the best season for this trip both on account of the length of time required and on account of the altitude of the peaks to be crossed. In the old days it was necessary sometimes to bivouac because of scarcity of huts and *gîtes*. This, in my opinion, should no longer be attempted, if possible, as few people are able to stand the rigours of a night spent at high altitudes unless highly specialised equipment be used.

The new Leschaux hut is an ideal one for climbers. Unusually comfortable and well fitted, it greatly facilitated this particular traverse of the Grandes Jorasses. In conclusion, the writer cannot resist the desire to express her appreciation of the great work of those who blazed the trail before her.

[We must convey to Miss Fitz-Gerald our gratitude for the interesting account of her party's magnificent expedition. We might add that we know of no other ascent of the mountain starting from the *French* side.—*Editor*, 'A.J.']

The Ascent of Mt. Bona, Alaska.

By ALLEN CARPE.

WHEN H.R.H. the Duke of the Abruzzi climbed Mt. St. Elias in 1897, he looked out to the N. upon a country still largely unknown. Mt. Logan and Mt. Bear had been named, but their heights had not been measured. Beyond them, nameless ranges stretched away toward the interior. On the far horizon two peaks seemed to stand out above the rest: these the Duke named Lucania and Bona, and he took compass bearings to substantiate their positions.

Sixteen years later, in developing the topography of the St. Elias Range adjacent to the Alaska-Yukon boundary, the surveyors found that they could identify these peaks from the data published by de Filippi.[1] Mt. Lucania lies 30 miles N. of Mt. Logan, on the Canadian side of the boundary; with an altitude of 17,147 ft. (5226 m.), it appears to be the highest mountain still unclimbed in North America. Fifty miles

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[1] Filippi, F. de, *The Ascent of Mt. St. Elias* (*Alaska*), by H.R.H. Prince Luigi Amedeo di Savoia, Duke of the Abruzzi, London, 1900, pp. 159–160.

farther to the N.W., near the N. extremity of the St. Elias Range, Mt. Bona rises to 16,421 ft. (5005 m.) above the glacial sources of the White River, a tributary of the Yukon. Its S. and W. slopes are embraced by various tributaries of the Chitina.

As Alaskan objectives go, Mt. Bona is comparatively accessible. From its N. flank originates the Russell Glacier, a fine ice stream some 25 miles in length, a principal source of the White River. The pack route to White River and Chisana [2] crosses Skolai Pass, a curious divide formed by a westward-draining lobe of the Russell Glacier 6 or 7 miles above its snout. By taking to the ice at this point, it appeared that the upper course of the Russell would afford an approach to the N. base of the mountain.

With this objective Terris Moore, Andrew Taylor and the writer left McCarthy on June 15, 1930. We went as far as possible by automobile. Harry Boyden met us with ten horses about a dozen miles out, on the Nizina River road. The route continues up the Nizina, ascending either the Chitistone, from the head of which Chitistone Pass leads to Skolai Basin; or, by going farther up the Nizina and crossing the lower part of the Nizina Glacier, the valley of Skolai Creek may be followed to the same destination.[3] The former is the shorter, but was

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[2] The official spelling, but local usage is 'Shushanna.' A declining gold placer district discovered about 1913.

[3] The topography is interesting. The Nizina River, a tributary of the Chitina, rises from the Nizina Glacier on the eastern slope of the Wrangell Range. Chitistone River and Skolai Creek are tributary to the Nizina from the E. The N. branch of the Chitistone heads at Chitistone Pass, which leads to the head of Skolai Creek. The E. branch of the Chitistone flows from the Chitistone Glacier which originates near Mt. Bona. This glacier formerly descended to the junction of the two branches and formed a temporary lake by blocking the N. fork, but in recent years the ice has receded. Skolai Creek enters the Nizina Valley well above the present terminus of the Nizina Glacier, and is therefore blocked by this glacier. Each spring the water fills up the lower part of Skolai Valley, forming a lake often hundreds of feet deep and several miles in extent. Eventually the pressure of the water and the movement of the glacier forms an outlet, the impounded water escapes, and an immense flood wave descends the Nizina. The head of the Skolai Valley has been occupied until very recent years by a shallow lake scooped out by the lateral tongue of the Russell Glacier which is the actual source of Skolai Creek; this lake has now largely silted up. These two lakes are found on some maps under the names 'Lower Skolai Lake' and 'Upper Skolai Lake.'

still impassable for horses because of snow on Chitistone Pass (about 5800 ft.). Even in the upper reaches of the Skolai Valley, almost 1000 ft. lower, deep drifts delayed the animals, and not until the fifth day, June 19, were all the loads brought in to the little relief cabin erected by the Alaska Road Commission about a mile from the ice of the Russell Glacier. Perfect spring weather had given us lovely views during the long journey, especially since reaching the Nizina Glacier. Now, across the white surface of the Russell, almost imperceptibly inclined to the N., rose snowy peaks of the Natazhat group and, to the right, a great shoulder of Mt. Bona. We gathered several hundred willow wands for trail markers, cut a stout 'gee-pole' for the dog-sleigh which we had brought with us—an amusing sight riding high on a pack horse—and arranged our supplies for the start on the ice.

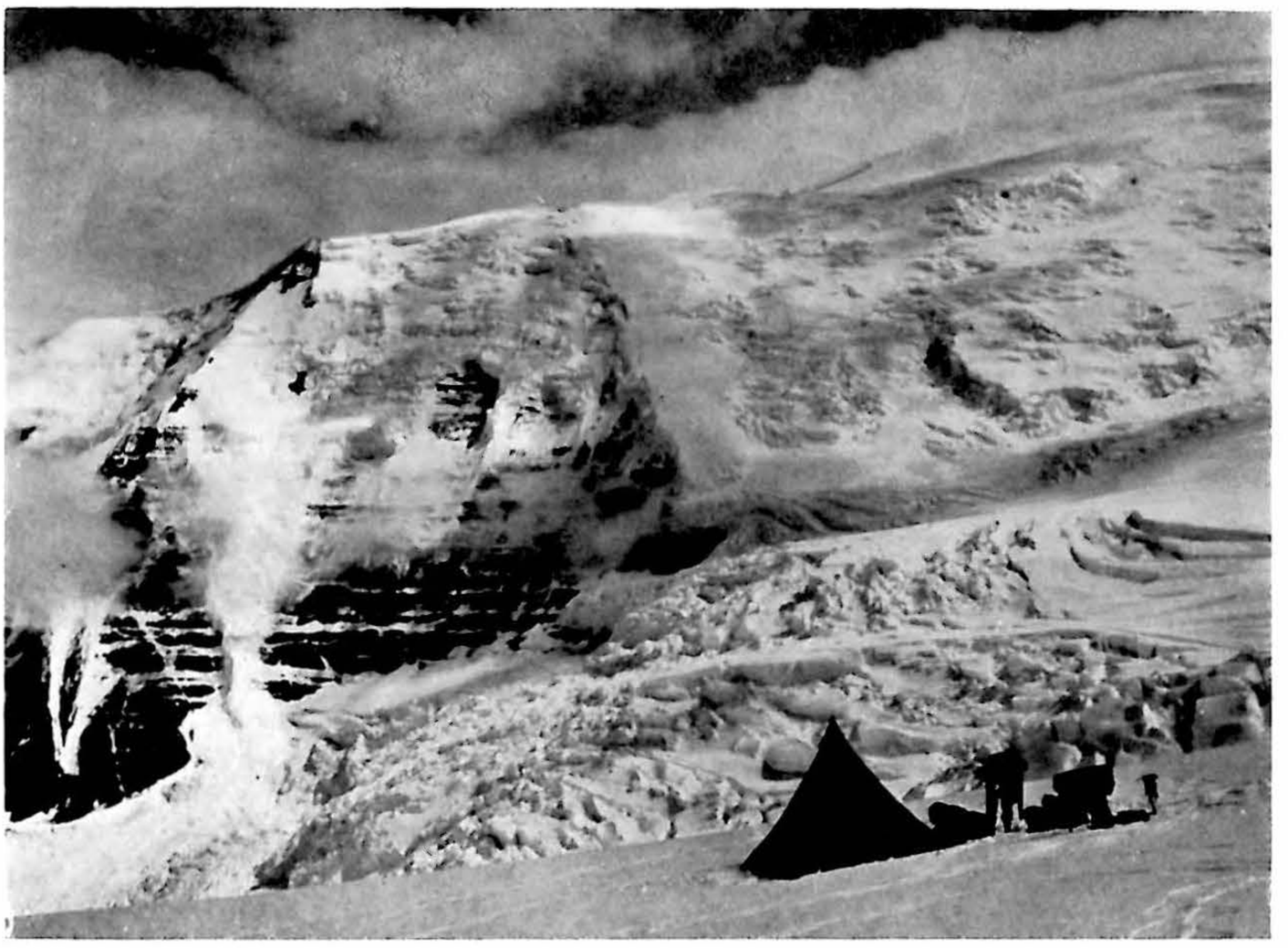
On June 20 the horses carried our loads several miles up the Russell Glacier and deposited us upon a moraine ridge near its left margin, at an altitude of about 5700 ft. From here we sledded in six days, with two intermediate camps, hauling two relays of roughly 300 lbs. on each march, to a point about 8700 ft. in altitude at the foot of the great N. face of Mt. Bona. In other words, we made two complete trips, with 300 lbs. each time. We had some trouble with slush areas and soft snow, and were forced to travel at night. Of course, at this latitude, over 61° N., one can see perfectly throughout the twenty-four hours.

The mountain rose above us in a grand wall 3 or 4 miles broad, 8000 ft. high, solidly clothed in ice of such steepness as to produce a fairly continuous system of icefalls and avalanche-swept terraces over its entire surface. We had studied this face on the way up the glacier and decided upon a route well to the right, where the sky-line dipped to a saddle little more than half the vertical distance to the summit. This left us, to be sure, a climb of several miles along the ridge, but the face was less broken here than directly under the summit, and it afforded more possible camping places. We had to count on at least two camps on the mountain. We also knew that there were two peaks, one higher than the other, and the map did not entirely dispel the possibility that the higher one might be found beyond what we could see; not until we got some distance up the mountain were we sure of our identification of the lower summit above the E. wall of the amphitheatre, to the left of the main peak. This possibility of an added distance to be overcome at high elevations lent special weight to available camp sites at a good height on the mountain.

We left the sleigh and one tent. Again we moved in two relays, this time with packs of 50 lbs. odd. At first we had to travel in the very early hours to secure passable going, and from considerations of safety, but above 10,000 or 11,000 ft. it does not thaw much. Snow-shoes and crampons alternated, according to steepness and character of the ground. The route led from the camp up a slope with an avalanche track between two icefalls—a steep pull and poor footing after sunrise—then to the right along a gently rising shelf strewn with occasional blocks of débris to another, broader corridor. Here we worked to the right-hand margin and ascended beside beautiful and spectacular pinnacles of banded ice. The upper part of this draw was cut across by long cracks, and became very steep. It brought us out on the lip of a crevasse which we followed back to the left, treading carefully on the narrow edge of ice, until a crossing appeared. We left the packs here the first day. On June 28 we brought the camp and continued up a fairly clear slope to 10,300 ft., where we dug out a tent platform and then went back for the cached loads. The 29th was devoted to the reconnaissance of a route to the saddle, and on the 30th we carried a light camp thither in a single trip, with supplies for a few days. The height we believe to have been about 13,000 ft. The snow-shoes were left a short distance above our midway camp, as the slope became too steep for them and we counted on a fair crust above that altitude; in this we were fortunately not disappointed.

We now enjoyed our first view beyond the mountain. Words are quite inadequate to describe the beauty of the range which we saw immediately across the nearer valley. Two glistening peaks 14,000 or 15,000 ft. high, yet of singular grace and audacity of form, capped a ridge extending from the main bulk of Bona somewhat S. of W., overlooking, as we later concluded, the head of the Chitistone Glacier. These peaks are not on the map, being located in the blank area which surrounds Mt. Bona on three sides. They are dwarfed by Mt. Bona itself so far as altitude is concerned. Their relation to the main massif is not unlike that of King Peak to Mt. Logan, and, like King Peak, their distinctive charm will some day attract climbers to them.

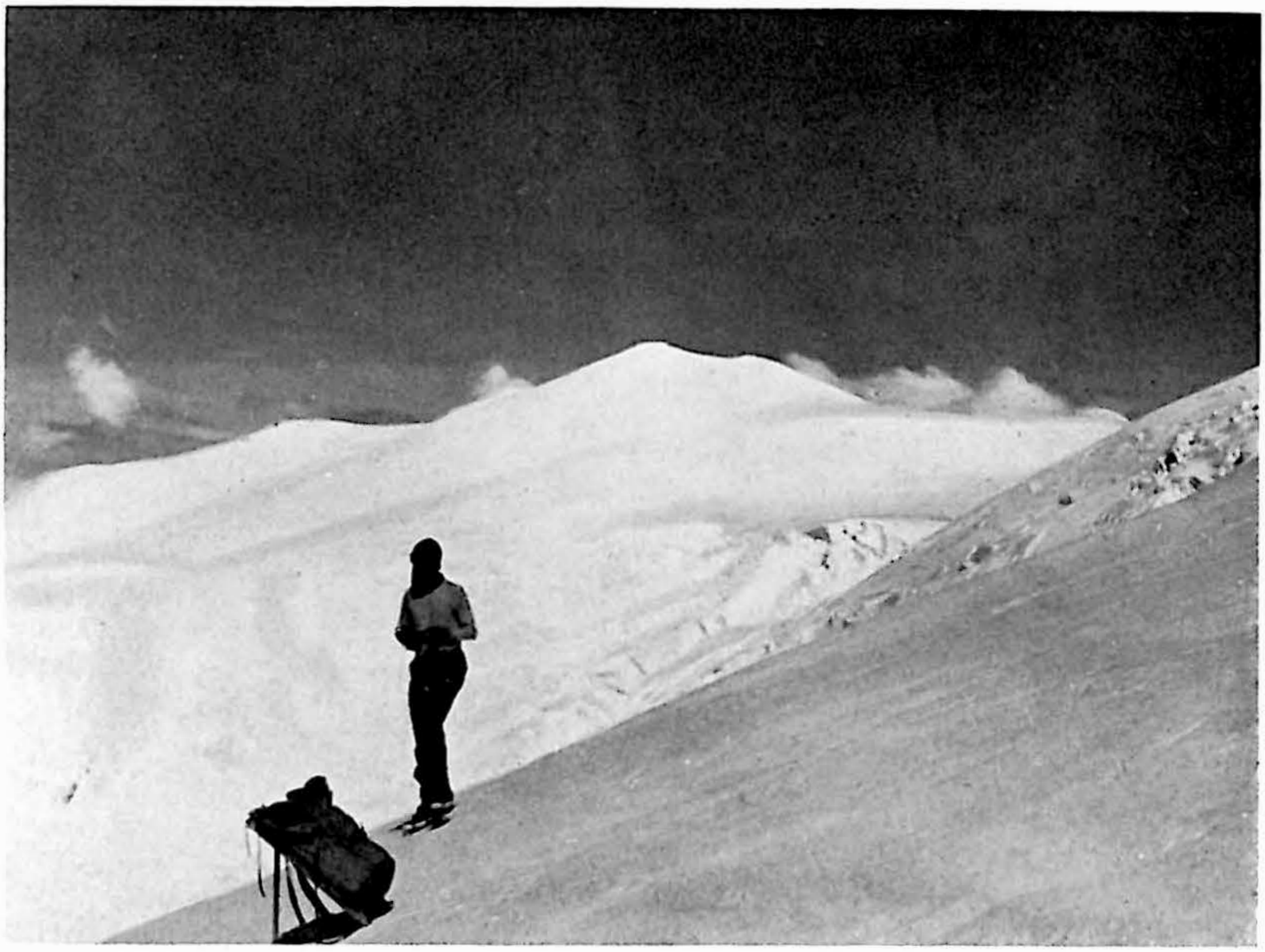
As to our own peak, the route looked steep but entirely promising. The morning of July 1 was cold and clear, the night temperature having been 7°, F. We were ready early, but clouds came up and we waited. Finally, at 8 A.M., we started up through thin mists. We got above them and had a glorious outlook across a cloud table at about 14,000 ft., the



Photos, Terris Moore.

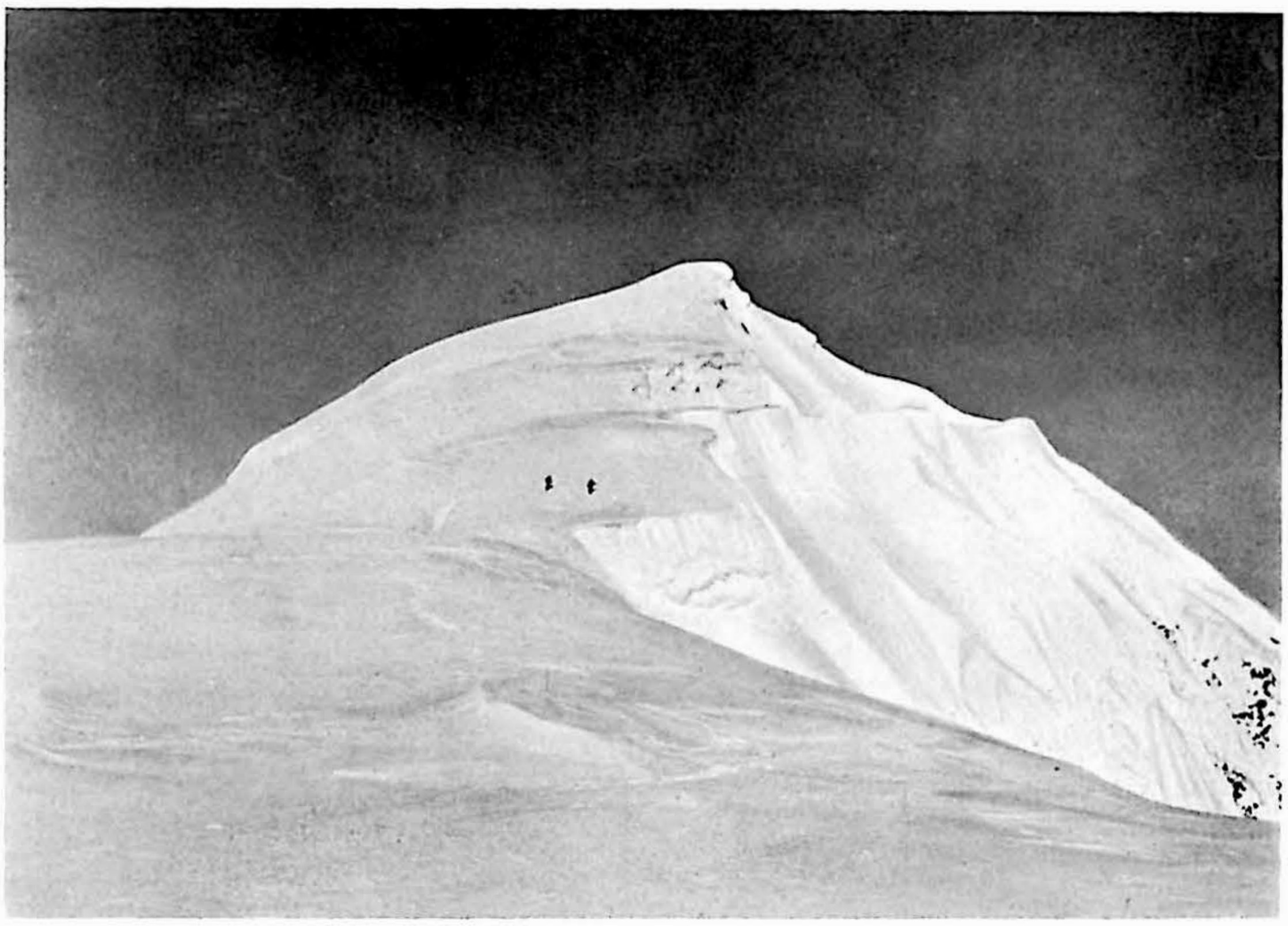
Camp at 10,300ft.

Approaching N. base of Mt. BONA.



Photos, Terris Moore.

E. Peak of Mt. BONA, from high up on main summit.



Summit of Mt. BONA.

peak of Mt. Blackburn, 60 miles distant in the Wrangell Range, showing clear in the blue sky. By noon we reached a hump on the ridge perhaps 1000 ft. below the summit and less than a mile from it. We saw Mt. Logan and King Peak plainly in the S.E. But the wind was increasing, clouds driving constantly higher, and it looked distinctly like a storm. The temperature must have been close to 0°. The writer, too lightly clad, was chilled through. Terris was more reluctant to give in. We could have pushed on to the top, barring complete loss of visibility, but the chances for a satisfactory view, or any enjoyment of the conquest, were small. We had food for several days in camp, and ample reserves close at hand. We acknowledged our first set-back and regained the saddle by 2 P.M. Snow was falling quietly all around us. The temperature was quite mild below the cloud level.

It snowed all night. The thermometer dropped to 18° only. We resigned ourselves to a spell of bad weather. But the morning of July 2 brought intermittent attempts at clearing, with impressive views of dark cloud banks in the W. and mists in the valley. At 11.30 A.M. we got under way once more for the summit. At 4.30 P.M. we reached the hump of the preceding day. The temperature was 4°, F., with little wind and quite pleasant. But great masses of clouds seemed always about to overwhelm us out of the W., billowing up to immense heights above the Wrangell Mountains and breaking against the beautiful sub-ranges of our own massif at the head of the Chitistone. The valleys everywhere remained filled. None of us had ever witnessed such magnificent scenes of clouds and mountains. A light wind trailed cloud streamers from the ridge of Bona, and the precipitous S. face dipped into a seething mass of vapour.

We hurried on, descending several hundred feet into a depression where accumulated soft snow bothered us, then up the last long slope to the top. It was 6.30 P.M. when we got there, and the thermometer indicated exactly zero.

Moments of sunshine alternated with periods of drifting mist and cloud. To the N. and E. we saw little except an occasional glimpse of the other summit of Bona, seemingly about 500 ft. below us. The Natazhat group was hidden. Farther to the S. we could distinguish Mts. Lucania, Logan and St. Elias, and we probably also saw Mt. Bear and Mt. Wood. Mt. Steele, Lucania's great neighbour, no doubt merged with it from this direction. In the W. everything was buried under towering clouds and no trace of the great peaks of the Wrangell Range ould be seen. Save for the clouds, we should have had the

experience of encompassing in one view no less than eight of the thirteen mountains of over 16,000 ft. known to exist in North America.[4] Mt. Bona is probably the only point from which such a number may be seen.

We regained camp at 9.15 P.M. The next day we packed up and went down through misty weather to the sleigh, wading in soft snow all the way. On July 4 we got through to the horse camp on the moraine in one long march, despite some trouble with a surface lake on the upper part of the glacier. It was surrounded by a wide slush area quite impassable for the heavy sleigh, and the only solution was to cross the outflow channel, which carried more water than was entirely comfortable. The ford was crossed without damage, however, and we got out of harness at 8.30 P.M.

We arose after a rather miserable night in the open, having failed to put up the tents because of the late hour, and being caught in repeated showers during the night. About us were the first signs of our return to the world of life: mosses with tiny star-shaped flowers growing somehow among the ice and mud of the surface moraine, a hillside dotted with brilliant patches of bluebells, forget-me-nots and windflowers, sheep grazing on the higher benches. Such things have poignant beauty after weeks on the ice. But a chilly rain followed us as we sledded down the last stretch of the glacier, mist hung about us and we could little more than guess at the best route. We got into very rough ice and finally abandoned the sleigh, carrying merely our bedding down to Skolai cabin for the night. Brighter weather on the morrow enabled us to retrieve the supplies left on the glacier and to bring the sleigh itself off the ice to a place from which it might be salvaged next winter. This done, we set out on foot on July 7 over Chitistone Pass and were in McCarthy on the 10th.

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[4] Mt. Logan (19,850 ft.); Mt. St. Elias (18,008 ft.); Mt. Lucania (17,147 ft.); King Peak (16,971 ft.); Mt. Steele (16,644 ft.); Mt. Bona (16,421 ft.); Mt. Sanford (16,208 ft.); Mt. Blackburn (16,140 ft.). Those not visible: Mt. McKinley (20,300 ft.); Mt. Foraker (17,000 ft.); Orizaba (18,209 ft.); Popocatepetl (17,888 ft.); Ixtaccihuatl (17,323 ft.). Not all of the altitudes are above question. The figure for Mt. Logan is based on photographic work only. King Peak is shown on maps of the Boundary Commission as 17,140 ft., although the text of their Report gives the lower figure. Mt. Blackburn was triangulated from distant stations by the Boundary Survey as 16,523 ft. Mt. Sanford is accorded a much lower altitude on older maps.