THE CARSTENSZ MASSIF, 1936[1]

By A. H. COLIJN

Up to the beginning of this century Netherlands New Guinea was practically known only from the outside. In 1906 Governor-General Van Heutsz, who was not a man to remain on the outskirt of things, charged the then Captain Colijn to report on the policy to be adopted with regard to New Guinea. This advice was embodied in the well-known memorandum of February 4, 1907, with the concluding proposal that New Guinea should be explored systematically on broad lines, aiming at reconnaissance of the whole territory with the object of obtaining a good sketch map of it. The military exploration of New Guinea was immediately embarked on and this lasted until 1915. The method of exploration adopted consisted principally in following all rivers as far as possible, preferably to their sources. A few overland traverses were also made, chiefly through the Vogelkop, Bomberai and the isthmuses.

One of the results of these military reconnaissances was the sketch map of Netherlands New Guinea, scale 1 : 1,000,000, published in 1919, which shows that the object was practically achieved, with the exception of one or two remaining white spots, principally in the area of the Central Mountains.

Almost coincidentally with the military exploration *private* expeditions under the auspices of scientific institutions set out with *definite* objects in view, as distinct from that of the military : reconnaissance of the whole on broad lines. The Central Mountains, in particular, claimed the attention of Netherlands and foreign institutions. I would recall to mind the expedition of the Indian Committee for Scientific Investigations to the Wilhelmina summit and the British expeditions to the Carstensz summits.[2] Although the Carstensz massif was not penetrated, good scientific results were obtained.

After the British expeditions no serious attempts, as far as I am aware, were made to conquer the Carstensz summits, although such remained the subject of contemplation. I need mention only Dr. Van Bemmelen's article in *Berggids*, the organ of the

[1] See map at end of this volume.
[2] *A.J.* 27. 236, 328 ; 28. 296–304.

Netherlands Alpine Club, and the plans of the Netherlands Geographical Society, who had commissioned Mr. Leroux to study the question.

What circumstances dictated my journey to New Guinea? About the middle of 1935 I went to Netherlands New Guinea on the instructions of the Netherlands New Guinea Petroleum Company to organize and manage their exploration work there. The task of this company was the exploration for petroleum in a concession area of 10,000,000 *ha.*, stretching along the greater part of the coasts of Netherlands New Guinea. A large part lies on the S. coast and extends to the foothills of the Carstensz massif. Aerial photographing of the entire concession area formed part of the work. This was done by the Royal Netherlands Indies' Airways. The following bases were laid out by the petroleum company:

Babo—chief base, with the secondary bases Jefman and Seroei in the N. and Etnabaai and Aika in the S. Aika lies about 100 kilometres due S. of the Carstensz massif, on a large delta formed by several large rivers, one of the principal of which is the Newerip.

In April 1936 a Sikorsky amphibian was stationed on the S. coast, operating from Aika or Etnabaai, according to weather conditions.

How did I come to undertake a Carstensz expedition? That is easily explained. My inspection flights several times took me along the S. coast to Aika. On a few occasions during these journeys I saw the Carstensz in all its splendour. I found from literature concerning New Guinea that former attempts to ascend these mountains had failed. An additional incentive was an article by Dr. Van Bemmelen, which appeared in *Berggids*, the organ of the Netherlands Alpine Club, of which I had been a member for years, informing me that it was about time that the Carstensz summits were climbed by Netherlanders. I turned over the matter in my mind. We were acclimatized; the Petroleum Company had Aika as base of operations on the S. coast, and scouts had already been operating for some time in the drainage area of the Central Mountains. We knew the coast Papuans and had already worked with them. Aika had been laid out with their assistance. Many circumstances were favourable therefore, but we had little time and no great expenditure was to be incurred. Consequently arrangements had to be made different from those of former expeditions to the Central Mountains, which were much encumbered by the great unwieldiness of the parties and, moreover, frequently went astray as regards the

approach to the mountains, the result being a considerable waste of time and money. We, on the contrary, if we were to achieve success in such a short time (*maximum* 2 months), had to find the right approach at once ; moreover, our party had to be not large and unwieldy, but small and rapid. These conditions could be fulfilled with the assistance of the aeroplane which was stationed at Aika. We wish to express our gratitude to the directors of the Petroleum Company at The Hague, who gave permission for the Sikorsky to be used now and then to assist the Carstensz expedition, when it could be released from the work of air-mapping the petroleum concession. The assistance was twofold :

(*a*) Aerial reconnaissance.

(*b*) Aerial provisioning.

Without this aid the expedition could not possibly have succeeded in the short time at our disposal. Aerial provisioning was to be effected by dropping provisions by parachute, since it was impossible for the aeroplane to land between the coast and the Carstensz massif.

The outstanding features of our expedition were thus :

(1) The greatest possible simplicity and mobility of the party.

(2) Co-operation with the aeroplane for reconnaissance and provisioning.

These two points were the guiding principles of our plan of operations.

It was found from the aerial reconnaissance, supplemented by ground reconnaissance of the first part of the route, that

(1) *The shortest approach was along the Newerip and Otomona ;* four stages may be distinguished :

(*a*) Journey by proa along Newerip to Proa bivouac (about 60 km. from the coast) in 2 days.

(*b*) Jungle march from Proa bivouac, first over a gently rising plateau, subsequently over the mountain ridge between Godman and Hanekam to a confluence of three rivers N. of Hanekam.

It was already known that the march from the Proa bivouac to the bivouac of Simpang at the foot of the mountain ridge was a matter of 2 days, and we estimated that the march over the mountain ridge would take a further 5 days.

(*c*) From the confluence to the mountain meadow, probably through the ravine on account of the absence of suitable ridges. We had no idea how long this march would take, but we optimistically estimated a week.

(*d*) From the mountain meadow to the Carstensz summits. We had an idea that this would be the easiest part, but it turned out quite differently. We had greatly underestimated this stage.

(2) *Carstensz was not a mountain, but a mountain group* with various glaciers and summits. It could not be ascertained by means of the aeroplane instruments which was the highest. The two eastern summits of the northern face and the pyramid summit are much the same as regards height.

(3) *The best locations for the main camps* (where provisions had to be parachuted) were the confluence (base camp) and the mountain meadow (Alpine camp).

(4) The only part of the route which was *inhabited* was at the confluence (base camp).

Above approach traversed three distinct zones : first flat swamp land about 55 km. as the crow flies, then a gently rising plateau, sometimes deeply cleft, about 15 km., and finally the steep, very deeply cleft foothills, about 30 km.

The ground scouts made further preparations for the proa journey and the march through the jungle, whilst we, on the basis of the data obtained and the experience gained from former expeditions, drew up our plan of campaign and carried out some experiments in parachuting provisions at Babo.

When reconnoitring the route over the plateau, things threatened to go wrong. From the regular reports of the scouts it became evident that they were working rather too far westward and were endeavouring to find their way too much in the direction of Godman. A mistake with regard to the access to the upper mountains, however, might have caused the failure of the expedition. Fortunately the Sikorsky was able to trace the last reconnaissance bivouac and to put the scouts on the right track again by dropping a photograph showing the position of the bivouac. Further directions were given to them with regard to the mountain ridge to be followed, the height of four summits on the ridge, various distances, directions, etc., which were of great importance for giving the ground party their bearings. The ground scouts were then able to cut part of the jungle path over the mountain ridge, which was essential for the rapidity of our march through the jungle.

The party was definitely selected at Babo. The choice fell on Dr. Dozy, photo-geologist of the Petroleum Company, and Mr. Wissel, naval flying officer and temporary pilot of the Petroleum Company, both good mountaineers. From the geo-

logical coolies 8 Dyaks were selected for their daring and powers of endurance. Personal equipment was reduced to a minimum, camp beds and other non-essentials were rejected, and every effort was made to reduce still further the impedimenta to be transported overland. Provisions were ample, however. The menu included gingerbread, marzipan, raisins, nuts and *Knackebrot* (crisp-bread) and a variety of other items. The provisions were packed in kerosene tins. Two kerosene tins wrapped in *idjoek* and gunny cloth formed one food package and weighed altogether about 25 kilos. The parachute was made of cheap cotton, 4 m. square, which not only gave good service as a parachute but also as a tent covering. One drop supplied us, therefore, both with provisions and a roof over our heads. The loads were parachuted through the camera hatch in the floor of the Sikorsky cockpit. A system of signalling to the plane, by laying out yellow cloths, was tried out and yielded good results.

The *plan of operations* was as follows: Dozy and I were to leave Aika with the 8 Dyaks at the end of October. We should try to reach the confluence N. of Hanekam by November 7. Wissel would then come with the Sikorsky to trace us and we would get in touch with him by means of the cloth code tried out at Babo. He would then drop by parachute the provisions for the base camp, which were of a different nature from those for the Alpine camp and sufficing for 6 weeks. After having supplied the base camp he was to drop on the mountain meadow a 3-weeks' store of provisions for the Alpine camp. As soon as the provisioning had been completed, Wissel would join us overland as quickly as possible to co-operate with us in the Alpine work. There would be only the three of us in the Alpine zone. In principle it was arranged that the Dyaks should not ascend higher than the timber-line, where the Alpine camp would be established. They would serve principally for the forest work and for communication with the rear. Our Alpine equipment was perfect and enabled us to move easily in the mountain zone. In addition to the ordinary Alpine clothing we had two coils of rope each 30 m. long, ice axes, crampons, sleeping-bag, Zdarsky tents, etc., and also a small, very light, closed tent made by Carl Denig, Amsterdam, according to Dozy's directions. This tent could accommodate the three of us. A great deal of this equipment was dropped by parachute with the food at the Alpine camp.

Our *object* was a general reconnaissance of the whole Carstensz massif and the ascent of one of the summits (the highest if this could be ascertained). We had 2 months at our disposal. As

much of this time as possible had to be spent in the Alpine zone. We were to collect, during the expedition, as many geological, botanical and ethnological data as the short time and the composition of our party should permit. The object in the first place, therefore, was to *blaze a trail* and to leave it to scientific bodies to elaborate our work.

After careful preparations at Babo we were ready to leave Aika on October 29. Dozy and I departed with the 8 Dyaks during the night of October 30 and reached Proa bivouac two days later. There the march through the jungle commenced. Two days' marching brought us to Simpang bivouac, situated at the foot of the mountain ridge between Godman and Hanekam. The march over the mountain ridge occupied 5 days, in accordance with our estimate. Everything went according to plan. In the evening of November 6 we camped in the wood, one hour's march from the first Kapauko settlement, which was situated at an altitude of 1800 m. on a cleared small plateau. It had been arranged with Wissel that we should try to establish contact with these mountain Papuans on the 7th and that he should then come with the Sikorsky to get in touch with us. This arrangement worked perfectly. Very early in the morning of the 7th we heard the roar of the engine. This was the signal for us to emerge from the wood and make our appearance in the clearing where these mountain Papuans lived. They were all crowded together on the plateau, where they were dancing and jodelling like madmen, waving their bows and arrows, not knowing whether they should shoot or wait for us. The Sikorsky diverted their attention, however, and before they knew it we were among them with our presents. Suddenly they seized us and dragged us into their frenzied dance. In Rome do as the Romans do, and we screamed and danced with them like madmen, whirling our ice axes above our heads as they did with their bows and arrows. This would have lasted a long time if we had not collapsed from exhaustion. By this participation in their dance we captivated their hearts, however, and they then sat down beside us, fondling our hair and faces. Meanwhile Wissel in the Sikorsky, circling above, was enjoying this spectacle. When we had recovered—no simple matter in face of this ostentatious Kapauko affection—we spread out the yellow cloths on the ground, announcing to the Sikorsky that the Kapaukos were friendly, that we were going to establish the base camp and that it was all right for him to parachute the provisions. Wissel then signalled that he had understood, by shutting off and starting the engine alternately.

After this ceremony, which the Kapaukos followed with awe,

SCHETSKAART VAN HET NASSAU GEBERGTE

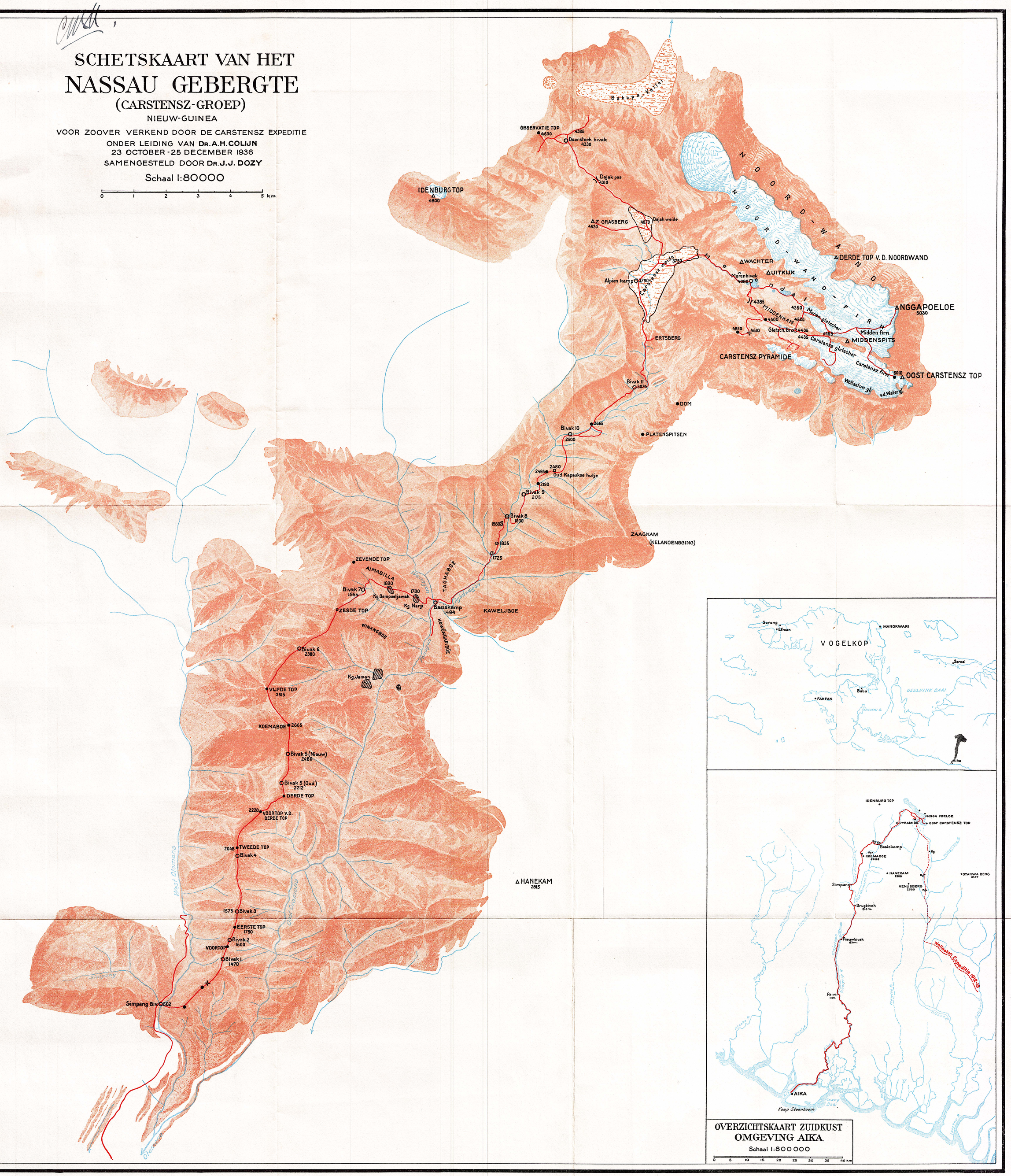
(CARSTENSZ-GROEP)

NIEUW-GUINEA

VOOR ZOOVER VERKEND DOOR DE CARSTENSZ EXPEDITIE
ONDER LEIDING VAN DR. A.H. COLIJN
23 OCTOBER - 25 DECEMBER 1936
SAMENGESTELD DOOR DR. J.J. DOZY

Schaal 1:80000

0 1 2 3 4 5 km



OVERZICHTSKAART ZUIDKUST
OMGEVING AIKA
Schaal 1:800000
0 5 10 15 20 25 30 35 40 km

By courtesy of the Royal Netherlands Geographical Society.

we quickly descended towards the confluence in order to establish the base camp, and passed a second clearing at 1700 m., situated 300 m. above the location of our base camp. Wissel had meanwhile disappeared, but not for long. Whilst we were occupied with the base camp we heard him return, and then the first parachutes made a stately descent in the immediate vicinity of the second clearing.

It was a fine sight to see the provisions coming down from the sky like that. They were dropped with great accuracy, and came just in time, for our march provisions were exhausted. Now we had rations for another 6 weeks. The work of setting up the camp was stopped immediately. Everyone, including the Kapaukos, co-operated in bringing in the provisions. Eighteen of the twenty loads parachuted were recovered immediately, two being lost in the thick vegetation—a 10 per cent. loss therefore, which is a splendid achievement considering the difficult topography. The packages were stored under cover of the parachutes, which proved to be waterproof, whilst the parachutes not immediately required were kept, in order that they might subsequently be used as tent covers in the bivouacs *en route*.

The Sikorsky then flew to the mountain meadow where the Alpine camp was to be established, and in the same facile manner dropped provisions for 3 weeks. We subsequently recovered these packages, lying very close together in good condition, when we arrived there.

The co-operation with the aeroplane was, in one word, perfect. Everything went off so well that one of the Dyaks, of rather a philosophical turn of mind, after regarding me for some time, observed that the *toean besar* (great man) must indeed be a great friend of the Almighty Allah, otherwise things could not possibly have gone so well.

After all arrangements had been made for proper storage of the provisions dropped, we set off on the third stage to the mountain meadow. This stage proved difficult, however. We had anticipated completing it in a week at most, but it took two whole weeks. In the long run we were so tired of struggling through the dense undergrowth with its network of roots, anything from the knee to the hip in height and all profusely covered with hanging moss, that from pure exasperation we gained access to the meadow by clambering through the last waterfalls. Dripping wet and chilled to the bone we reached the meadow, reminiscent of a Scottish moor, a fine coloured picture of moss, bog pools and malachite rocks, alive with great numbers of partridges and wild ducks. In short, after all the misery we had suffered, gaining access to the mountain

meadow was like a dream. Steps were immediately taken to establish the Alpine camp and to store the provisions, so that we should be ready for the next stage—penetrating the Carstensz. We were now at an altitude of 3700 m. A reconnaissance made it clear that the bad weather necessitated our establishing bivouacs still higher up, which would have to be provisioned from the Alpine camp. To this end we left 2 Dyaks in the Alpine camp to provide us with provisions in our bivouacs on alternate days. Our first Alpine bivouac was at 4000 m. altitude, in the big gully between the northern and the southern face of the Carstensz, and was called Lake bivouac.

Here, on November 30 (the thirty-third day), we seized the bull by the horns. We determined to climb out of the gully (called Lake Valley), cross the glacier and try to reach the ice dome lying due E. of the southern glacier face.

We still did not know, and perhaps we were not to discover, which was *the* summit. In any case we had to start with one summit and set as objective what we presumed to be the highest point—that which appears to the observer on the S. coast as the E. Carstensz summit.

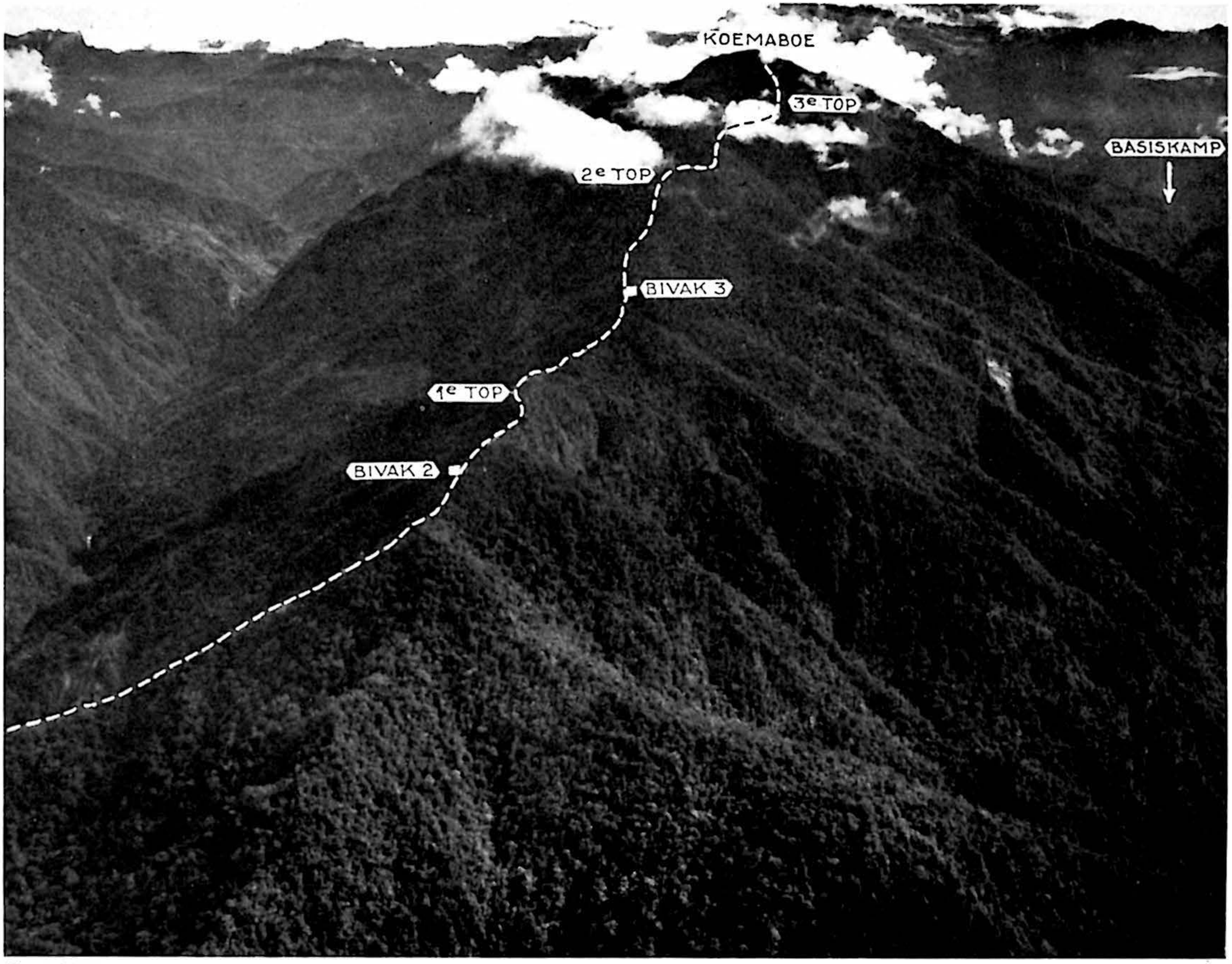
First Glacier Crossing

We rose at 02.45 : at 04.00 we departed from the tent into a fine moonlight night. Slowly we climbed upwards, progress being very pleasant in the bright light. The only thing that was sometimes obstructive was that our shadows were dead in front of us as we proceeded. On looking around we were struck by the fantastic spectacle of the small lakes glittering far below us, and the dark silhouettes of the high walls of limestone. In the far west the snow of Idenburg summit shone brightly in the night. A fresh mountain breeze blew towards us through the valley. When we arrived at the lake glacier (4300 m.) light began to appear in the east (05.30). We fastened the rope around us and put on our crampons. We were very glad that we had them, for the ice was hard and steep. The glacier is an expanse of ice hills with large holes, deep fissures and numerous fantastically beautiful, small deep-blue tarns, which with their steep, freakish, high walls are more reminiscent of Greenland than of the tropics. From the centre of the glacier tongue we wound slowly through the fissures to the foot of the imposing 'middle peak,' which observed from below has a shape that recalls the Matterhorn to mind. This middle peak rises between the southern glacier, which we called Carstensz Glacier, and the glacier lying between Carstensz Glacier and North Glacier, which we accordingly called

Expedition air photo.]

COAST BASE AIKA ON THE REMAINS OF AN OLD BEACH EMBANKMENT. SIKORSKY CAMP IN THE FOREGROUND. THE SWAMP LAND HERE IS A BELT ABOUT 69 KILOMETRES WIDE.

[*To face p.* 184.

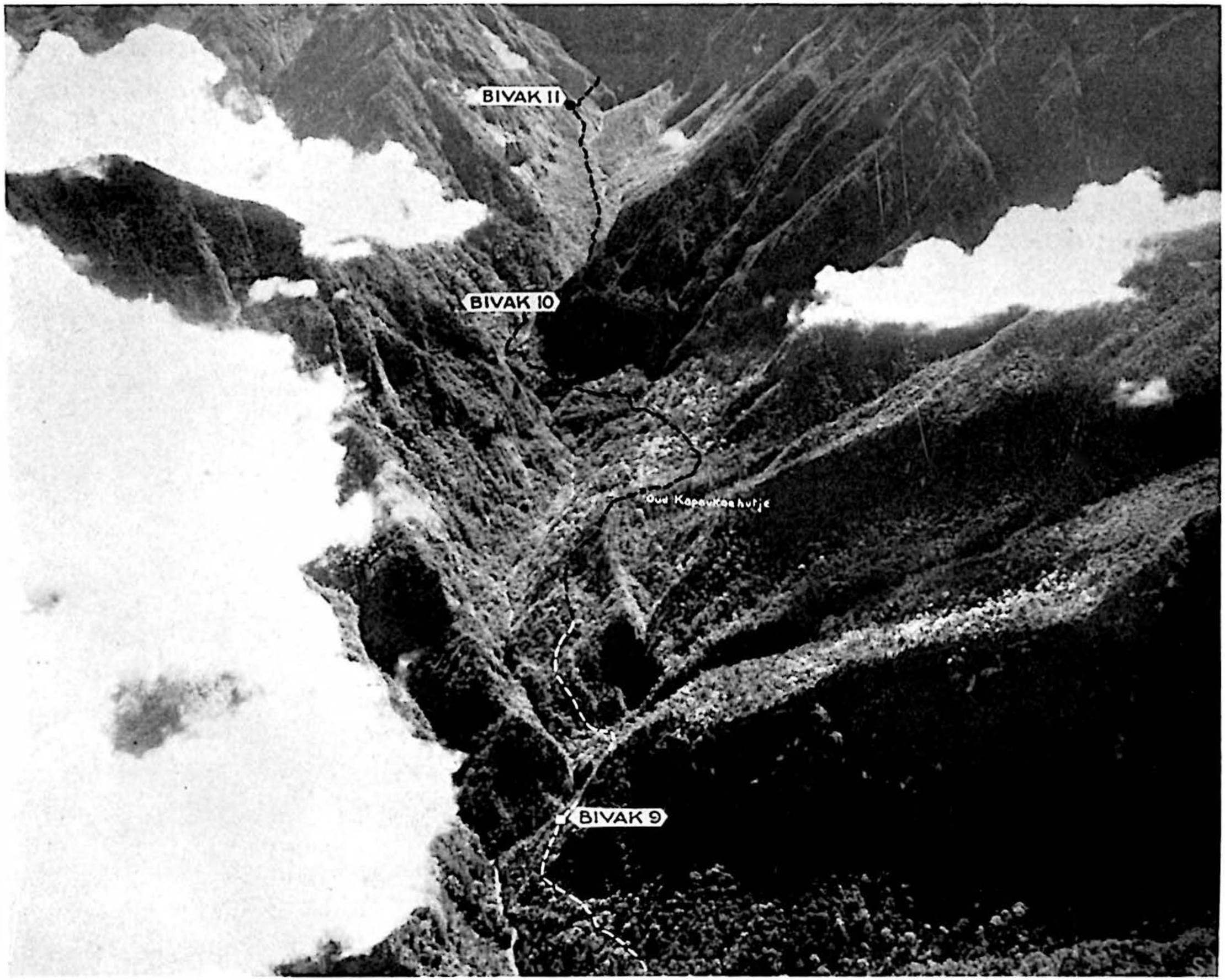


Expedition photo.]

JUNGLE ROUTE OVER THE MOUNTAIN RIDGE OF BIVOUAC SIMPANG (500 M.) TO KOEMABOE (2600 M.). FOREST OF MOSS.

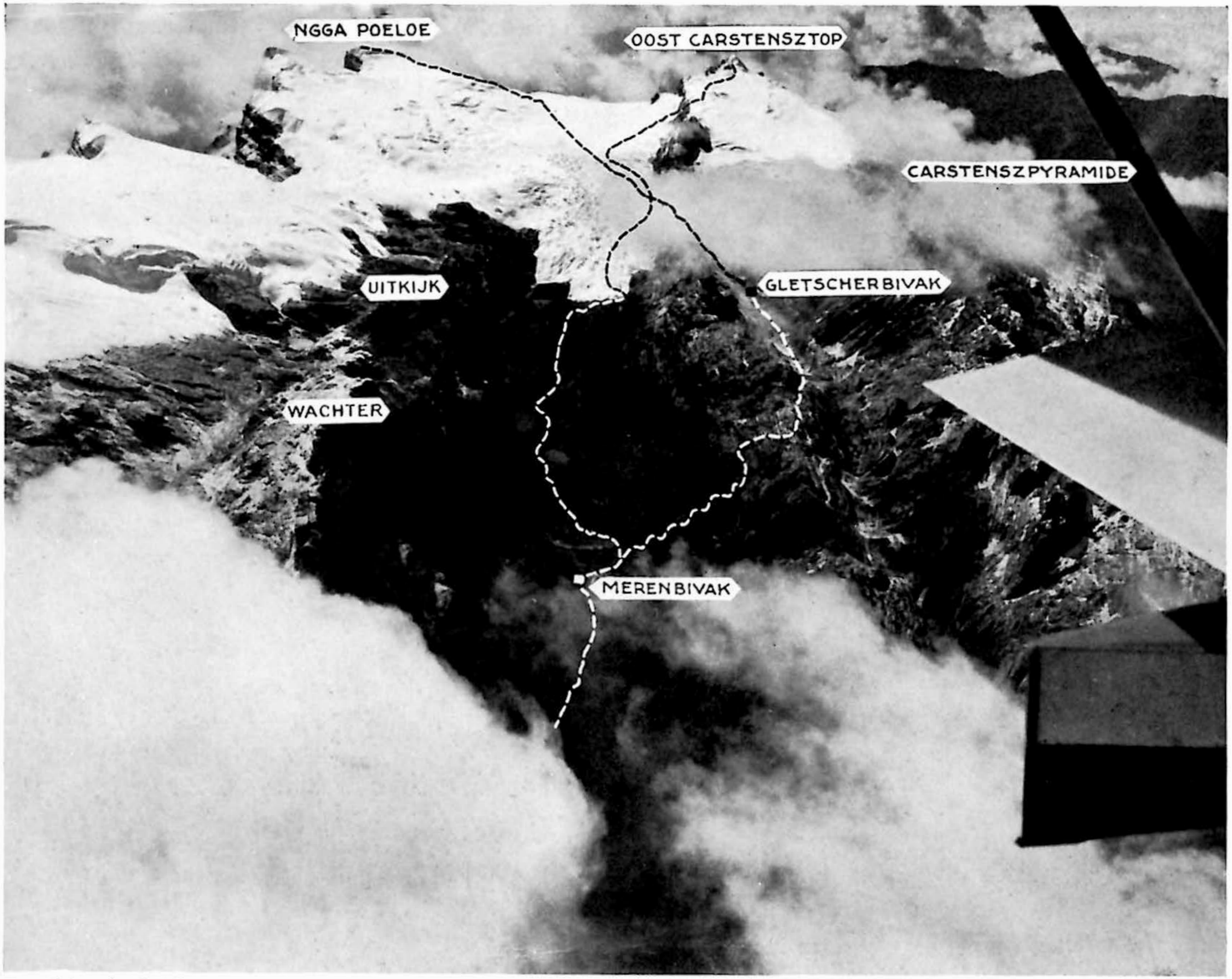
Expedition air photo.]

JUNGLE ROUTE FROM BASE CAMP (1400 M.) THROUGH THE RAVINE TO BIVOUAC 9 (2100 M.). THICK FOREST OF MOSS.



Expedition air photo.]

JUNGLE ROUTE THROUGH THE RAVINE OF BIVOUAC 9 (2100 M.) TO BIVOUAC 11 (3000 M.). THICK FOREST OF MOSS.

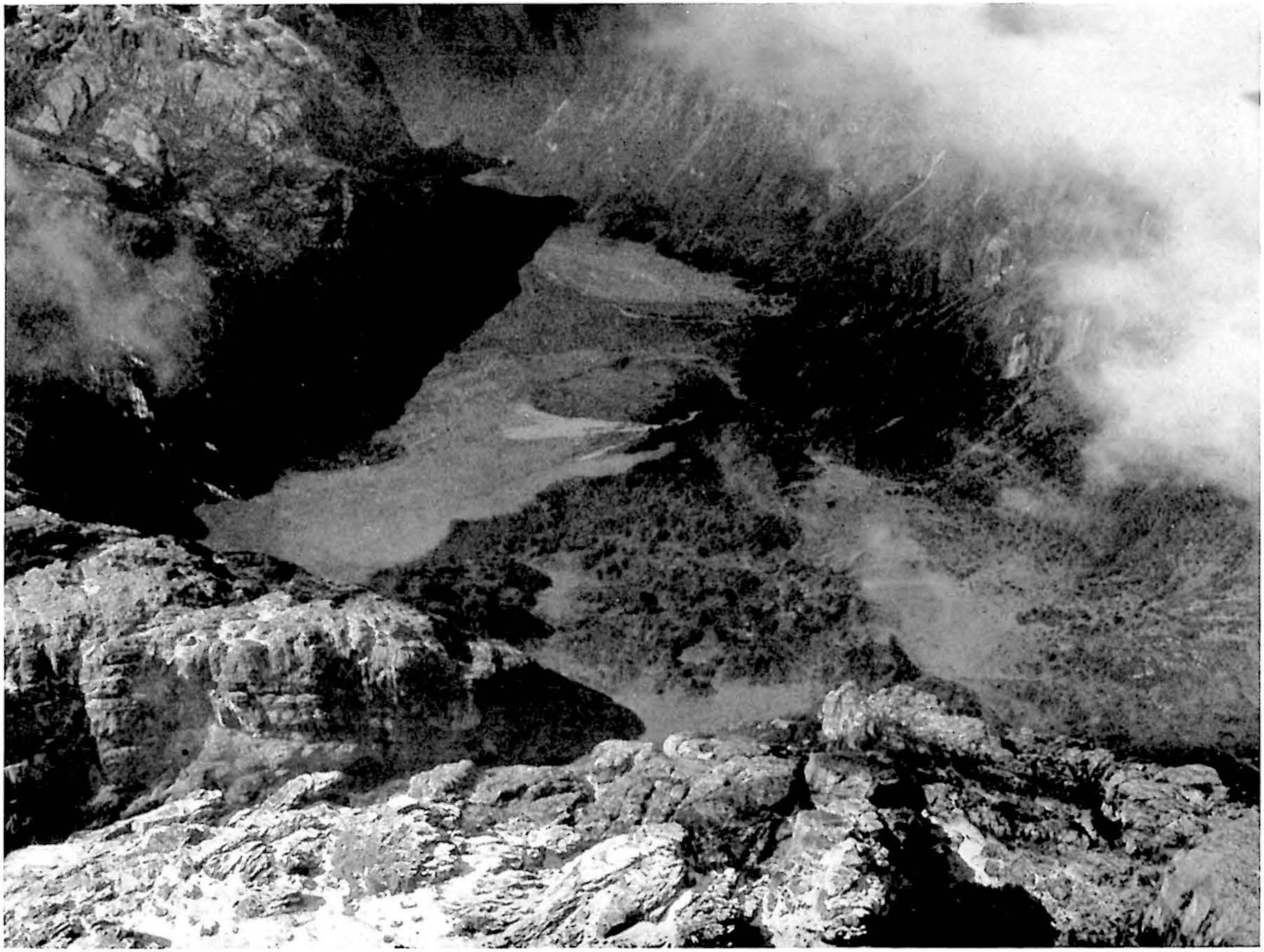


Expedition air photo.]

ALPINE ROUTE ABOVE ALPINE CAMP (3700 M.) THROUGH LAKE VALLEY *VIA* LAKE BIVOUAC (4000 M.) AND GLACIER BIVOUAC (4400 M.) TO E. CARSTENSZ SUMMIT AND NGGA POELOE (5040 M.).

Expedition air photo.]

ALPINE ROUTES FROM GLACIER BIVOUAC (4400 M.) OVER CARSTENSZ GLACIER AND E. RIDGE CARSTENSZ PYRAMID AND *VIA* N. FACE TO W. RIDGE AND UNDER PYRAMID.



Expedition photo.]

CARSTENSZ MEADOW (3700 M.) AS SEEN FROM N. TO S. IN THE BACKGROUND ACCESS FROM STEEP RAVINE. WATER GENERALLY TAKES A SUBTERRANEAN COURSE. ONLY ONE STREAM FLOWS ABOVE GROUND (VIDE CENTRE OF PHOTO).

Expedition photo.]

View from Middle Glacier on Carstensz snow-bridge joining the Carstensz Glacier (situated about 100–150 m. higher) with the Middle Glacier (about 4800 m.).

Expedition photo.]

VIEW OF THE UPPER PART OF CARSTENSZ GLACIER (ABOUT 4800 M.) ON THE E. RIDGE OF CARSTENSZ PYRAMID.

[*To face p.* 185.

'Middle Glacier.' The way then led through another system of fissures to the centre of the glacier, where the hard ice was soon replaced by névé of much gentler slope. From here we kept a straight course to a very steep snow-bridge, which connects 'Middle Glacier' with the Carstensz Glacier situated about 100 m. higher. To our left stretched an extensive undulating snow landscape, dominated by the high snow summits of the N. face. On attaining the foot of the Carstensz snow-bridge we saw there the traces of avalanches. Certain corniches above us looked dangerous, as also the indication of some snowed-up crevasses. Fortunately a convex vault could be found, which we surmounted by climbing straight up, kicking steps. Having arrived at the Carstensz Glacier (about 4950 m.), we pursued our way eastwards along a low ice ridge with a few small elevations, despite the fact that the weather was becoming overcast (09.00). Here and there the ice ridge was separated from the snowfield by large fissures. Time after time we thought we had *the* summit in front of us, and each time we were mistaken. The E. Carstensz summit seemed to be a *fata Morgana*. Not only that, the impression became forced on us that both the Carstensz pyramid and the two eastern summits of the northern face were higher than the peaks of the ice ridge which we were following, and of which the E. Carstensz summit could only be the last (most easterly) elevation.

At any rate we saw nothing dominating the surroundings, with the exception of Ngga Poeloe, with its neighbour (both E. summits of the northern face) and the Carstensz pyramid. Nevertheless we went on in order to find the end of the ice ridge. The snowfield rose gently. The ice ridge now became veiled. The clouds gathered. It was about 10.00 ; all visibility gradually became obstructed. We still continued, however, as the end of the ice ridge, where we expected to find the E. Carstensz summit, could not be much further away. In the mist lying densely around us we arrived below an icicle at the foot of which large blue holes and fissures gaped before us. This was surely *the* top. We looked about for a path over the fissures. The mist cleared a little and disclosed to our view, at the other side of a depression, a top which appeared to us to be a little higher than the summit at the foot of which we were standing. Meanwhile the change in the weather had become complete and hail began to fall. Shortly afterwards thick flakes of snow fell, as they might in Holland about Christmas, splendid thick flakes falling gracefully. There was now no longer any question of going on. We had to think of our return journey, preferably by retracing our steps. We calculated our height at

5000 m.; the temperature was about + 1° C. In addition to the weather, the consideration that the two eastern peaks of the N. face and the Carstensz pyramid were higher than the summit which we had been following like a spectre, was a reason to commence the return journey.

The said return was tiresome. The snow had become soft and on the Carstensz snow-bridge we sank deep into it, which was very troublesome and cost much time. Zigzagging through the lake glacier, over small ridges of ice and along the freakish blue tarns, was again a pleasure. In the Lake Valley we again admired the hues of the tarns and of the walls of rock glittering in the rain. We finally reached our small tent at Lake bivouac at 14.00, in the pouring rain. It was snowing on the glacier, but here it was the genuine rain of the European November or December variety. Temperature about + 5° C. After a hearty meal the sleeping-bag was the best place to philosophize upon the events of the day and to make fresh plans for the morrow. Our trip had shown that the Lake bivouac was still too far from the glaciers, having regard to existing weather conditions; that there was no characteristic, conspicuous highest summit that could be termed *the* Carstensz summit; that a few tops were evidently of about the same height, and that as far as height was concerned the choice in all probability would lie between the Ngga Poeloe (E. summit of the northern face) and the Carstensz pyramid.

We therefore determined to climb the Ngga Poeloe as the next summit, for the following reasons: First, because the climb would occupy less time than with the Carstensz pyramid, which was an important factor, having regard to the main Carstensz handicap—the short day; secondly, because we anticipated the best view to the N. from the summit of Ngga Poeloe; thirdly, because the ascent of the Ngga Poeloe would afford us an additional crossing of the glacial system, which would be of benefit to the general exploration of the Carstensz ice-massif. After a successful climb of the Ngga Poeloe the Carstensz pyramid would come next. If we succeeded at once with the Ngga Poeloe, we could safely devote a few days to the Carstensz pyramid. By climbing Ngga Poeloe, our expedition would finish with a satisfactory Alpine achievement in any case, whatever fate had in store for us with the Carstensz pyramid. On the strength of the above deliberations we set to work again.

Climb of Ngga Poeloe

We removed the Lake bivouac higher up to the foot of Carstensz Glacier and named it Glacier bivouac, 4400 m. Strategically this

point is very well situated, since it allows of ready access to the Carstensz and to the middle glacier system, and also to the pyramid ridge both over its E. and W. ridges and *via* its northern face. On December 5 we seized the opportunity of tackling Ngga Poeloe. We left in the early hours by moonlight. In view of the threatening weather we proceeded at a sharp pace, and reached the summit at 07.10. Clouds again began to collect. We had not much time. A few bearings and panoramic photographs were quickly taken, and, when we had finished at 07.30, we had just ten minutes left to look around before everything became obscured again. From the temperature and altitude-barometer readings we calculated a height of 5040 m.

Apart from the direct vicinity, the Carstensz group itself, the view to the N. especially captivated attention. First a high plateau with small lakes, then a series of mountains with limestone plunging abruptly towards the N. There, right beyond, we saw in the N. an extensive grass-covered plateau with hillocks eroded in freakish furrows. There was a large lake on this plateau. Further beyond rose more high mountains with sharp ridges. A sea of clouds hung over the 'Meervlakte,' the central depression of the Mamberamo, but it was just possible to descry the Gauthier mountains very far beyond. To the S. the coast could be seen over a vast expanse of swamp. Towards the E. we perceived beyond a depression a confusion of summits free of snow; to the W. the grass-covered limestone mountains with the glittering snowcap of the Idenburg summit.

We were nowhere able to find a suitable resting-place for the summit record book which we had brought with us. We therefore helped ourselves with a long red cloth from a Sikorsky report case, which we placed on the summit, taking the record book back with us. The ascent of this summit was celebrated by an orgy of marzipan.

Attempts on Carstensz Pyramid

It was then decided to devote the week still left to us, from the 5th to the 12th December, to a siege of the Carstensz pyramid, if it could not be conquered direct. The start was not very promising. During the night our tent collapsed as a result of a very heavy fall of snow. After several reconnaissances, however, we saw a chance of getting at the pyramid across the E. ridge. Everything went well until we were on the ridge, where disappointment overtook us: it was not a continuous ridge, but a

series of loose slabs of limestone not connected in any way and separated from each other by deep chasms, deeper than the length of our rope, so that we were brought to a halt time after time. Seated on one of the slabs, which was corroded on the top into sharp micro-corries (like pieces of glass), philosophizing as to the wisdom of Providence in bestowing and withholding its favours in turn, we were overtaken by snow and a sudden thunderstorm. Our hair stood right up on end from electricity, and everything of metal that we had with us began to hum. We were then at a height of more than 4900 m. It was high time to commence the return journey. The attempt had failed, and it was already evening when we reached our tent, where we at once planned an attack *via* the northern face. This opportunity did not present itself at once, on account of bad weather with an icy N.W. wind, accompanied by continual snow, hail and rain. At length we thought we had a chance, which we, of course, immediately seized, although the rocks were covered with a thick layer of fresh snow.

We now wished to make an attempt through the northern face of Carstensz pyramid. The first few hours again passed without a hitch until we came into a large couloir with a system of grottos and caves just under the pyramid summit (09.00). It could not be much higher, but in doubtful spirits on account of the threatening weather conditions we entered the couloir. Then the same old story started again. Everything became obscured and snow began to fall at a temperature of $+ 1 \cdot 5^{\circ}$ C. The fresh snow which had fallen during the night began to melt. Everything was dripping. The rocks became coated with ice. Great masses of snow were about to slide. A small avalanche in our immediate vicinity gave us a sharp warning. There was no longer any visibility. We held a council of war in one of the caves of the couloir. However bitter we felt about it, we had to retrace our steps, our only spark of consolation being that we had been defeated, not by the mountain, but by the weather. Our time was up and, rather disappointed from an Alpine point of view, we returned to the Alpine camp, where we took a chance of forcing a crossing through the grass mountains, W. of Carstensz meadow, to the N. The record book which, after the Ngga Poeloe, we had intended for the pyramid summit was buried in a pile of stones at the foot of Carstensz Glacier ($\pm$ 100 m. W. of the tongue), with a request for the next Alpine expedition to take it up to the summit of the pyramid.

Summary

The whole expedition did not last 2 months, reckoned from the departure from Aika to our return there. Three weeks of this time were spent in Alpine bivouacs between 3700 and 4400 m.

The results are :

(1) The ascent of Ngga Poeloe (5040 m.).
(2) Various crossings of and reconnaissance trips through and over the Carstensz massif and the western grass mountains, between the Carstensz and the Idenburg summit.
(3) A very rough collection of geological and botanical data.
(4) Contact with an isolated tribe of mountain Papuans, regarding whom a few ethnological data have been obtained and a word list compiled.

With great satisfaction and thankfulness I can record that the whole party, Europeans and Dyaks, returned from this expedition in perfect health. In my opinion this was largely due to good nourishment and the short duration of the expedition.

Features of the Expedition

(1) Simplicity, mobility and speed. Three Europeans and 8 Dyaks with only essential equipment, no military escort, no camp beds, no large tents, no weapons of any significance, no wireless, only one change of clothing, etc. In brief—all ballast overboard.
(2) Co-operation with the aeroplane for :
  (*a*) Reconnaissance.
  (*b*) Provisioning.

In conclusion, I would once more emphasize that our object was principally to *blaze a trail.*

It is for specialized scientific expeditions to go more closely into the anthropological, zoological, botanical and geological problems. We had very little time at our disposal and did our very best during that time to collect as many data as possible of all kinds. Nevertheless it goes without saying that, in view of the short time and the composition of our party, the scientific value of our expedition can be but limited.

I would further point out that the Carstensz range can now be reached in 10 days from the coast along our cleared jungle track, whilst the return journey can be completed in 7 days.