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The Ascent of Mt. Logan.

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STIMULATED by the valiant fight being made to gain the summit of Mt. Everest, the highest point on this globe of ours, the Alpine Club of Canada in 1923 again took up consideration of an attempt to climb Mt. Logan, Canada's highest peak,[1] which, after the successful ascent of Mt. Robson in 1913, Mr. Wheeler, Director of the Alpine Club of Canada, had declared to be the proper goal for the club's next efforts. A year previously the American Alpine Club had brought up the subject, and intimated that, although recognizing the Canadian club's paramount interest in Logan, in the event that that club was unable to launch a campaign against it, the American club would undertake the task, or, better still, would be glad to engage in a joint expedition under the management of the two clubs, and this suggestion naturally spurred the Canadian Alpine Club on to definite action in the matter; and at its annual meeting, at the 1923 encampment, the first step was taken by the appointment of the Mt. Logan Executive Committee, with instructions to investigate the feasibility of such an attempt, and with full powers to act in case a favourable decision was reached.

The first official meeting of that Committee was held at Vancouver on November 14, 1923, at which time Colonel

[1] See map, *A.J.* **37**, 90.

Foster, D.S.O., was made chairman, Mr. A. O. Wheeler, director, and the writer was informed that he had been chosen as leader of the expedition—thus putting into effect the results of a conspiracy hatched at an informal meeting held before I arrived on the scene. Thrown off my guard by the flattery of such a designation, and without knowing in the slightest what I was letting myself in for, I accepted the appointment and asked for instructions, for up to this time I simply knew Logan was the second highest peak on the North American Continent and was located somewhere in Canada.

Then it was that the magnitude of the project became apparent to all of us, for an inspection of the maps and photographs and a reading of the report of the International Boundary Survey covering the mountainous area in which Logan is situated clearly indicated that our job was a big one, for Mt. Logan has many geographical and alpine features that require the most careful study and consideration in order to cope with the difficulty each of them contributes to hamper an approach to it and a climb of its forbidding heights.

A few of these controlling factors are as follows :

1. Located in the S.W. corner of Yukon territory, 156 miles from rail-head and the nearest habitation, with intervening territory of the most difficult character to traverse.

2. Being at 60° 35′ N. lat. and thus almost within the Arctic circle with its consequent severe temperatures.

3. An altitude above sea-level of 19,850 ft., and standing 14,000 ft. above the level of its surrounding glaciers.

4. The stupendous bulk of its massif, having a circumference at its base of over 100 miles, while at its 10,000 ft. level it measures 16 miles from E. to W. and 8 miles from N. to S.

5. Superimposed on this higher plateau is a regular system of peaks, snow-fields, and glaciers, indicated but not detailed in any picture or map.

6. An ice-cap of almost 200 square miles area, the centre of the greatest glaciated alpine area known, and the source of scores of cliff and hanging glacier encircling it which form the sources of some of the world's largest glaciers : the Logan, 50 to 60 miles long and from 3 to 5 miles wide ; the Seward, the longest alpine glacier known ; and the huge Columbus Glacier, which fills in the bleak area between the Logan massif and the St. Elias Range to the S.W.

7. Eleven miles of badly broken and crevassed snow and ice stretches across the high plateau from the most favourable point of attack on the massif to the base of the final peak.

8. The close proximity of the Pacific Coast with its moisture-laden airs over the Japan current, causing enormous precipitation on the high levels and frequent and many times long sustained storms of the greatest intensity.

Such serious factors as these entering into our problem, it was essential that a reconnaissance should be made in order to obtain reliable data on which a plan of campaign could be based before an expedition should be sent out, for up to this time the highest point reached on the massif was made by a survey party in establishing Station ' Turn ' at 6500 ft. elevation and about 16 miles from the summit, and little was known as to actual condition from a climbing point of view.

Of the three possible lines of approach to Logan, from the E. by way of Skazway, White House, and Kluane Lake, from the S. from the shore of Yakutat Bay, and from the N.W. by way of the Chitina Valley from the little town of McCarthy, the latter was the only definitely known route, and it also delivered at the N.W. point of the massif, which, according to the maps and all the pictures of the mountain, afforded the best and apparently the only feasible line of ascent of the massif to the upper plateau. Hence it was decided that in the summer of 1924 I should undertake a reconnaissance over the McCarthy-Chitina approach and obtain the data on which to base an assault in 1925. With no provision made in advance for this trip, it was necessary for my two local men, Andrew Taylor and Miles Atkinson, and me to relay back-pack our entire outfit from the end of the 86-mile horse trail from McCarthy to the beginning of ice, across the Chitina and Walsh Glaciers and up the Logan and Ogilvie Glacier, each mile of which had to be traversed eight times in our relays, which involved a tramp of 552 miles—315 miles of which were done with packs averaging 60 lbs. each, and the climbing of intervening ridges and hills totalling over thirteen times the height of Logan above sea-level. This was a severe, exhaustive ordeal that, combined with almost constant bad weather while near and on the mountain, made a serious attempt to climb it impossible, and limited our advance over the route chosen up the King Peak Trench to a maximum elevation of 10,200 ft. But our experiences of this 45-day trip definitely proved that the McCarthy-Chitina route was feasible and should be adopted, and much valuable data was obtained on which to formulate plans for the 1925 campaign. This western route involved the following stages: Steamer trip, Seattle to Cordova, Alaska, 1600 miles, 5 days ; railroad, Cordova to McCarthy, 191 miles,

2 days; pack train up Chitina Valley from McCarthy to beginning of ice at Chitina Glacier, 86 miles, 6 days; trekking up Chitina, Walsh, Logan, and Ogilvie Glaciers to advance base camp site at base of massif, 52 miles, 5 days; and, finally, from this point at the base of the King Glacier Cascades the advance and climb was to be undertaken up the King Peak Trench to the upper plateau of the massif, and then a traverse of the plateau to the highest summit at its eastern end, a distance of 18 miles with a rise of 12,000 ft., and my estimated time for accomplishing this stretch was twenty-one days, if possible making it from June 1 to June 21, when continuous daylight would be at its best.

These, then, were the elements that entered into our problem, and had to be solved with one most important factor to remain an unknown quantity until after the event, but to be carefully reckoned with at all hazards—that factor being the weather.

The gruelling ordeal of relay back-packing definitely convinced me that it must be entirely eliminated on the line of approach in 1925, so that the climbing party might reach the advance base camp in prime condition. Hence the entire outfit of clothing, equipment, fuel, and provisions to be used beyond the end of the horse-trail must be freighted in during the winter when dog-teams could be used to advantage, 4700 lbs. required for use on the massif to be laid down as near as possible to the advance base camp site, while five other lots of food and fuel must be cached along the line of advance up the glaciers for use of the party while going in and returning from the mountain. In addition to these caches, it was necessary to place five caches of hay and grain, 2200 lbs. total, along the valley trail for the use of the pack train in May, when grass would not yet be available for the horses.

Thus the Logan campaign consisted of two operations, that of freighting in and laying down these caches, and then the assault by the climbing party, the first extending from February 4 to April 26, and the second from May 12 to July 15, and it would be difficult for me to say which period proved to be the greater ordeal.

With so much time and expense involved in merely getting the party to the base of the mountain, it was evident that our arrangements should be made to cover a reasonably long period of time in order to be prepared to tide over spells of bad weather, and that our party should be sufficiently large to provide for several casualties and still leave a strong party for the final climb. Accordingly, provision was made for a party of ten for



Phot. A. H. MacCarthy.

ROUGH GOING.



Phot. A. H. MacCarthy.

THE START FROM MacCARTHY
ON THE SEVENTY DAYS' JOURNEY.



Phot. A. H. MacCarthy.

OVER THE ROUGH NORTH SHORE LINE.



Phot. A. H. MacCarthy.

ELAINE CAMP.

a campaign of three months from rail-head—one month to go in to the advance base camp and to return from it, and two months around and on the mountain.

The outfit equipment, supplies, fuel, and provisions based on these figures and assembled in January 1925 at McCarthy to be freighted to the various points along the trail and glacier stretches totalled 6724 lbs., while the hay and grain necessary for the pack-train brought this total up to 8924 lbs. to be placed in ten caches along the route, with the greater part, 4700 lbs., to go clear through to the head of Ogilvie Glacier, 138 miles from McCarthy—a task that must be completed before the climbing party could with safety begin its advance for the assault.

With little overflow ice on the rivers to help us, much soft snow on the dry gravel bars, and temperatures dropping to 55° below zero F., and such a large cargo to transport, it was clearly evident that the two dog-teams originally provided for could not accomplish the work in the time available, and therefore a third dog-team and six horses with two bob-sleds and three more men were added to our train, with the consequence that our supply of provisions and feed had to be greatly increased—50 lbs. of hay and grain per day for each horse, and about 3 lbs. a day of rice and tallow or corn meal, fish, and lard for each dog, while the requirements for the men averaged about 4 lbs. each per day; thus our total cargo ran up to 19,860 lbs., almost exactly 1 lb. per ft. of altitude of Logan above sea-level.

In order that our entire caravan might make a definite and complete departure from civilization at the same time, which is a very difficult although very necessary thing when doing real work in the Northland, 2½ tons of the outfit were relayed up the Chitina Valley (50 miles) during the period from February 4 to 13 by Taylor and Trim, the teamster, when a minimum temperature of 52° below zero was recorded on one day.

On February 17 our start from McCarthy was made with six horses, twenty-one dogs, and six men, and a short distance down the Kennecott River our troubles and hard work began, for it seemed that we had struck the usual 'unusual year,' when all conditions seemed to be very much against us and we were in for an uphill fight; but we were thankful at the end of the first day to find ourselves at the junction of the Nizina with the Chitina River, 16 miles from McCarthy, and safely through the treacherous Nizina gorge without accident. This winter route,

down the Kennecott and Nizina and up the Chitina to its source and the forefoot of the Chitina Glacier, is a little over 100 miles in length, and throughout most of that distance, from February 17 to March 5, it was a constant fight against adverse conditions, and often very discouraging when open channels would force us to retrace long stretches and thus make our advance for the day pitifully small. Fortunately, however, during this period we had no terribly severe storms and our animals, somewhat sheltered in the woods at night, fared fairly well, although the temperature generally dropped before morning to from 30° to 35° below zero, and the heavy harnesses became so stiff that they were not taken off for thirteen days.

Reaching the forefoot of the Chitina Glacier with the dog-teams and one double bob-sled load on February 27, it became necessary for us to choose between the N. shore and the S. shore line-up, the first 25 miles of the glacier stretch, a decision that might spell success or defeat for all our hard work. From the bare condition of much of the moraine and the extremely rough glacier stretches along the N. shore line, it was evident that it would prove an almost hopeless task to transport our heavy cargo over that route ; while, on the other hand, long stretches of the S. shore line were unknown, for a survey party in 1913 had met with considerable disaster and were forced to abandon that route after ascending it for but a very short distance.

On February 28, with Atkinson, I inspected the portal and a short distance up this route and then left ' Scotty ' to follow it to the head of the gorge while I broke trail down the ice channel of the Chitina and left signals to deflect our teams to the S. shore. Upon returning late that night to our camp at Hubricks, an old prospector's camp, Atkinson reported having made the S. shore line to Baldwin Glacier and that it would go for the dog-teams, provided the ice bridges and side ledges did not give out before we could get our outfit across them. We really had no choice in the matter : the N. line was hopeless and we simply *had* to make the S. route or fail in laying down our caches and thus delay the expedition another year, and this we knew must not happen ; so I decided to risk the S. shore route and gave it what proved to be a surprisingly appropriate name, that of the ' Gorge of Fate.'

With all speed possible we then, by relays with horses and dogs, got all our outfit save our bare camp requirements about 4 miles up the gorge above the portal by March 5 and, with logs taken in for the purpose, built a bridge to span the stream where an ice-bridge had gone out. On the 6th, Trim and



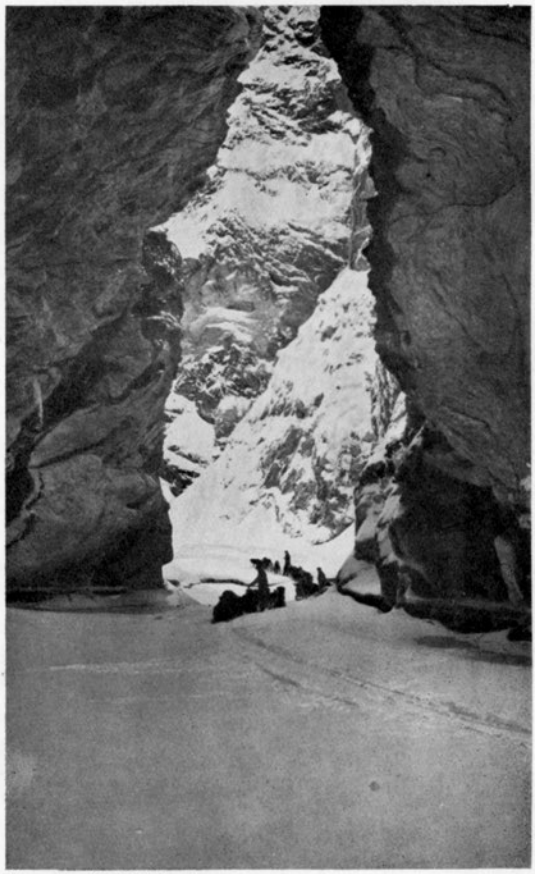
Phot. A. H. MacCarthy.

THE SHOULDERS OF MOUNT LOGAN.



Phot. A. H. MacCarthy.

"GINGER" HEADING FOR HOME.



Phot. A. H. MacCarthy.

GRANITE PORTAL.

Weyers left with the teams and bobs for McCarthy, while Taylor, Atkinson, Olsen, and I set out with our three dog-teams and camp outfit to go clear through the gorge and establish camp above its last point of danger; for its narrow winding course had many treacherous spots that, with the opening of the channel, the dropping of an ice-bridge here, the breaking-off of a side-ledge there, a snow avalanche from the shore cliffs, or of ice from the glacier cliffs, easily could close the way for us and force a retreat and a possible complete abandonment of our outfit.

Our great concern now was first to get the outfit across the log-bridge before its abutments were scoured out, and then to advance everything to a safe distance above the last narrow point of the gorge where the vertical walls were but 10 ft. apart and where the ice-bridge over the rushing stream was absolutely essential to our advance. Just above the gorge at this point were huge séracs and one of them appeared strikingly like a hooded sentinel, so we named this particular spot the 'Devil's Door.' Once beyond this Door with our outfit we could feel safe, for then we could rely upon alternative routes in case our first choice failed us.

At about 6½ miles above the Portal, the gorge opened out on the shore side, and here late in the afternoon we pitched our little tent and rigged Gorge Camp, which served as our base of operations during nine very frigid, strenuous days. Throughout much of that night we had a most violent storm with heavy snowfall, and some time, probably early in the night, there occurred what we most feared, an avalanche of perhaps a thousand tons of ice falling just below the Devil's Door and effectually damming up the channel, which speedily formed a lake with 10 ft. of water, closing the Door we had passed through the afternoon before. Here, indeed, was a serious situation for us; our camp and dogs were above the Door, while all our outfit with all the dog food was below it, and for a moment that morning our prospects looked very dismal indeed.

Leaving Henry in camp to tend the dogs, Andy, Scotty, and I set out on snow-shoes and, in five hours of most difficult and dangerous glacier travel, succeeded in effecting a passage over the glacier around the Door to its lower side near our cache, this clearly demonstrating the impossibility of transporting our cargo over such a détour. Securing 50 lbs. of rice and some tallow for the dogs, we then ascended the gorge and were glad to find our log-bridge still intact; and upon climbing

the huge pile of avalanche ice, that had buried our trail deep under it, it was a mighty relief to discover that during the hours of our hard détour the water had worked a channel under the ice dam and had drained down to the level of the ice floor and thus had again opened the Door for our use.

This experience was indeed a warning to us to make haste, and the next day in twelve hours we transported our entire cargo first across the log-bridge, carrying each parcel separately by hand over it, and then, rushing it up over the avalanche pile through the Devil's Door, we cached it at a safe point beyond a fragile bridge at its up-stream side, the last load crossing this bridge but a few minutes before it sank and slid under the ledges, thus leaving an open stretch of water across the gorge and so effectually closing the Door for further passages that season ; but this meant nothing to us, for on the return journey we were to take the N. shore line.

We had won out by the narrowest of margins, were now out of the trap, and if weather and time permitted were certain of placing our caches along the glacier line, and the last one at least well advanced towards the advance base camp site.

From March 6 to 31 the strain on men and dogs was very great, for during that time the outfit was advanced by many relays over about 15 miles of the most difficult route imaginable, with frequent storms to wipe out the trails so laboriously made with ice-axe and shovel along the shore line of the Logan Glacier and across the Baldwin Glacier and its lateral moraines to the beginning of the smooth ice on the Logan Glacier, where on the latter date Ice Camp No. 1 was established. Here we cached our wood stove and a supply of wood to be picked up on our return, and as cook for men and dogs I had to become accustomed to the use of two-burner gasolene stoves supplemented occasionally with the use of one or two Primus stoves.

On the smooth stretches of the glacier our progress was materially increased, and even the dogs seemed to realize that we were much behind our estimated time and must rush matters if we hoped to finish the job as laid out and get back over the river-bed before it became too dangerous for travel. For most of the distance so far, and especially the pioneer trips over the various stretches, only about half loads of 50 lbs. per dog could be taken, thus entailing many relays ; but now, with many wind-blown stretches of hard snow of uniform easy gradients, as much as 150 lbs. per dog was occasionally taken without undue strain on our shaggy friends. Little does the outside world realize how much credit is due to the ' Husky '

and the ' Malamut ' for the hard jobs that are done in the Northland ; with but one meal a day of rice, or cornmeal and tallow, or lard, varied sometimes with a meal of dried fish served to him at the end of the day, he is then chained to his stake out on the snow-field for the night, where he curls up into a woolly ball and sleeps. And in the morning, with a vigorous shake to free himself of his blanket of snow, he is ready for another ten or twelve hours in harness, with nothing to break the monotony of his slavery other than now and then a gulp of snow in lieu of water, a few short rests, or an occasional fight. And yet those dogs simply adore their sometimes cruel masters and literally pull their hearts out to please them.

The night of April 13 saw all our caches placed and the advance base cache safely stowed under its heavy canvas tarpaulin weighted down with rocks and tins of oil on the Ogilvie Glacier opposite the foot of Mussell Glacier and but 6 or 8 miles from the advance base camp site. Our job was finished, but now the terrible N. shore route had to be negotiated and a dash made down the Chitina before its channel opened to block our retreat, and already we were over two weeks late for a certain safe passage.

Early on April 14 we put out with the lightest loads possible, and with tails high, thus showing that all was well with them, the dogs fairly flew down to the end of our 16-mile stretch of white ice, where we again began with wood for fuel and thus had a slight bit of warmth in the tent, and the pleasant crackle of the fire to make things seem a bit homelike ; even the wood smoke was a pleasant relief from the pungent smell of the gas-jet.

During the next five long hard days of straight travel with light loads, save for one short 2-mile relay, we averaged but 4 miles per day, thus thoroughly justifying the desperate gamble we took in choosing the ' Gorge of Fate ' route for the advance of our caches.

Again at Hubrick's Camp on the 19th, we gave the dogs a rest for one day and repaired our outfit, and next morning in a bad storm set off down the treacherous Chitina, where again we were forced many times to make long détours, sometimes deep into the thick forest along the N. bank, to get a safe route for men and dogs ; but all things have an ending, and at noon of April 26 our caravan entered the main street of McCarthy, having taken seventy days in which to set the stage for the advent of the climbing party.

On May 7 I met the other members of our party at Cordova—

Lambart, assistant leader; Foster, recorder; Carpe, representative of the American Alpine Club; Hall, Morgan and Reade, who, with Andy Taylor and me, constituted the climbing party; and Laing, the Dominion Government naturalist—and the next day we made a run up the Copper River and North-Western Railway to McCarthy. It was a clear day of bright sunshine, and the high mountain ranges in all directions seemed to stand out in brilliant array to impress our men, who were seeing this mystery-land for the first time, and it was indeed a fit introduction to the grand panoramas they were to see later on.

In the forenoon of May 12, all being in readiness, we put out from McCarthy with a pack train of ten horses under the care of Harry Boyden and Peter Brenwick, and, save for the usual troubles on such a trip, our six days of travel up the Chitina were without difficulty, as this was the short interval between the time of the spring run-off and the summer flooding, at either of which times travel afoot or on horseback in that valley is extremely dangerous.

On May 18 our pack-train left us at trail end to return to McCarthy, thus cutting us off from touch with the rest of the world for the next fifty-eight days, and our next seven days of advance, first over the extremely rough moraines and dirty glaciers and then up the stream line of the Logan and Ogilvie Glaciers with their soft blankets of snow, gave the new members of the party a fair introduction to what was in store for them on the higher levels, for although the packs should not have averaged more than 54 lbs., all exceeded that figure and ranged up to a maximum of 101 lbs., which, of course, was out of all reason as loads for the first days of an expedition. Fortunately, experience is more convincing than advice, and progressively as we advanced from one food cache to the next our trail was blazed with articles that gradually went through the various stages from ' absolutely indispensable ' to ' worthless burdens,' and this jettisoning of cargo continued even after reaching our Yukon sleds at the boundary cache when packs were transferred to them and pulled along through the soft snow.

At the 1000-lb. cache at Turn Camp at the junction of the Ogilvie with the Logan Glacier, which we reached on the 24th, we had an abundant supply of food, fuel, two-burner gasolene stoves, and, most appreciated of all our equipment, the individual pneumatic mattresses, and these were straight away put into service and continued our greatest source of comfort until our job was finished.

With a 5-tent camp rigged on the 25th at the main cache,

about 5 miles up the Ogilvie, the laborious work of sledding the outfit up to the head of the Ogilvie Glacier, the site chosen for the advance base camp, was begun, and here we began to appreciate what it meant to have this cargo placed so near to the scene of action instead of having to back-pack and ' jirk-neck ' it in over that terrible 52 miles of ice approach. On the 27th, Cascades Camp was rigged at the base of the ice-falls descending on to the Ogilvie Glacier from the King Glacier, and here by May 31 all of our equipment and two-thirds of our food supply had been transported and one reconnaissance trip had been made to the look-out point at 10,200 ft. reached in 1924 ; and this time a clear view was had of the entire King Peak trench to the col showing that the route was entirely feasible to that point at least. This was most gratifying information, for the trench being the one apparently doubtful stretch on our map and all the rest of our proposed route contoured and laid down from photographic survey, it seemed that with good weather we were almost certain to make our goal.

But proceeding on the doctrine that a climb is not made until one stands on the summit, and preferably has safely descended to camp, I felt that we should not fail to take full advantage of our favourable situation. A climbing party of eight members all in fair condition, an excellent equipment, two months' supply of good food and fuel, and six weeks of daylight—all these things to help us travel 18 miles and climb 12,000 ft. to our summit. In the long run I suppose it is fortunate we do not all see things alike, but at times it is surprising how divergent conclusions are when drawn from the same statement of facts—or is the explanation right there—it is not the ' same ' statement of facts, for *facts* never are appraised the same by any two observers. Evidently such was the case with us, for we were wide apart in our views as to what should be done—all the way from a desire to advance the bulk of our outfit to a camp site near the col and from *there* to establish and stock our fly camps along the plateau until a short dash could be made from the last one to the summit, to a rebellious outburst that we should ' stop this ridiculous work and go and climb the mountain.' A little dash of 18 miles over an unknown route involving a climb of 12,000 ft. of course was entirely out of the question, but with a quick, fairly easy route up the trench for 7 miles it did seem that the original estimate of twenty-one days to make the ascent and two days for the descent should prove ample ; so, making a further allowance for eventualities, we

prepared for a campaign of twenty-eight days, and immediately assembled in each of fourteen brown paraffined canvas bags two days' rations for eight men, with meat rations on a more liberal scale packed in white canvas bags.

Each of these bags, the fuel and all other parcels to be taken along, weighed from 34 to 40 lbs. each, thus being in convenient form for back-packing, and during the first two days of June twenty-eight of these packs, with other equipment and one Yukon sled, about 1500 lbs. in all, were cached on top of Quartz Ridge about 1000 ft. above our camp site and the last rock outcrop of any considerable size along our route of ascent. On June 3, at 6.30 A.M., with a clear sky and brilliant sunshine on the high ridges about us, we set out with heavy packs and light hearts to try conclusions with our giant with considerable satisfaction in the thought that we were leaving behind a month's provision to draw upon in case of need.

The route to Observation Camp, at 10,200 ft., although somewhat intricate because of many deep crevasses and steep side slopes, was familiar ground to us, and with the use of the sled and our pack boards we were consolidated at the foot of the King Peak trench by evening of June 4, and that night we experienced the first of many violent storms that swept over us while on the high plateau—storms that at times threatened to blow us off the mountain, and which several times probably would have blown our tents away but for the weight of our bodies on the sewed-in strong canvas bottoms.

With a route to prospect and work up the trench as far as the col, we put out next morning on snow-shoes in considerable fog, each man packing about 35 lbs. and the leader armed with bundles of willow switches the size of a pencil and from 2 to 3 ft. long, these to be stuck in the snow at intervals of 100 ft. to mark the trail and thus make the route safe for work in all conditions of weather; for on a white background these dark willows can be seen for long distances and, stuck a few inches into the snow, will wave and stand against all but the most violent gales; each time when going over such a blazed trail after a heavy snowstorm the switches are lifted and reset in proper position.

Our trip up the trench that day was a trying one, for, besides constant sounding for crevasses, the fog obscured the route much of the time and a raw wind came down from the col which by 3 P.M. became so severe that at 13,200 ft. we were forced to cache our packs and return to camp. Having started in fog, with occasional gaps to give us our bearings, and then worked

most of the day in what might have been called a mild blizzard at about zero temperature, our arrival in camp in brilliant warm sunshine, with the trench and col again clear, showed how local and uncertain storms might be around Mt. Logan, and from this it was evident that we must carefully prospect and blaze our trail and then continue to advance regardless of weather conditions ; and as later events proved it was only by adherence to this policy that the summit was finally made.

With our trail now well marked for several miles we set out next morning with a heavy sled-load with all eight members on the tow-line and handle-bars, and in four hours had advanced it many miles to the foot of some ice-falls a mile below our cache, and here, leaving the sled and part of the cargo, we back-packed the rest to a point a mile above our cache and the same distance below the col, for here seemed to be the most favourable spot for our all-important Col Camp.

Relieved of our burdens, we made rapid progress up to the col to learn our fate—I perhaps the most pessimistic of all—little imagining the shock we were to receive, for upon arriving at the col, there to the E. of us, instead of the fine gradual slope dropping down from the high plateau of the massif to the col and trench as the map indicated, was a break in the levels of about 1200 ft. filled in with a veritable jumble of broken ice-slopes, while just beyond to the E. of this and the col the plateau glacier broke over the cliffs for a plunge of 7000 ft. to the Seward Glacier below, and the upper reaches of the massif were blanked from view and could only be speculated about. This was indeed disheartening, and I am sure more than one member of the party was confirmed in his view that a systematic reconnaissance must be arranged while at the same time transport work was being carried on. Our expedition was definitely committed to this route for this year, and we must bend every effort to discover a route through to the level of the high plateau.

Lambart returned to camp with the second rope, while I, with Foster, Reade, and Morgan, ascended the E. shoulder of King Peak to its crest at about 15,000 ft. and from here secured a fair view across the trench of the slopes on the massif to an altitude of about 16,000 ft., where here again our view was obstructed by a bold ice-face that ran below a series of ice-falls to the eastward until it broke off at the ice-faces above and to the E. of the col. It appeared that by attacking the slopes of the massif, a mile or more below the col, a route might be worked through the ice jumble and some vulnerable spot might

then be discovered along the face of this parallel ice-cliff or rib just mentioned.

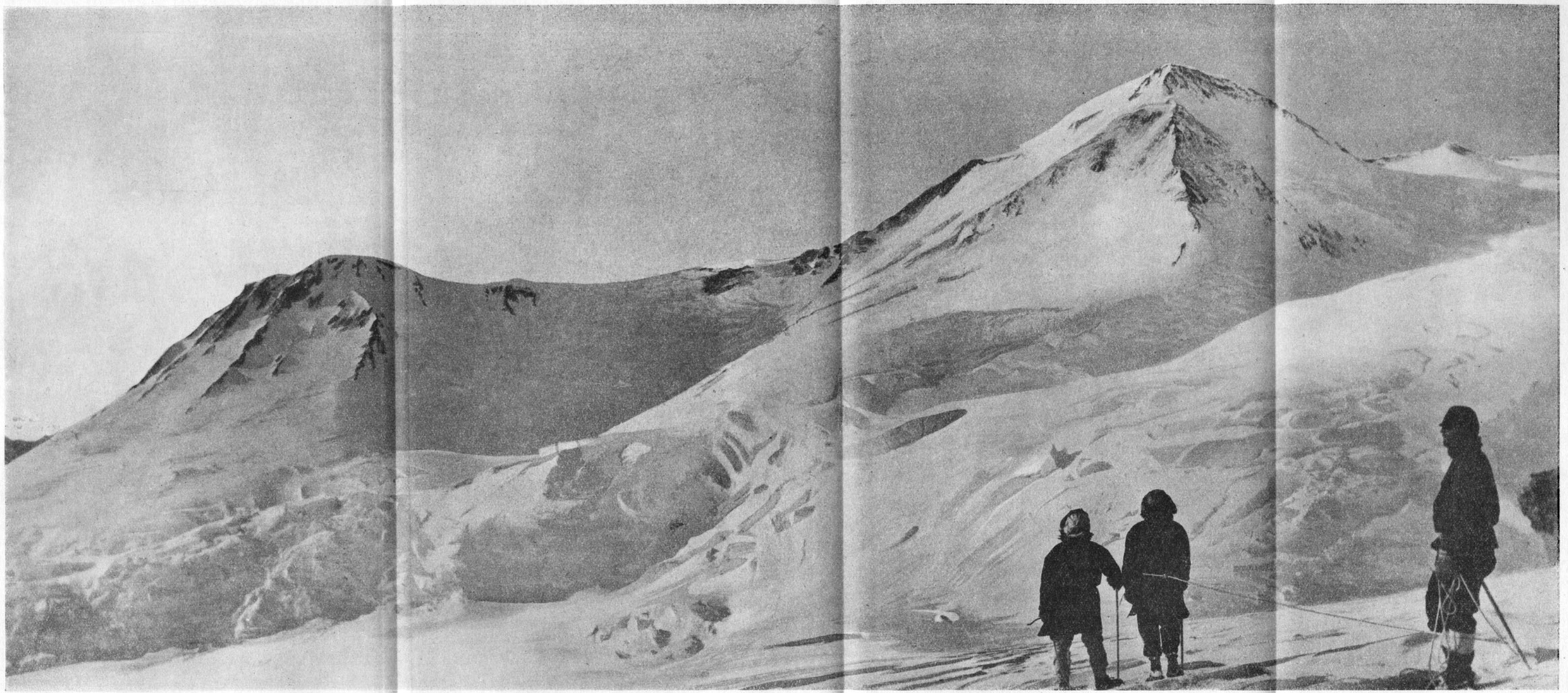
To the W., for a few minutes in the last rays of the setting sun, we were treated with perhaps the most magnificent spectacle seen on our whole expedition: to the S. of us and 9000 ft. below lay the Seward and Columbus Glaciers with the magnificent Saint Elias range rising in the purple sky beyond, showing between its peaks grand views of the mighty Malaspina Glacier with its myriads of moraines, while fringing these crests the blue Pacific outlined the whole panorama and all agreed that it was ample reward for our heavy labours.

The next day another sled-load of 650 lbs. was hauled to the base of the ice-falls and then back-packed to a camp site at the base of the line up the massif tentatively chosen, and here Lambart left Foster, Reade, and me to rig camp and make a reconnaissance next day, while he returned to Observation Camp with the others to begin the arduous task of relaying up the balance of the outfit.

The Col Camp site being at somewhat over 14,000 ft. elevation we soon began to note the effect of the altitude, for it visibly slowed up our operations. The site for the tents was on a snow-slope which necessitated digging out and levelling off the snow bank, and a few minutes' work with the long-handled shovel, brought along for that purpose, was enough to start very rapid breathing and soon after a feeling of exhaustion, and with some the motions became painfully slow, while at night even at this level several of us had short spells of suffocation when it seemed that we could not catch another breath, the distress rapidly disappearing upon sitting up in our bunks.

After a night of torture for me nursing an overstrained eye, with the efficient work of Foster as doctor and cook, we got off with a late start next morning on our voyage of discovery and took the first steep slopes above the camp on snow-shoes, but were able soon to shift to crampons, and for the rest of the day found the wind-blown snow ideal for their use, this adding materially to our speed and distance travelled during the day.

But progress was slow during the early hours as we worked in and out among the jumbled mass of ice and threaded our way through the occasional criss-cross of crevasses; each time upon seeing our way clear through one stretch we wondered if it would prove to be but the entrance to some trap beyond. Thus one strange formation of ice after another was put behind us as we steadily climbed diagonally towards the high plateau to the eastward above the col, circling under the 'Diamond



Phot. R. M. Morgan.

WEST END OF MOUNT LOGAN MASSIF.

Sérac,' around and over the 'Dormer Window,' up the 'Cork Screw,' and on to the 'Hog Back,' when, upon dropping to its far side, to our dismay we saw ahead of us the bold ice-face towering above us, and which we had been following on more or less of a parallel course, suddenly end at a 300-ft. face of the cliff glacier and to the E. of the col, descending to the Seward Glacier; this was indeed a shock to us, for our fine route had simply ended, had dropped to the level 7000 ft. below, and we did not wish to go that way. As our bold ice-face was topped with cascades and hopeless ice-falls as far as we could see to the westward, and apparently was too steep to negotiate with steps, we seemed at last to have reached a cul-de-sac. The shock took the keen edge off our appetites, but this clearly was the proper time for a snack, so we halted and shifted a bit of cargo. While doing this, I noticed not far beyond and a bit above us a line running down the ice-wall that looked as if there might be a breach in our barrier, so I forthwith made off to investigate it, and there at the most eastern point where it could possibly occur was a split clear through our ice-rib with a ledge along one side on which it seemed possible to effect a passage, although for some distance beside the ledge the crack opened clear through the ice mass and gave a view of the glacier thousands of feet below. A protest from one member that we should not attempt such a passage made me doubly careful in negotiating it for the first time, for it seemed to be our only hope and we simply had to make it go. Once over the narrow ledge and beyond the portcullis of a 10-ton ice-slab that overhung the far end of the route the passage did not seem so dangerous, and several days later, when we relayed through it, the bottom had been filled in with considerable snow and, being packed down, was much safer. At any rate 'McCarthy's Gap' afforded us a passage to a good route past the 'Stage Coach'; up the 'Avenue of Blocks,' huge rectangular ones three and four hundred feet square; through the 'Tent City' to 'Glissade Hill,' then half a mile along 'Friendly Crevasse' to its one safe bridge, and so on to the exposed slopes above the ice jumble, these slopes forming the lower end of an upper plateau trench which, according to the map, carried up over the main ridge to the high plateau on its N. side. Continuing to mount a succession of easy slopes until we were at an elevation of about 16,500 ft., we had a good view of the intervening slopes to about 17,000 ft. beyond which there was a short steep rise and then two or more miles beyond a high double peak on the crest of the main ridge of the massif.

Some place, well this side of the ridge, in a sheltered spot, at about 17,000 ft., clearly was the logical site for our next camp and, as there were many steep steps on which we wished to cut good steps for use next day while packing, we put about and retraced our route to the Col Camp, where at 7 P.M. we found the others of the party already had arrived with their heavy packs, and all were pleased with the good news we brought them.

Heavy storms made work in the soft snow very laborious and difficult during the next two days and forced us to be content with advancing four small packs as far as the ' Hog Back ' and relaying up the balance of our caches from below, but on the 14th the morning broke clear and all hands were away at 6.30 on snow-shoes, each carrying packs averaging 45 lbs. The snow was soft and varied from 4 to 24 ins. in depth, thus making progress very slow, and the danger of avalanche was great because many slopes were so steep that up and down routes were impossible, and they had to be negotiated by long diagonal traverses. At noon we reached the end of our willowed trail at the small cache on the ' Hog Back ' ; here we had luncheon, distributed the cache among the members of both ropes, and then pushed on, following our reconnaissance route by the aid of our many familiar landmarks until at 5.30 P.M. a heavy snowstorm enveloped us and forced us to make camp at the base of ' Glissade Hill ' at about 15,800 ft., the storm becoming very violent early in the evening and confining us to camp during the 15th. Early next morning we struck camp and set out with the whole outfit for the upper stretches and reached the top of ' Glissade Hill ' in dense fog, thus making the route from here on for some time very obscure, and it was only by an occasional glimpse of some familiar ice-slope, a snow-bank, or a crevasse that we followed our proper line, this time carefully ' willowing ' it as we advanced.

On this day the combination of deep snow, heavy packs, and altitude told rather severely on all of us and finally forced us to camp considerably short of the site I had chosen, and it was here when rigging that camp that we discovered how much on edge we all were, ready for a frolic or a fight with our best friend in response to his smile or his scowl. We all were dreadfully uncomfortable, tired and hungry, and consequently very peevish, but a quiet suggestion that we ' rest a bit and then be *men* ' brought back a cheerful feeling all around, and soon we were as comfortable as circumstances would permit in our ' Windy Camp ' at about 17,000 ft. and perhaps three miles

below the double peak on the ridge ahead; and well it was, for at 8 P.M. the temperature had dropped to 27° below zero, and the record for our trip, 33° below zero (F.), was recorded during the night.

For the reconnaissance of the next day, the 17th, my diary reads: 'In about five hours of easy but slow going, willowing the route, reached the steep stretches on the back side of the double peak and then its saddle at about 18,800 ft. and waited half an hour for view. Fog too dense, so returned to camp and turned in at 8 P.M. Undecided about next move, but probably another reconnaissance and relay of food as both needed.'

Next day Lambart again went back with the others for provisions and fuel, while Foster, Reade, and I made a careful examination of the S.W. slopes along the double peak, and found them to be devoid of any possible route toward the eastward; meanwhile a storm blew so heavily that we could not stand up against it and had to lie prone and peer over the crest of the saddle, getting indistinct glimpses of another double peak from 2 to 3 miles farther on, but no view of the intervening terrain. However, it was evident that our route was not over or along the S. side of this peak, as one or two had hoped, but that we must follow our original plan and pass over the main ridge to its northern slopes, so we circled to the N.W. around this 'False Double Peak' and, upon passing well over a saddle in the main ridge at 18,500 ft., we clearly saw the steep though smooth ice- and snow-slopes leading down towards the N. shoulder of 'Double Peak' beyond, an easy route for us to take and a good camp site at the base of its N. shoulder. As yet we had sighted no peak beyond this double peak, but, in spite of my hope and arguments of others to the contrary, I felt certain our goal lay further on. At all events 'Windy Camp' was too remote from which to make a dash for the summit; at least one more camp was needed, and that preferably at the base of the N. shoulder of 'Double Peak.'

Arriving at camp that night at 11 o'clock the thermometer read 32° below zero, and stood at 25° below zero at 7 o'clock next morning, with heavy snowfall throughout the night and up until nearly noon, when we set out breaking trail down the slopes until we met the others at 'Stage Coach' staggering upward under their heavy loads.

After a luncheon of ginger snaps, and hot tea from our thermos flasks, we equalized packs and set off up-grade wearied by that

exhausting fight of stepping two feet forward and sliding one foot back with a load to bury you deeply whenever you lost footing altogether.

Emerging in perspiration from the protected trail among the ice-blocks to the exposed slopes above Glissade Hill, we were struck by a piercing cold wind that sent a terrible chill through us, and for a moment it seemed that we must turn back to seek shelter, for there was none near at hand ahead ; but there now was no assurance of better weather below, and the Col Camp was three times as far away as Windy Camp, so as there really was no choice we were forced to forge ahead as quickly as possible, and by 10 P.M. all hands were stowed in their eiderdown bags for the night apparently little the worse for the ordeal, with the exception of Morgan, whose toes had a touch of frost-bite. It was now evident we had reached the limit for the safe use of rubber or oiled leather footgear, and must shift to dry tanned moccasins with heavy felt insoles and four or five pairs of heavy woollen socks ; this shift was made and the moccasins used until our return to the Col Camp.

It was evident next morning that Morgan should not attempt to go farther, and Hall generously volunteered to accompany him down, but asked first to be allowed to pack our heaviest load forward to the new camp site before descending. The 20th broke very cold and stormy and we did not start on our relay to the higher camp site until 2 P.M., which was too late in such low temperature to attempt to go the full distance desired ; but it was imperative we should make some progress forward, and our loads were finally cached at the rock-saddle of the main ridge at 18,500 ft., and we returned to camp at 6.30 to enjoy a delicious supper prepared by Morgan.

Another stormy forenoon followed a bad night with low temperature, and at 10 A.M. when Hall and Morgan, at the ends of their 150-ft. rope, set off down the trail, with its first willow just visible, conditions were too severe to begin an advance, so the climbing party, now reduced to six, turned in to await a call. At 3 P.M. the wind ceased, the fog lifted, and we were again in warm sunshine, so camp was struck and at 10 P.M. we had supper in our two-tent ' Ridge Camp ' at 18,500 ft., probably the highest regular camp ever established on the North American Continent. My diary entry was : ' Day not lost, fine trip, a bit cold but comfortable and camp alongside food cache, but not close enough for final dash if at all possible to make one more camp, preferably beyond Double Peak.'

Here at our highest camp the altitude told severely on some



Phot. H. F. Lambert.

AN AVALANCHE IN THE MT. LOGAN GROUP.

members and visibly affected all of us ; actions were painfully slow and inefficient, and the smallest exertion caused rapid breathing and a desire and need for rest. The gasping for breath and the rapid breathing clearly indicated that it was not exhaustion alone but altitude that was affecting us. Much of the time while at the high levels I noticed a metallic taste whenever I took a deep breath, the same as one sometimes experiences in an electric storm. Contrary to expectations, however, at this camp I slept soundly without the slightest feeling of suffocation, such as I had felt on a number of nights at lower levels and especially after a day of comparative idleness, while a day of heavy work seemed to free me from this distress at night.

The piercingly cold atmosphere next morning necessitated the use of heavy gloves and mittens, so that the operation of striking camp and fixing packs was very slow and delayed our start until about 11 o'clock, when we set off with all but one ' two-day ' bags of provisions, which now, with only six men, could be made to do for three days.

Our route down the snow and ice dôme, which we later came to know as ' Hurricane Hill,' was easy to negotiate and we made fair progress until we reached the soft deep snow stretches a mile or more beyond, when our pace became very slow, and at 2.30 P.M., after only about three hours of travel, we were forced to stop and rig Plateau Camp at about 17,800 ft. But this was none too soon, for almost before we were settled inside our tents a violent wind swept over the plateau and engulfed us in a driving snowstorm that continued throughout the night. My diary reads: ' Had supper at 4 P.M., discussed plans with all hands and decided to take first good chance for mountain. Have 8 days' grub and fuel for venture ; could hold out for 10 or 12 days on grub available, but do not think strength of all members of party would last that long for task ahead, probably two peaks to make ; will be severe strain ; must push and push fast as possible and then *some more*.'

June 23 is the day we shall all long remember, for it saw the end of our doubts and our fears, even if not the finish of our labours and our troubles. We climbed our giant to its topmost pinnacle and nothing else mattered to us so long as all hands got down safely.

During the night the storm raged with such violence that at times it seemed as if our tents would be whipped to shreds ; but by morning its force was spent, leaving us in a deep blanket of soft snow and a dense fog which enveloped us until about

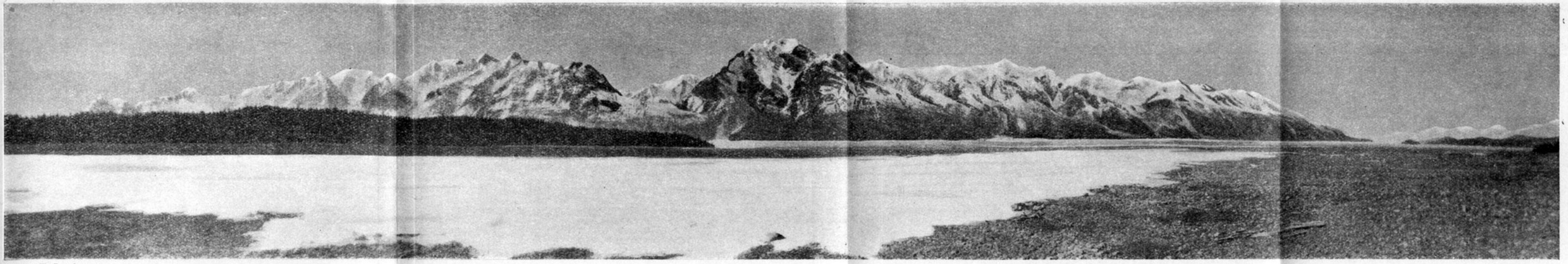
10 A.M., when a glaring sunshine broke through on the white slopes about us, and soon we were off, with show-shoes, on two ropes for the crucial test, Foster in the lead, his rightful place had he been able to have accepted the leadership of the expedition offered him in 1923 for a supposed 1924 campaign, when he was unable to leave home. By 11 o'clock we had circled intervening ice-ridges and were in view of the whole of 'Double Peak,' and an hour later reached the base of the final slopes that led to the saddle between its two dômes. Here we rested, had a snack, and shifted to crampons. The route to the summit of this double peak was steep but appeared to be free of difficulties, and although the peak undoubtedly was the western and lower one of the two highest shown on the map, with a difference of only 50 ft. in altitude between them, I felt we must climb both in order to be sure of setting foot on the highest point of the mountain. Hence now was the time to make this peak while *en route* to whatever might prove to 'angle' higher from its summit; so I worked our course zig-zag up the westerly face, cutting steps at a few points where steep slopes made them necessary, and in brilliant sunshine with an almost clear horizon we made the summit of 'Double Peak' at 4.20 P.M. The panorama that lay about us on all sides was truly an impressive one, and to the N.E. there extended as far as the eye could reach hundreds of square miles of rugged mountainous country uncharted and unknown, with a comprehensive view of the Saint Elias range to the S.W., never before so thoroughly seen by man. But to the S.E., a mile or more away and with a thousand-foot drop between, rose the final heights of our mountain which terminated in a spire-like summit, so we knew that we must climb still higher that day, for the Abney Level showed this summit to be at least 100 ft. higher than the one we were on. After a short rest, while another snack was eaten and some pictures taken, Foster, Carpe, and I dropped down the E. side of the peak to the saddle on the main ridge and there awaited the arrival of Lambart, Reade, and Taylor, who unfortunately had cached some of their packs on the trail below, and so were forced to retrace their steps and circle the base of 'Double Peak.'

At the saddle we cached our snow-shoes and other unnecessary articles and then, at about 5.40, in a light snowstorm with a raw wind blowing, we set out for the final leg of our long journey.

The ridge before us had two summits, the W. end being a level stretch, while the easterly end rose from a deep saddle,

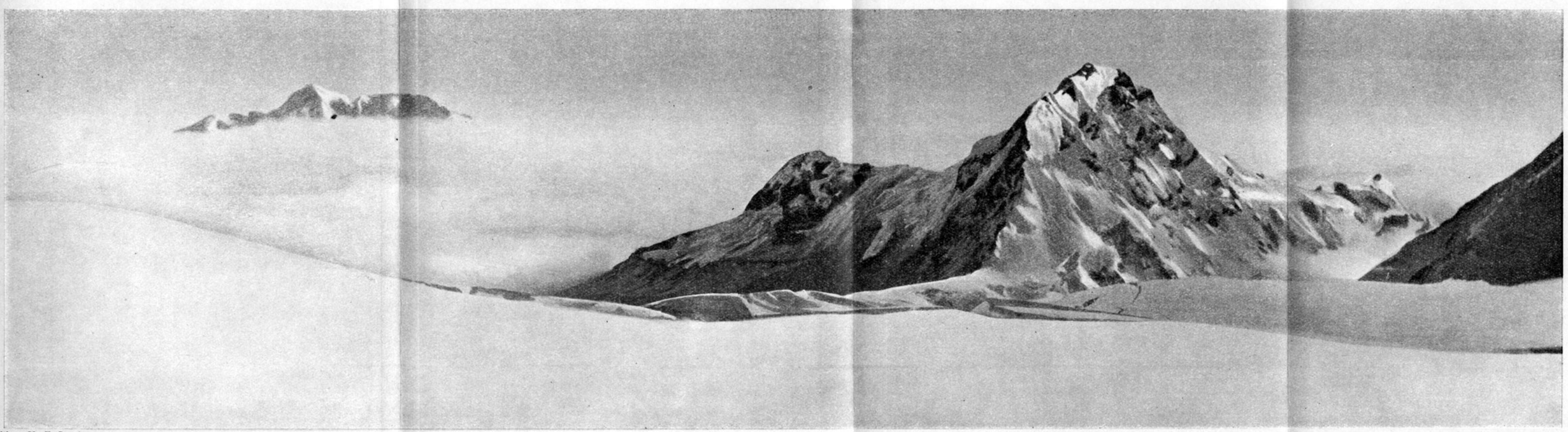
steeply, by a sharp snow-ridge to almost a spire-like top. The wind-blown snow surfaces were ideal going for our crampons, with only an occasional out-cropping of ice, which we circled as much as possible and thus avoided cutting more than about 200 steps, and in about two hours' time my head topped the N. ridge, there to see close at hand my first sight of the ' Spectre of the Brocken ' with a distinct rainbow circle around my reflection. Each member of the party had a good view of himself crowned with a halo of victory as he came up on the ridge ; it was a novel treat to all of us excepting Carpe, the only member who ever had seen this strange phenomenon. But there was no time now for us to tarry and experiment with it, for a sharp drop in the ridge still lay between us and the summit and might prove to be an impossible barrier, so I hastened on and was relieved to find the cleft opened towards our line of ascent from below, well filled in along the crest of the ridge, and by a sharp steep snow arête we quickly mounted to the final crest and our goal at 8 P.M., when there was a hand-shake and smile all around, for right then at least the joke was on the mountain instead of on any one of us.

Here again, although not nearly so clear, we could see over a vast area of new territory, but with the temperature near the zero mark and heavy clouds rolling in from the S.W., we stayed only long enough for pictures to be taken, to note a temperature of 4°, and for a record to be deposited by Carpe ; then began the descent, with Lambart leading. In the dim light of the approaching storm the route back to our cache at the saddle of the main ridge was well defined by the cut steps and trail in the snow, but from here on with no footprints or willow markers to follow, as our supply had given out a mile or more from this point, and the blinding effect of the heavy blast that now assailed us, it made the laying of a safe course a very difficult and dangerous task, for, with no dark object in sight to give us a sense of distance and direction, the white expanse seemed to lie in a horizontal plain all about us and thus effectually obscured the dangerous slopes and cliffs that bordered our right hand, until at last, with our horizon cut to but a few feet, further advance was too dangerous, and at Andy's suggestion I called a halt and we dug caves in the snow-slope to give us some protection from the cold wind. During the night the storm continued, with a heavy fall of snow, and a reading of 12° below zero was recorded before the thermometer was snowed under and lost, and there was slight improvement in conditions by noon next day, the 24th. But the altitude and



Phot. H. F. Lambert.

PANORAMA FROM HUBRICK'S CAMP.
Valley of Chitina River.



Phot. H. F. Lambert.

MT. ST. ELIAS.
From 16,820 ft.

KING'S PEAK, 17,130 FT.

exposure were seriously telling on our party, and it was imperative that we should get down to lower levels, shelter, and food as soon as possible; so at noon I ordered a move and began to get the ropes ready, but it was 2 P.M. before all six of our party could be got out of those miserable little snow-holes and ready for the start, with Andy this time in the lead. In spite of his great care in groping his way along through the deep snow on the steep slopes, at times both he and I were unable to detect the abrupt rises and drops in the slope, and within the space of twenty minutes Andy had a miraculous escape from injury in a fall of almost 30 ft. over an ice-ledge to a snow bank below, while I took a plunge of about 15 ft. Such were the uncertainties that beset us until Reade suddenly discovered one of our willow markers near at hand and we made straight away for it, for here was our trail back to Plateau Camp and all the comforts of good food, soft mattresses, and warm sleeping-bags that it contained. By carefully scouting each willow, Andy, Reade, and Lambart made rapid progress through the storm and reached camp that night at about 8 o'clock, while my rope, having stopped for a time while a pack was being fixed, lost touch with the other party in the lead, got turned around, and for an hour or more back-tracked towards the summit until Carpe raised a question as to the pitch of the slope we were traversing, for it fell away on the left hand when it should have been to the right; so after a further test for some distance we put about and wearily retraced our steps and soon, because of our haste in the foggy darkness, lost our willow trail and thus condemned ourselves to a night of slow trudging in a world of weird uncertainty with an occasional halt to catch our breath and two attempts to dig holes in which to protect ourselves from the severe winds while we tried to sleep. But muscular action was the only thing that brought relief to mind as well as body, so we kept moving in a world of unreality until with the direct rays of the sun the fog lifted, our horizon expanded, and familiar terrain came into view, and finally at 5 A.M. we reached camp after thirty-four hours of severe strain since leaving the summit of the mountain. Here again, as so many times on that trip, Andy was 'Johnny on the spot' and treated us to a fine breakfast, dinner, and supper of boned chicken, potatoes, fried biscuits and Ovaltine, before we turned in for our first real sleep in two days. But delicious as the comforts of Plateau Camp were in comparison with the bleak stretches above, it was evident that its nourishing dishes and warm bunks were not all that our party needed, as food and sleep did not bring

bodies and minds to a normal state, for all of us seemed to be very unsteady in our movements when we consented to move at all, and some conversations were decidedly flighty and incoherent, so it was apparent to all of us that we must get down to lower levels as soon as possible. Even so, it took five hours the next morning to have breakfast, fix our small packs, and abandon Plateau Camp with the two fine tents and all else that we did not absolutely require to see us through to the Col Camp.

From 11 A.M. that morning until 1.30 A.M. next morning, when we reached Col Camp, we passed through ordeals that in our weakened state almost spelled disaster for some of us, and perhaps were avoided only by members of the party taking turns at being strong while others perforce were weak. With hands and feet touched by frost, eyes weakened, one member snow-blind, and all exhausted from the severe ordeal, we were in no condition to withstand the frightful blast that struck us at the base of ' Hurricane Hill,' and then again the heavy snow-storm that obscured our route down through the maze of jumbled ice on the slopes to Col Camp ; but by 3 P.M. all hands were over ' Hurricane Hill ' and in the shelter of the ridge at the 18,500 ft. camp site, and at 1.30 next morning we were again at Col Camp, enjoying Andy's culinary art in a sumptuous meal that was worthy of several names ; breakfast and luncheon, or luncheon, supper and breakfast, whichever way we chose to look at it, for we had had no meal since 7 o'clock the morning before.

At Col Camp, with another outfit of pneumatic mattresses and sheepskins, Primus stoves, and an abundance of food and fuel, we rested for thirty-six hours, of which time my diary reads :

' With Foster busy treating and bandaging frozen fingers and toes, all first joints on my fingers and thumbs frost bitten and turning black, Lambart's toes frozen, Foster's big toe and two fingers, Carpe two toes and two fingers, Andy one finger . . .'

But soon after noon on the 28th we were again under way, and again abandoned everything we did not actually need to get us to the advance base camp, and, back-packing our outfit to the base of the ice-falls, where we had cached our Yukon sled, we shifted our burdens to it and made good time down our old trail with here and there some of our willow markers still appearing above the snow ; again back-packing from the snow-dôme down to the top of Quartz ridge, which we reached at 9 P.M., we came within sight of Cascade Camp 1000 ft. below.

Four weeks before, while relaying up our supplies, we made

the descent of this stretch in fifteen minutes, but this time, with snow in avalanche condition and muscles weary, we were three hours in reaching our base.

Here we found a note from Hall and Morgan announcing their safe arrival and contemplated departure after a rest of a day or so, and thus by notes we traced their movements out to Hubricks, from which camp they left for McCarthy a few hours before our arrival there.

By slow stages and with considerable rests at Cascades and Turn Camps we made our way slowly down the Ogilvie and Logan Glacier, abandoning our sleds and all heavy equipment at the end of smooth ice near ' Point,' and back-packing over to our Baldwin-Frazier food cache and arrived there at noon of July 4, to find that a bear or wolverine had solved the problem of opening cans and had left us little or nothing; and the same misfortune befell us at the next cache at Turn Point, but the joy of again being in the land of living things, of running water, and green vegetation after forty-four days on the ice more than made up for our losses. The next day the long rough stretch over the Chitina was negotiated in about seven hours, but not, however, until several of us were forced to abandon some of our cargo *en route*; even the weight of expensive unexposed films seemed too much to endure unnecessarily, and were left to mark our trail. On the N. bank we found a good cache of food hung high on a cross-pole by Laing, the naturalist, for us, and at 9 P.M. we turned in for a good sleep after a real meal of bacon, sausages, rice, sugar, butter, biscuits and tea. The next day all were again at Hubricks, where Laing welcomed us after his long weeks of solitary life with his animal friends, and here we revelled in the luxury of baths, food, and rest.

Then came the question of our return to McCarthy, still 86 miles away and with our party too weak to ' whip-saw ' the lumber for boats; and, all being anxious to get home, we finally decided upon rafts for a descent of the river, and here again the call for haste made us shove off on two rafts, three men each, that had insufficient buoyancy to ensure a dry safe passage down the turbulent Chitina at flood times. With great skill from long experience, Taylor managed to keep his raft in the northerly channels and in about ten hours ran 50 miles down to ' Rush Pond,' and next day from there he, Lambert, and Reade walked into McCarthy and sent out the news of the ' Conquest of Logan.' Foster, Carpe, and I were less fortunate, for, less foresighted, I allowed our raft to be

swept into the main channel, and soon, for an hour or so, we had a very exciting and dangerous time while running the rapids at terrific speed when a mere touch of the jagged rock shore-line would have capsized our craft and sent all of us to the bottom ; but eventually we got clear of these dangers and swung rapidly around a big bend in the river and close to the inside bank of the curve, when suddenly, without warning, a short cross-stream, flowing at great speed, dashed down upon us and bore the starboard side of our raft well under water. Hastily we jumped to port and took a sea on that side, and, suddenly shifting our weight again, this time the starboard side was washed completely under and we capsized. Carpe and I came up clear, while Foster was thrown under the raft and hit on top of his head, but even that was not enough to keep a good man down and in a moment he came up 10 ft. away and soon joined us on the upturned raft with all our outfit lashed to its under side. Finally running the raft aground at the head of a gravel-bar, we worked for an hour or more in the icy water cutting our outfit adrift and carrying it ashore ; then with the use of the upturned raft we ferried across to the right bank and camped for the night some distance below Short River, about 70 miles from McCarthy. Here, next morning, caching all but the barest necessities, each such process justifying more and more in our minds that declaration that ' Man wants but little here below,' we set out on our long tramp for McCarthy, which we reached at noon of the 15th, just as a relief party headed by Andy Taylor was about to search the Chitina Valley for us. And thus ended our interesting adventure on which Andy and I had spent exactly 180 days to assist in its accomplishment.

The First Direct Ascent of the Aiguille de Bionnassay by the North Face.

By R. W. LLOYD.

(Read before the Alpine Club, December 13, 1926.)

EVERYONE knows the Aiguille de Bionnassay, and no doubt some of you have stood upon its summit, or, rather, have sat upon it *à cheval.* It is nevertheless one of those peaks of the Mont Blanc Range of over 13,000 ft. which is the least frequented during the season. Some years there