi, after finishing their surveys on the Baltoro, completed the geophysical programme, taking measurements in the valley of the Indus as far as Parkutta and in the Gilgit area as far as Damas (Chitral), and then established a gravimetrical connection between Karachi and Delhi and between Karachi, Beirut and Rome.

The balance sheet of the expedition thus shows on its credit side the results of a series of scientific researches in the field of geography, with the explorations accompanied by topographical surveys, of vast areas of the Stak and of the Baltoro basins, with the setting up of astronomical stations and carrying out morphological and glaciological studies in the geophysical field with numerous measurements and observations on terrestrial gravity and magnetism, and in the palethnological field with the discovery and the study of various prehistoric sites.

To this we should add the zoological and botanical collections, formed only at levels above 12,000 ft.

The elaboration of the data collected and the study of the material brought back to Italy, will require not less than three years of work.

I must add again that the photographic documentation has been very considerable ; the photographs in black and white and in colour amount to many thousands, taken along all our itineraries. The many thousand feet of colour film shot include two rolls of 100 ft. shot on the summit of K2.

The basic plan of the expedition, in spite of unfavourable weather, was carried out with results which I leave the reader to judge. This was only possible owing to the enthusiasm, self-sacrifice and discipline of the whole party and to the efforts of previous expeditions that opened the road along the Abruzzi ridge of K2.