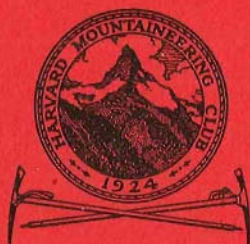


HARVARD MOUNTAINEERING



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THE
HARVARD MOUNTAINEERING CLUB
CAMBRIDGE, MASS.

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Foreword

THE Harvard Mountaineering Club is now in its third year. Organized in November, 1924, with some ten or a dozen charter members, it has grown rapidly, until there are now some thirty active members and fifteen qualifying members in the University, as well as thirty odd graduate members, some of whom are former active members and others Harvard graduates who are or have been active mountaineers. Active membership is limited to those who have had at least some real mountaineering experience in the Alps, Canadian Rockies, or equivalent regions. Qualifying membership was established last fall to enable men who had done little or no active mountaineering, but who were interested, to be carried in the club rolls, so that they might attend its meetings and take part in its other activities.

The original idea of forming such a club came to two Harvard graduates, who with an undergraduate were camped in the summer of 1923 at the base of a certain fine peak in the Canadian Rockies, which they were keenly hoping to climb. Fortune favored. The peak was climbed, and a year from the following winter several undergraduates were found who enjoyed mountaineering, and who themselves had felt a desire to unite with others of a similar interest into a definite organization. After one or two preliminary meetings, brief by-laws were drawn up and officers elected. Once the reticence, which is rather common to mountaineers, had been broken, several of the charter members were rather surprised to find friends in college who were as keen as they themselves. Several informal meetings were held during the year and a formal dinner. At least two or three climbing parties were organized for the summer as a result of acquaintances made through the club, and also a club trip to the White Mountains.

The second winter found the club meetings enriched with the recounting of activities of members during the previous summer. A formal dinner, two informal dinners, and several meetings were held, as well as a short club excursion to the White Mountains. In the spring, at a large open meeting before the University at the Harvard Union, Captain Noel told of the adventures of the Mt. Everest Expedition. Again through acquaintances made at

the meetings, informal groups went as far as Mt. Katahdin in Maine, and introductions to other clubs were arranged in several cases which led to our members joining and attending the camps of western clubs in the mountains.

During the third year of the club's existence, in addition to the continuation of former activities, several local rock climbs have been organized, and it is safe to say that several of the districts visited held considerable surprises in store for even those who have lived in the vicinity for several years either in college or longer at home.

The club will soon have lost by graduation from the University the last of its original active members. As it is primarily an undergraduate organization, though including in its active membership graduates as well, it must continue to find its chief motive power from the classes which come into college each year. In this respect its difficulties will be greater than that of the regularly established mountaineering clubs, and in this respect particularly the graduate members can aid the club. If they know of boys going from the schools to Harvard who have climbed or are interested, and will communicate with the Secretary, they will help the club, and help the boy by enabling him to come in touch with those in college whose tastes in this respect are similar to his own. It is sincerely hoped that all members will have this in mind.

Already movements are on foot in at least two other colleges in the country to found similar clubs (due indirectly possibly to the existence of our own club), and it should be a source of satisfaction to Harvard men to feel that once again, even if in this small way, Harvard has been able to take the lead.

HENRY S. HALL, JR.

In Search of Mount "Clearwater"¹

BY W. OSGOOD FIELD

WE had for some time been interested in the rumored existence of a mountain said to be over eleven thousand feet in height, situated near the head of the Clearwater River, some twenty-five to thirty miles north of Lake Louise in the Canadian Rockies. Personally, I was rather skeptical of its existence, as I had been in that locality three times and had never seen a mountain which appeared to rise much over ten thousand feet. Nevertheless, from a distant summit two of us had once seen a group of high rock peaks in that district. None of them had seemed to be outstandingly higher than the others, but because they had never been mentioned in the mountaineering literature of the Canadian Rockies, we decided to make a brief exploration of the region.

Accordingly, on July 5, 1925, our party, consisting of John Hubbard of Milton, Mass., C. D. McCoy of Roswell, N. Mex., and myself, with the outfitter Max Brooks of Banff and his wrangler Jack Wilson, set out from Lake Louise to locate and, if possible, climb Mount "Clearwater."

Two days later, while crossing the Pipestone Pass, we climbed a small promontory but could see nothing back of the east wall of the Siffleur Valley. A good observation peak was located, however, and a camp made at its base that evening. Next morning, on July 8, the three of us with Jim, a husky dog who had voluntarily joined the expedition, made the first ascent of this peak. No great difficulties were encountered, although we had underestimated the mountain's height, which we found to be actually in the neighborhood of 10,300 feet.

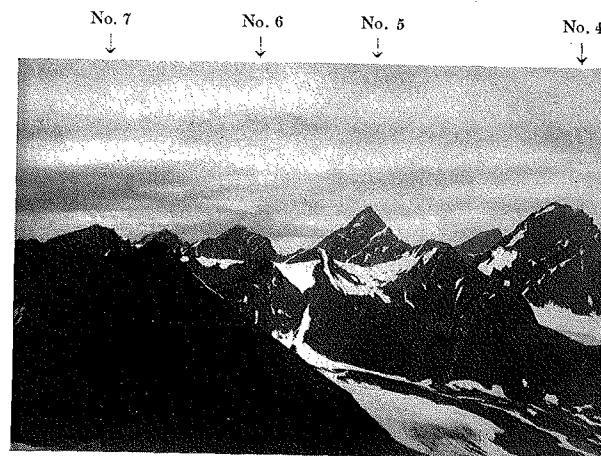
From the summit, we beheld a surprising number of peaks towering far above the one on which we stood. Several of these were surely over 10,500 feet in height, and yet had no names and had apparently never attracted more than passing interest from mountain climbers. In the absence of appropriate names, we gave each of the big peaks a number and plotted out a rude map. (See accompanying sketch map.) Two in particular immediately attracted our attention. These we had designated as No. 1 and

¹ The name Mount "Clearwater" is suggested by the author. — ED.

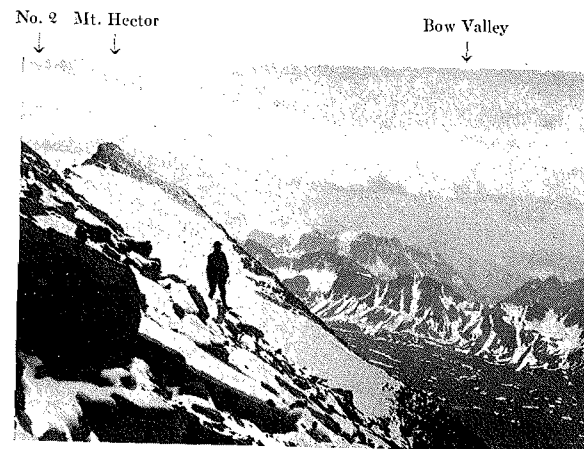
No. 5. The former rose from an unexpectedly large snow field to the east of our summit (No. 3) and certainly seemed to be almost eleven thousand feet high. From what we could see, however, it was not necessarily the highest of the group, for to the north of it rose an array of peaks any of which we should previously have been proud to ascend as Mount "Clearwater." Of these, No. 5 was by far the most conspicuous. Composed of a different sort of rock from its neighbors, it towered to an altitude about equal to that of No. 1 in a rudely pyramidal mass somewhat resembling a Babylonian zikkurat. We could see at once that it was one of the outstanding rock towers of the Canadian Rockies.

The ascent of No. 1 was immediately planned, and accomplished three days later (July 11). The climb was of greater difficulty than the one we had previously made, for starting at Clearwater Pass, we were forced to gain the snow field in order to locate the peak, and from there climbed by way of a steep ice slope to the west ridge of the mountain. Here we encountered some difficulties in climbing a set of transverse cliffs, made all the harder because of the loose condition of the rock and the outward dip of the strata. Eventually, however, we arrived at the summit nine hours after leaving camp. At the time we believed we had made a first ascent, but on our return east, learned that a survey party had climbed the mountain in 1919, and, to our amazement, had determined its altitude as 11,044 feet. This is the mountain which it seems logical should be named Mount Clearwater. To the west, northwest, and north rose the other peaks of the group, with none but No. 5 seeming to challenge No. 1's altitude. The accuracy with which we could estimate the height of No. 5 was greatly lessened by a cloud of dense smoke which blew from a forest fire to the westward, and all but obscured the mountain, making it impossible to see any peaks beyond. Nevertheless, we decided its altitude was not far from that of No. 1, — somewhere in the neighborhood of eleven thousand feet. Here indeed was one mountain, and probably two, higher than any of the Freshfield and Waputik Peaks, and probably the highest in that part of the Rockies situated between Mount Hector and Mount Forbes. They had frequently been seen from a distance, but because not located on or near the Continental Divide, their height had been underestimated and the whole group overlooked.

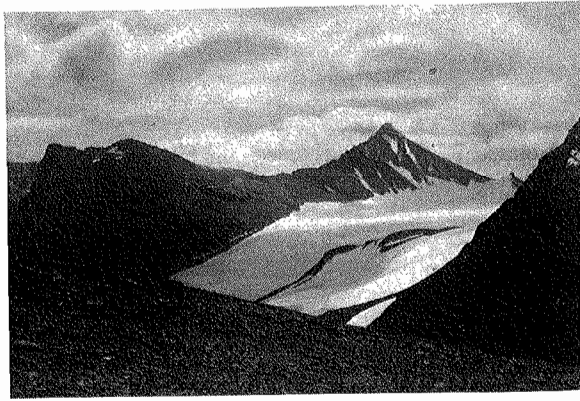
To climb No. 5 now seemed to us rather more than we could attempt, for our two glimpses of the mountain had failed to suggest a practical route of ascent, and indeed the climb looked very difficult. Nevertheless, anxious to discover the best route of approach, on July 13 we moved camp six miles down the Siffleur to



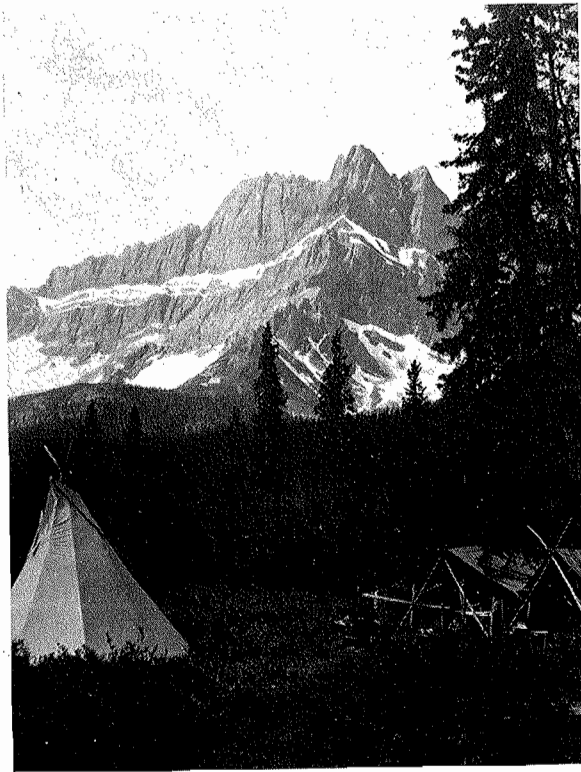
Northern peaks of the Clearwater Group from No. 3



Looking South from near summit of No. 3



No. 1 from northern shoulder of No. 3



Camp in Siffleur Valley

a place where a side valley led southeastward in the general direction of where No. 5 should be.

Next morning (July 14), we made an early start, and in a few hours reached the upper part of the valley. No. 5, appearing as formidable as ever, towered directly in front of us. To climb it was out of the question, as, aside from the difficulties involved, there was insufficient time for a serious attempt. We therefore started up a smaller peak to the west of it, and four hours later stood on its summit (ca. 10,000 feet). This peak we designated as No. 5 West.

We could see that the valley up which we had come afforded an excellent approach to No. 5 and its immediate neighbors Nos. 4 and 6, while a valley to the north of us gave access to the lower slopes of No. 7. To the northwest across the Siffleur, in another group, rose a large mountain obviously over 10,500 feet high, while many miles beyond it, across the Saskatchewan River, towered Mount Cline, perhaps not quite 11,000 feet as maps usually indicate, but surely not many hundred feet less.

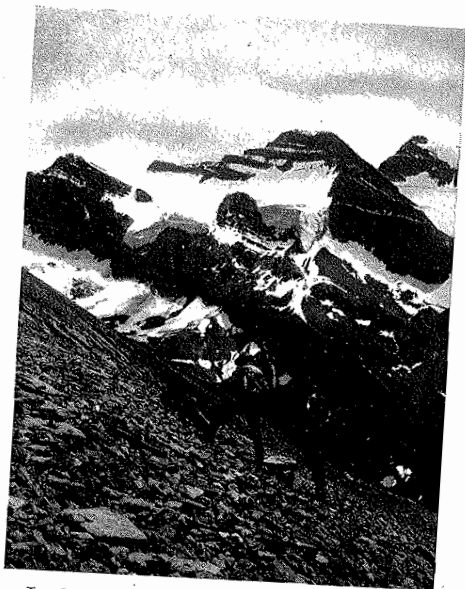
Our time was now getting short, as we intended to return to Lake Louise via the Saskatchewan and Mistaya Rivers and the Bow Valley, so no further climbs or observations could be attempted, and on July 15 the return journey began.

In the place of a single Mount Clearwater we had found a group consisting of at least six peaks over 10,500 feet and fully ten more over 10,000 feet.

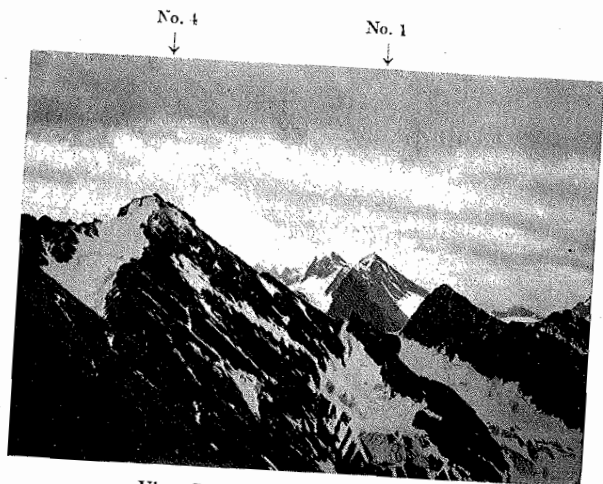
The highest peaks should be approached from the Siffleur Valley. Several draws lead from it into the heart of the mountains to the very base of the various peaks. The valleys on the eastern slopes, entering the Clearwater Valley, are for the most part very difficult to ascend because of lakes, which completely fill their floors, and numerous perpendicular cliffs which occur between these lake basins. Furthermore, due to the westward dip of the strata, the mountains are of the "writing-desk type," and have a very steep eastern side and a comparatively gentle western slope. Thus most of the routes of ascent should be found on the western ridges and faces.

The glaciers of the district are not extensive, the largest, occupying the basin between Nos. 1, 2, and 3, having an area of perhaps three square miles.

Due to the fact that these mountains are fifteen to twenty miles east of the Continental Divide, where the snowfall is greatest, and therefore the glaciers most extensive, these peaks have comparatively little snow and for that reason are apt to be shunned by mountaineers as merely uninteresting shale piles. This con-

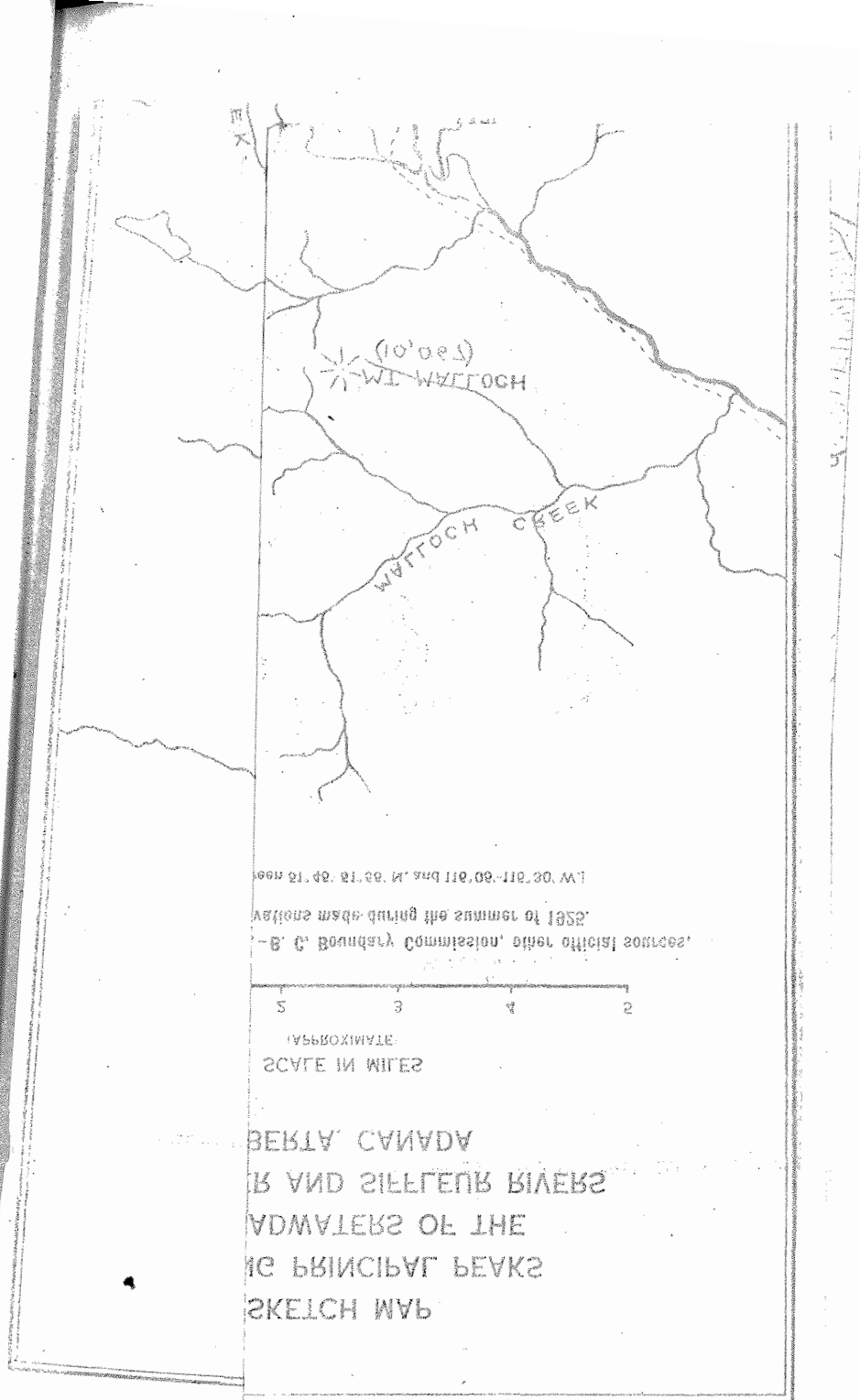


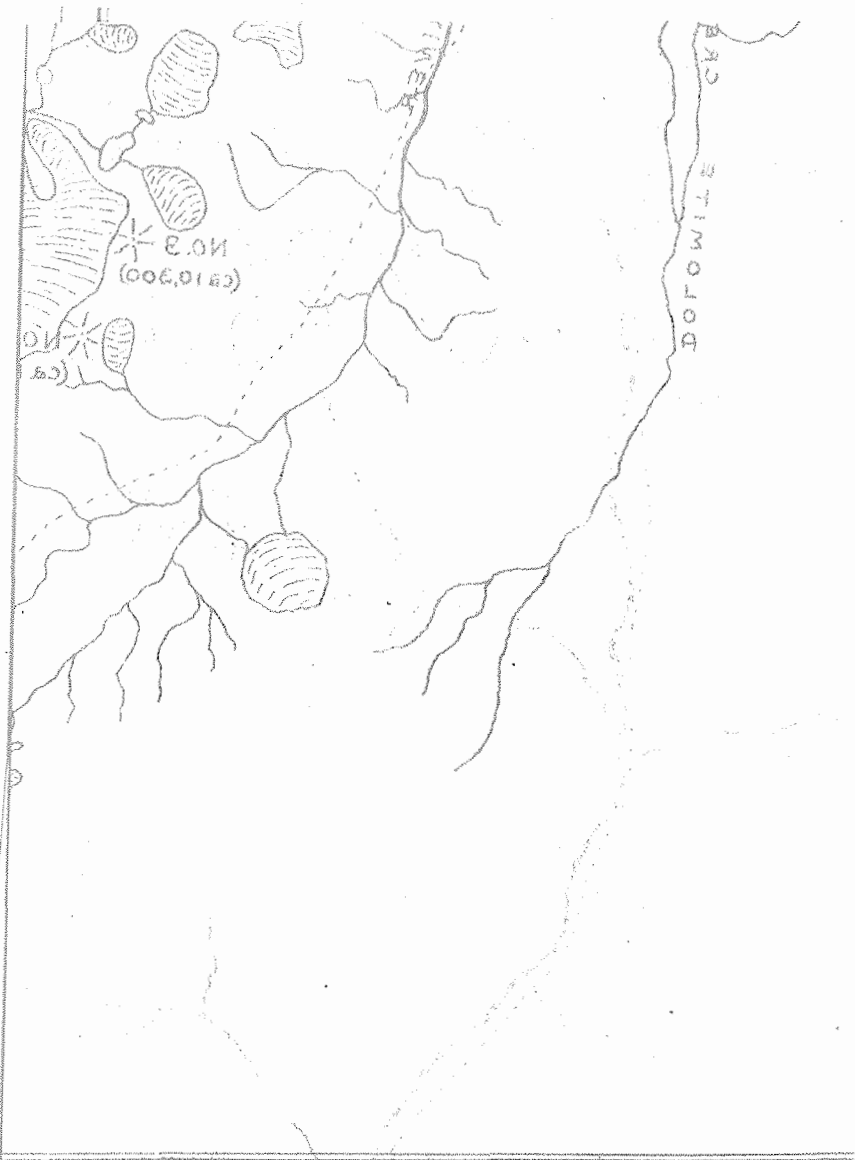
Looking South from slopes of No. 5 West
Peaks at right are 10,000 ft. high.



View Southeast from No. 5 West

[10]





ception is to a certain extent true, but there are still climbers who exult in the mere attainment of a virgin summit of high altitude. Certain it is, also, that No. 5 will never be considered as a mere pile of shale by anyone who attempts its ascent. It is a beautiful rock peak and, from what we could see, may present very considerable problems to mountaineers.

Finally, these peaks are an excellent training ground for inexperienced climbers. Guideless climbing can be resorted to in this region by anyone possessing any mountaineering ability whatsoever, and in this way perhaps more actual fun and satisfaction may be gained than in following a guide or an experienced amateur up more difficult mountains.

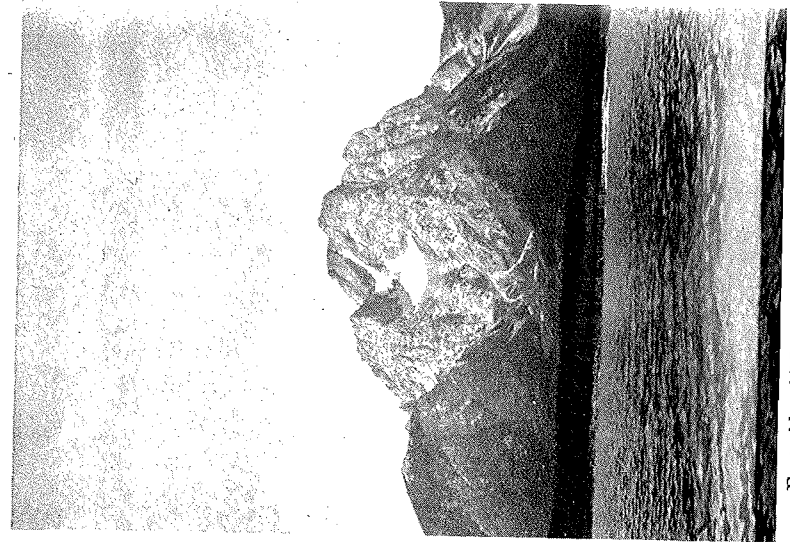
Mount Moran and the Tetons

By BEVERLY F. JEFFERSON

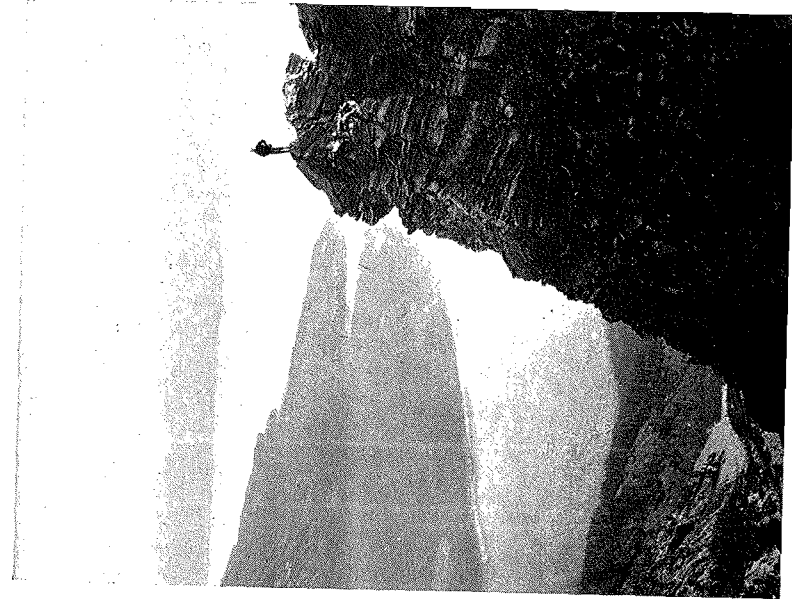
THE Tetons, a range of peaks in northwestern Wyoming, deserve wider recognition among American mountain climbers. Forming a background to a chain of beautiful lakes, they rise abruptly from five to seven thousand feet above their base in a great granite mass of blocks, spires, shafts, and pyramids. The climbing possibilities of real interest are almost unlimited. The Grand Teton, 13,747 feet, is the best and highest peak in the range. It looks like some supernal mosque, with its encircling cluster of minaret-like pinnacles, each of which in itself offers fascinating rock work, while few have as yet been climbed. The main peak, with only one "possible" route to the summit, presents bewildering problems of sheer faces and knife-edged arêtes that are broken up by pinnacles and gendarmes. To the distance of five miles south and as many miles north along the range, at least seven more main peaks contribute a profusion of similar possibilities for exceptional rock climbing and virgin routes of ascent.

Mount Moran, five miles north, is the second finest peak in the range. Its altitude is 12,100 feet. In contrast to the Grand Teton, from the east it appears to be a great black, polygonal pyramid, truncated to a flat top, and without any encircling spires or gendarmes. On its fore-face is a glacier, shaped like a frying pan, the handle of which runs up almost to the top in a narrow ice couloir. It was by this couloir that the first two ascents of the mountain were made. Above the couloir by either of two ice chimneys, one may reach the top of the pyramid, which will be found to be a narrow broken arête, dropping off on the further side in a vertical face. The arête joins the double summits, the southerly of the two the higher by one hundred and seventy-five feet.

It was the north and lower summit that LeRoy Jeffers reached by the snow couloir and chimneys above the glacier, in July, 1919. Another party, attacking the peak a year later by the same route, made the first complete ascent by reaching the south peak. Jeffers returned later, and with a single companion made the second complete ascent, following his old route. It is not to be questioned but that he would have made the first complete



East side of Mount Moran from Jackson Lake



Looking down on "buttness" arête of Mt. Moran

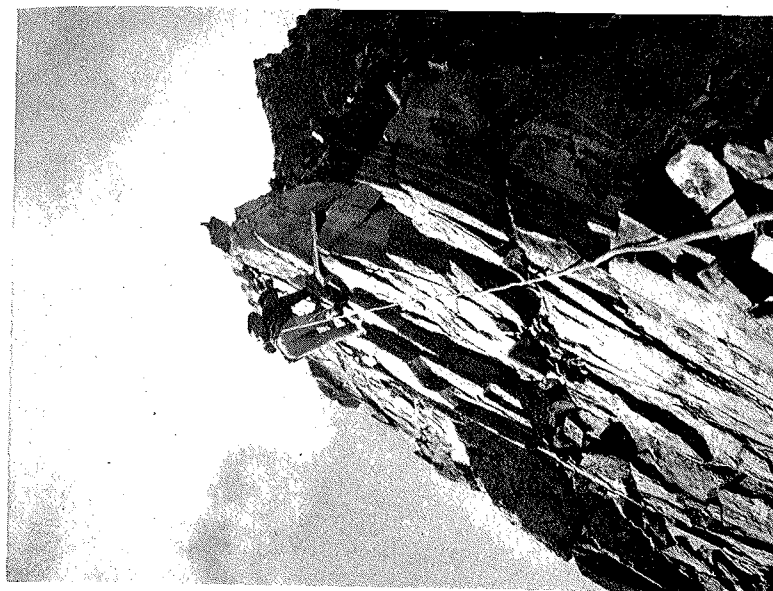
ascent by crossing the arête from the north to the south peak, if darkness had not overtaken him, and to him alone belongs all credit for discovering the first route up Mount Moran. The third ascent, the first by rock, was made by two men from Lake Forest, Illinois, by the north arête to the north summit, and thence to the south summit via the connecting arête. Robert Cleveland and myself made the fourth ascent of the peak in August, 1925, by the buttress to the right of the glacier, thence to the north arête, where we followed the route of the third ascent to the summit.

We came down from Yellowstone Park by car to Jackson Hole and remained at the lodge in Moran as Mr. Sheffield's guests through two days of bad weather. It was not until the third day that the clouds cleared and for the first time we could look across Jackson Lake at Mount Moran, nine miles away. We crossed the lake in the afternoon by rowboat, and pitched camp that night on the southern spur of the southwest bay, directly below the east walls of the mountain.

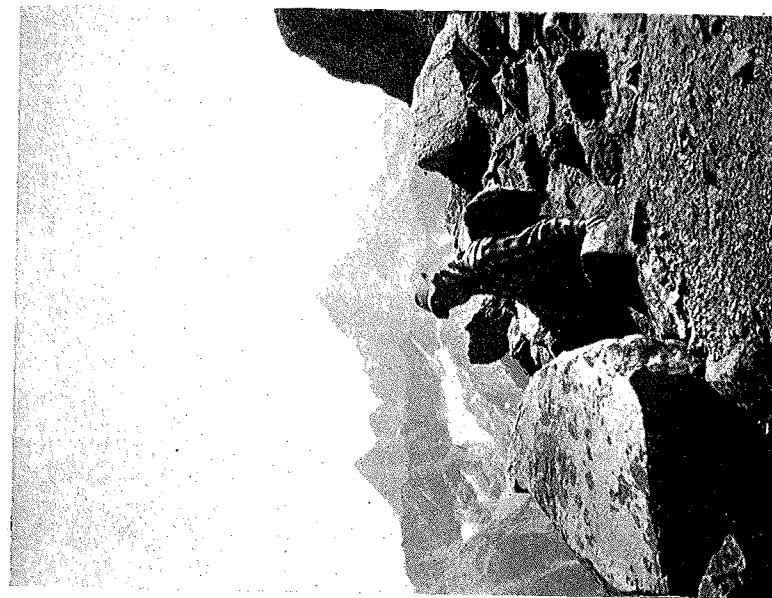
These walls had been subjected to a careful binocular study during many hours of the day. The buttress to the north of the glacier had been decided upon for the attack. A route of ascent was planned, which was followed in every detail the next day, and we rolled into an immense pile of balsam early that night, hoping for the best of weather.

We left camp just before the morning star faded into the dawn, and all weather signs pointed to a good day's climbing, if not to a successful ascent. From the lake level at 6700 feet up to about 7500 feet it was necessary to break through second-growth trees and underbrush, the most arduous part of the day's work. Instead of attacking the buttress at its base, we climbed up to the foot of the glacier and attacked it on its side, working around to the middle of its face by ledge traverses. Shortly we reached and climbed down into a large couloir in the middle of the buttress. Consistently broad ledges of varying height in the bottom of the couloir brought us up to the buttress arête, which led to the north arête previously referred to. The buttress arête dropped off on the right almost three thousand feet, and a thousand feet further below was Moran Canyon, the east end of which was in full view. Looking up the buttress arête we could see on the right where the north arête rose sharply from Moran Canyon and joined it.

Turning to the left off the buttress arête we worked up along its side just above the place where it dropped off onto the glacier. We checked our approximation to the course selected by passing two small patches of snow, the first on the left, the second on the



The north arête of Moran below the north summit



The Grand Teton from the north summit of Mt. Moran

right. The climbing was excellent, but not hazardous, for walls, ledges, and chimneys furnished good holds in dependable rock. Finally the junction of the buttress arête and the north arête was reached and we turned sharply to the left, following the north arête. About twenty yards below us on this arête, a small cairn was discovered which undoubtedly marked the route of the third ascent.

The climbing along the north arête to the north summit was extremely fine. The arête dropped vertically to the west on the right in a two thousand foot smooth wall, and to the east on the left at an increasingly steep angle until we got up to the north, summit. It was spectacular, but the fine pitches, firm rock, and reliable holds prevented it from being dangerous. Soon we were walking across the north summit, which was about a hundred feet square and covered with a coarse gravel of granite, with the higher south summit and connecting arête in full view.

The climbing on the connecting arête turned out to be the best of the whole ascent. There were the same fine pitches, firm rock, and reliable holds, but two or three small gendarmes occasioned traverses out over the west face. There were sharp descents and ascents in crossing the notches made in the arête by the two ice chimneys, referred to before as connecting the snow couloir from the glacier with the summit arête.

The top of the north summit was covered with frost-cracked boulders, and a large cairn was found on its highest point. In a tin box the complete records of the three previous ascents were found, and we had only to look about us to see the many possibilities for interesting new routes of ascent in the future. Among the most interesting seemed to be one by the northwest arête from Moran Canyon and a second by the southwest arête from Leigh Canyon. Ascents made from Leigh Lake also should be very good.

Below, to the east, all of Jackson Hole was in full view. The winding course of the treacherous Snake River, with all its braided channels, could be traced across the flats. There was the Gros Ventre, which poured out of the mountains in the east to join it, and to the southeast was Sheep Mountain, well known to the big-game hunters. Jackson Lake was a great blue sheet beneath the mountain, and we could see our route between the islands, followed when we had rowed across the lake from Sheffield's. There were many things to look at from the summit of Moran, and the allotted hour on top passed quickly and we left reluctantly.

In descending, our route of ascent was followed, with the exception that upon leaving the north arête we followed the crest

of the buttress arête instead of the south side. The climbing was distinctly more difficult, with long pitches and short traverses around small gendarmes, and always the great drop to the north just beneath us, but good rock and good weather kept it from being hazardous. In our descent of the couloir we got into difficulties by going down too far before traversing to the right by ledges across the buttress, and we had to climb back up a hundred feet. We then crossed the ledges and got off the buttress, reaching our camp soon after. The climb, excepting an hour on top, had required just twelve hours, seven in the ascent and five in the descent.

The Tetons may be approached most easily by stage or automobile either from Victor, Idaho, the nearest railroad station, or from the Yellowstone to the north. A base camp at Jenny Lake below the east faces of the Grand Teton would make the best center for climbing activities, because it can be reached by automobile, there is a small store on the lake for necessary food supplies, and it is within easy walking distance of all the mountains. If Mount Moran were the objective, one might easily back pack fifty to sixty-five pounds to the base of the mountain from Jenny Lake, a distance of not more than seven miles and a climb no greater than six hundred feet. Camps accessible to desirable sides of the Grand Teton could be made just as easily, and in the case of the South and Middle Teton, it would be even easier. Of course pack horses can be rented at reasonable rates by the day or week, but they are not necessary. When the fact is appreciated that the Tetons are the nearest mountains to the East offering real climbing, and when it is realized that the Tetons afford the best climbing and some of the grandest and most beautiful mountain scenery in our country, then these mountains will receive that wider recognition which they deserve among mountain climbers of America.

The Lyell Peaks and Mount Forbes

BY ALFRED J. OSTHEIMER, 3RD

GENERAL TOPOGRAPHY¹

THE little known group culminating in the Lyell Peaks and Mount Forbes lies on the Continental Divide midway between the Freshfield and Columbia ice fields, sixty miles from Lake Louise, Alberta. The way of approach is from Lake Louise via Bow Pass, Mistaya and Saskatchewan Rivers, and Glacier River to Glacier Lake in the valley dividing Forbes from the Lyells. To ascend Mount Forbes and the peaks of the Mons ice field, a fly camp is needed, best placed near ours on the slopes of Division Mountain. Forbes is the most attractive climb south of the Glacier Lake depression, but Mounts Cambrai, St. Julien, and Messines are very interesting-looking first ascents still open. These may also be reached by Forbes Creek, but the ascent is more difficult and Forbes becomes a hard rock climb, — not the long snow-and-ice ascent of its northern slopes.

From Bush Pass at the head of Forbes Creek, it should be possible to drop over into Icefall Brook Valley with a possible chance to climb Mounts Arras and Lens, fine first ascents, and the twin-headed Bush Mountain, a beautiful and exciting mass to the west offering great adventure in high British Columbia country. It would be best, if attempting the Bush, to do as much work on the eastern side of the Divide as possible, for the British Columbia side is thick, and heavy, and most annoying.

For the best results among the Lyell Peaks a high camp can be well placed in our delightful meadow by the southeast icefall. Mount Lens can also be reached — probably much more easily than from the creeks above Icefall Brook — by crossing directly west from our routes on the Divide and striking a curving ridge slightly to the northwest — the northeast arête. This route will probably consume about fifteen hours, round trip, from high camp if the arête is in good condition. It might also be possible to attempt the Bush from here, but better to try crossing south of Lens than on its north side because of treacherous ice descending west of the 3-4 col² on Lyell to the available branch of the Bush River.

¹ Alberta, British Columbia, Boundary Survey sheets 18, 19, 20, cover this whole area.

² Col between Peaks 3 and 4 of Mount Lyell.

Peak 4 of Lyell is very beautiful, unclimbed, and should prove an interesting climb. From the 3-4 col a jagged arête looks at best most discouraging and hopeless. The best way would probably be to attempt a traverse of Peak 5 and cross the intervening arête to the summit of Peak 4, but even this presents great climbing problems and difficulties. However, this latter seems the more feasible way.

North of the Lyells lie two unclimbed peaks, — Farbus and Oppy, — very promising ascents. Cliffs ring their eastern faces; their western sides are not easily accessible. There appear to be two possible and equally feasible routes of ascent. One of these would be to cross to Farbus from the northern side of Peak 3 of Lyell, reached by the 2-3 col from the Lyell ice field, and work from there across to Oppy. This, though a long way from climbing camp, is possible. The other route is by working from the Alexandra River headwaters up one of the corners of the group. Of the two, the first seems more practical and likely to succeed, though the second presents unknown quantities.

THE ICE BASIN OF MOUNT LYELL

The five eleven-thousand-foot Lyell peaks lie at the north end of a large ice basin, containing approximately thirty-eight square miles. This basin is drained to the east by branches of the Saskatchewan River, emptying into Hudson Bay, and on the west by branches of the Bush, which flows to the Pacific by the Columbia River.

Of the glaciers which fringe the ice field, the largest, the southeast, descends by a tremendous icefall into the valley of Glacier River, a fork of the West Branch of the Saskatchewan. The southwest Lyell glaciers drop between Mount Lens and Division Mount. The waters from the east glacier form Arctomys Creek in the "Valley of the Lakes," which in turn joins the North Fork of the Saskatchewan. On this nearly conical group of peaks forming the Lyell massif the ice drops abruptly on the north and west in spectacular icefalls.

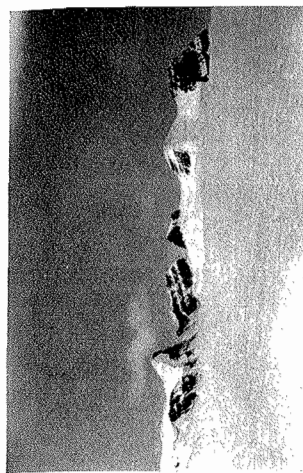
Like five fingers the peaks of Lyell jut from the ice field. Number one stands out to the east in a great block; number two is a tremendous snow mass, flanked on the east by great ice cliffs; number three is isolated and sheer, protected on all sides by a gigantic overhang, — rock and ice both towering forbiddingly; number four seems a long rock ridge, while number five hides its northern drop behind a gentle southern snow slope.

On the morning of July 5, 1926, Dr. J. Monroe Thorington, Dr. Max M. Strumia, Edward Feuz, and the writer, were heading

toward these Lyells at 3:30. Forty-five minutes brought us to the snow west of Arctomys Peak, and in another forty minutes we were on the upper ice field. The spring snow was in good condition, but we were sorry to find it so plentiful. For the first time we now saw the five peaks of Lyell; no longer was our immediate task such a mystery. While stopping for a bite of food on the ice at 6:20, we decided to strike for the col between Peaks 1 and 2. It was a long snow pull, with stops again at 8:10 and 8:30. A bergschrund offered no difficulty and we gained the summit of Peak 1, 11,370 feet, at 9:50. Near us, the spring snow constantly avalanched on the steep east ice face of Peak 2.

In an hour and a half we had stumbled and slid through deep snow to the snow col between Peaks 1 and 2, and up the slopes of number two. By traversing north and then south we again found an easy passage over the bergschrund, reaching the summit of number two at 11:15, 11,495 feet. This summit we traversed immediately and descended into the col between numbers two and three at 11:35 A. M. for a light lunch. A great bergschrund blocked our further upward moves on the ice; rock cliffs proved sufficient defense to keep us from the summit of one of the highest unclimbed peaks in Canada. At 2:30 P. M. we roped once more and traversed northward, around rock cliffs and above icefalls. No way appeared up this mass. We had therefore to encircle it — by the arête running northward to Farbus, over the tremendous icefall into a branch of the Bush — until we were brought up by a rock wall under the col between Peaks 3 and 4 at 4:30 P. M. Finally, after some most interesting rock work, we struck home across the ice field. A wolverine track led over from the col, from British Columbia into Alberta. Had old "Devil Claws" made this crossing, up that icefall and wall?

July 6 was a day of rest for us. The hot weather that we had encountered since our arrival at our high camp, 6800 feet above sea level, was in interesting contrast to the cold tang of the atmosphere at the same altitude at Bow Pass. Three of the climbers left at 3:30 A. M. on July 7 — the fourth remained in camp with a painful sinus — but the heavy fog and rain forced them back to camp; and at 2:30 on the morning of July 8 the weather was still too bad to make a start. It cleared later, however, and two of us moved along in search of pictures and adventure (9:10 A. M.). We ascended a rocky point west of the high camp, crossing from there to the Continental Divide at 1:20 P. M. A beautiful quartz crystal of slightly more than five inches delighted its finder. Some excellent views were obtained, but the climb through deep snow on an empty stomach forced us homeward. Some very good



The Five Lyell Peaks from the Lyell Icefield



Bush Mountain from the Divide

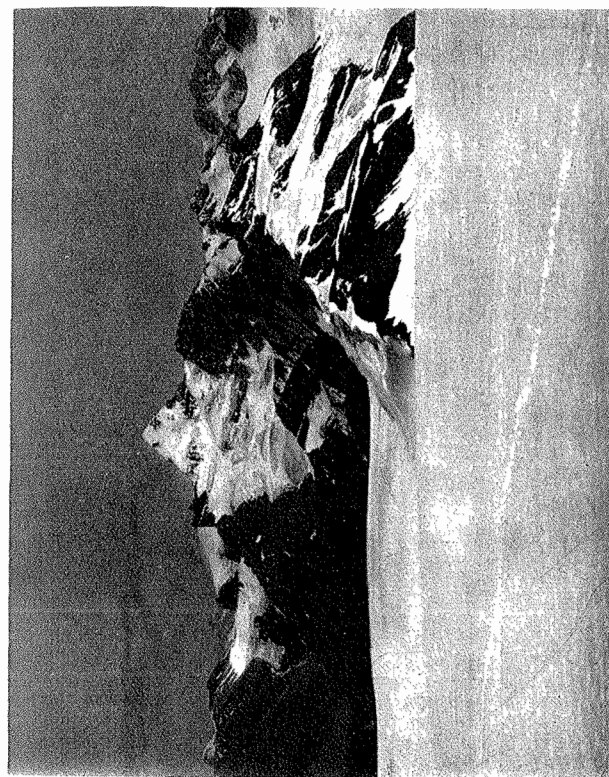


Photo — Interprovincial Boundary Survey
Mt. Forbes from the North

ice work across and around several Divide 'schrunds lent excitement to the return.

At last, on July 9, we got away. An early start at 1:25 A. M. and fast traveling enabled us to reach the 'schrund under Peak 3 at 5:30 in the morning. We crossed at 5:45, cut about one hundred steps to the rock rib of the couloir, and another sixty from the rocks to the summit snow ridge. The sun was behind the eastern buttress of the peak, so that the snow remained firm, but not for long. We hurriedly gained the summit at 6:30, took photographs and retreated. But short as our visit was, each of us vividly remembers that view. Around us, as far as the eye could see, stretched Canada's mountain peaks. Northward towered the Tsar, Clemenceau, King Edward, Spring-Rice, Alexandra, and the vast ice basin of Mount Columbia, the Twins, Saskatchewan, Athabaska, and Brazeau; to the east jutted Cline, Murchison, and the ridges from Willerval to Honchy; southward were Hector, Pyramid, Outram, Forbes, the Freshfield group, the broad Lyell ice field and the Mons Glacier. And to the west lay the Purcells, Sir Donald, Sir Sandford, Bush Mountain, and Mount Lens.

The snow in our little couloir was rotting fast. At 7:35 we recrossed the lower 'schrund and a long walk on the ice field brought us under Peak 5. Some ticklish work followed, crossing the lower bergschrund, which was really a miniature icefall. In fact, we literally swam across a poorly bridged crevasse. At 11:05 A. M., after an uneventful snow ascent, we gained the summit of the peak. On the rocks just below the summit we halted: cameras clicked busily, pipes were smoked, and we snoozed in the sunlight. After an exciting descent to the ice basin, a long tramp homeward, and a youthful chase of a ptarmigan, we regained camp.

Next day we packed our belongings down to the main camp. When we had first gained the lower southeast Lyell glacier, on July 4, we had done so by cutting our way up a huge ice block that bridged the swift glacial stream draining the Mons Glacier. On the 6th our outfitters, returning home from packing food to us, had found this block at a swiftly increasing distance from the main ice stream. Edward, on the 8th, had been forced to two hours' work when this block had entirely disappeared. Rather than follow his route up and across the Mons tongue, we held to the north side of the river and continued through timber to a point opposite camp.

From the third peak of Lyell we noticed a direct line of fire haze around the horizon at about eleven thousand feet, dividing sunlight from darkness. Above the haze were the summits of the higher peaks, such as Tsar, Clemenceau, King Edward, Columbia, the Twins, to the north.

A few miscellaneous observations follow. Jimmy Simpson asked us to look for horse-feed, in the nature of grass, when we could see well into the Valley of the Lakes, which parallels the Glacier River depression, being the next northward to it. This we tried to do, and it looked as if the valley were a long succession of sloughs. On the rocks surrounding the southeast Lyell Glaciers were found, in addition to the large crystals, the following: copper ore of very low grade; honeycomb shale; numerous interesting inclusions of slate; an imperfect trilobite (*Belle fontia* — Upper Cambria) located in the débris of a dry gully; the imprint of a brachiopod and several other interesting specimens. But two small iron pyrites were found; one of them was burnt out and lay on the ridge northeast of high camp; the other, round and exactly similar to those found on the Freshfield tongue, was found on the surface moraine of the southeast lower glacier. The flora and fauna correspond to that of like regions of the Canadian Rockies.

The southeast Lyell icefall is very beautiful and somewhat spectacular. It is about two miles in span and about three hundred feet thick. The southern half drops from Division Mountain in an unbroken fall, leaving that half of the lower glacier clean ice. The northern ice drops over glacial washed cliffs, forming a heavy surface moraine below. This icefall is continually active, and it was also noted that the amount of breakage seemed greater in bad weather than when the sun shone. The terminal moraines of this glacier are covered with growth at about three hundred feet from the ice tongue. It would thus seem that the movement of this ice has been little in recent years. The main stream emerging from this and the Mons Glacier is very swift and does great damage to the moraines through which it passes. Ice chunks make the flow of these waters spectacular and supply additional interest to the observer of the rapid erosion of the glacial hill. East of the cliffs bordering the southeast tongue on its southeast side is a fresh-water stream. This stream formerly, it is probable, flowed through a little valley into the stream from Mons Glacier. Now stream piracy has taken place and its clear waters completely fill a narrow canyon about forty feet deep, that cuts through the rock wall beside the final terminal moraine.

Lastly, the spring snow that greeted us on the Lyell basin, July 5, disappeared as though by magic. Each day, as we came down, more and more crevasses opened up. On the morning of the 9th, we had to cut about fifty steps on the first ice slopes above camp in the darkness. Coming down that afternoon the shock was even greater. It took a comparatively long time before we found a passage to our usual unroping place.

MOUNT FORBES

The afternoon of the 11th of July, with tea, bannock and beans, and our climbing equipment, we walked easily over the Mons Glacier and bivouacked at 8:30 p. m. near a tiny spring-water creek at about sixty-four hundred feet above sea level. While walking across the Mons Glacier that afternoon, a hot breeze suddenly struck us, coming down from British Columbia. Fire smoke followed soon after, and from then on, dense smoke covered the whole area. It was cold and damp in the bivouac, and hard to sleep. We started at 2:25 next morning, ascending through brush and scree, with the aid of two lanterns. On a ledge we were forced to halt in the darkness and wait until light came, but at 4:20 we were across the moraines and the Mons Glacier and stopped to rest a moment on the North Glacier of Mount Forbes.

Here was an interesting system of moraines. The Mons Glacier flows northeast. Its lateral moraine is joined at right angles by the terminal moraine of the North Glacier of Mount Forbes, which flows northwest. Thus, ascending as we did, from rocks north of the Mons Glacier, we crossed successively a lateral moraine, a surface moraine, the main stream of the Mons Glacier, its other lateral moraine, a terminal moraine, and eventually gained the North Glacier of Mount Forbes.

Slowly we worked up the long ice slopes, rounding a very pretty little icefall, and turning — under a series of dolomitic aiguilles, northeast of Forbes and the huge final pyramid — west to a little snow pass about 10,300 feet. Here we struck the western arête and continued over extremely rotten shale and a long snow and ice ridge, to the beautiful summit cap at 9:45 a. m. The highest eleven-thousand-foot peak of Canada's Rockies was ours! Though our party was but the third to ascend Mount Forbes, we could find no record of any previous ascents, so we erected a small cairn on the southern rock of the summit crest.

As the fire haze unfortunately cut down the visibility tremendously, we were on our way down within an hour. As we descended below a rock band, a rock slide crashed by us, scarcely ten yards away, erasing our tracks, and filling the air with a distinct odor of sulphur. We moved off the mountain rapidly, descending directly to our bivouac for a cup of tea. On the North Glacier, as on the Lyell Glacier, the spring snow was melting very fast. Treacherous were the bridges, and sloppy the going. Down and down we went, over ice, snow, moraine, and through timber, until at six that evening we came into base camp. A red and smoky sunrise had greeted us that morning as we crossed the North Glacier. "Bad weather before night," warned Feuz. We all

laughed; but that night, at the base camp, a terrific windstorm, accompanied by rain, swept the author's tent partly away.

After this all too brief visit in the section of Canada's Rockies at the head of the Glacier River, we moved slowly back to Lake Louise. There are, as the reader may have gathered, many peaks of interest to the mountaineer in the region covered by this article. And a more interesting or enjoyable location is hard to imagine.

Impressions of Dolomite Climbing

BY LINCOLN O'BRIEN

"BOSTON is not a city, but a state of mind." One can say the Dolomites are not a range of mountains, but a type of climbing. It is delicacy in rock climbing carried to the *n*th degree. In the course of these pages I shall try to explain myself.

The Dolomites lie on the Austro-Italian frontier, some hundred odd miles north of Venice. They are approached most easily, however, from Verona, in the direct line from Milan to Venice, or from Innsbruck, in the valley of the Inn River. From Verona, which is perhaps the easiest, one ascends by train the valley of the Adige as far as Bolzano in the Upper Adige of World War fame. From Bolzano (Bozen before the war) one takes a bus or a motor car up along famous Dolomite Road by the Karersee and Canazei to Cortina. All three of these are climbing centers, Cortina the most famous. In the Dolomites, however, it is best not to settle down all summer in one climbing center but to move from place to place, spending a few days here and a week there, and getting fine climbing in each place.

The first thing one notices is the extreme perpendicularity of the jagged towers and monuments which stretch upward from the grassy alpland. Ridges are entirely absent; and the faces seen in profile are not straight but ascend in waves which make the climbs alternately easy rock, steep rock, and overhang. There will be two or sometimes three of these convolutions in a thousand feet — measured vertically. As a general rule the color of the rock tells its steepness. Black rock is always wet and is almost always overhanging. Yellow or red rock is generally dry and overhanging. Gray rock is likely to be climbable.

In the Dolomites one climbs chimneys and faces and makes long, exposed traverses. Ridges are for all practical purposes unknown. The chimney is the typical method of getting uphill in the Dolomites. It is always steep and quite often overhanging. It is occasionally damp or even slimy. During a rainstorm a large percentage of the water collects in the chimneys and makes them veritable waterfalls up which it is difficult to climb. The interior of the chimney is often black rock, whether it overhangs



Franz Joseph Biner illustrates a primitive method of roping down



R. L. M. Underhill climbing down



Crossing from the Winkler to the Stabler Turm, showing a typical Dolomite chimney



Traversing on the Winkler Turm



Vajolet Towers from the hut

or not. Rarely will the climber encounter chimneys such as those on the route up the south face of the Grohmannspitze, which are waterfalls even in dry weather. The average chimney, however, is dry and trustworthy. As a general rule, "back and foot" chimney technique is used. The natural tendency to "get in out of the view" should be avoided, as the rock in the inner part of the chimney is less weathered and thus more difficult to adhere to. One can perhaps be more audacious and less careful, owing to the rough, gripping quality of Dolomite rock, even in chimneys, which are normally little weathered. Thus one can keep the feet well below the body to give more efficient driving power upward. Many men use a chimney method whereby one foot is on the same wall with the back. That foot pushes the body upward, and then is placed on the opposite wall some two feet above the foot already there, the foot-already-there is taken over to the wall with the back on it, close under the body; then the action is repeated. This method is very speedy but requires confidence. I have seen Dolomite guides climb chimneys with one foot on each side, the ankles bent 45 degrees, and the body facing directly into or out of the chimney.

Faces, however, are where the peculiarities of Dolomite rock are most noticeable. These faces are always steep and exposed. There are generally plenty of small holds large enough for one or two fingers. Bigger holds are more rare. Holds big enough for your *entire* foot are a curiosity. The rock has many characteristics of a solidified sponge. Excellent balance and skill in using small holds are necessary. If the body is out of balance and thus has to be held against the rocks by muscle, the climber will find his arms will soon tire and be unequal to the task of surmounting the first ten-foot overhang — where his arms alone support the body. Strong-arm climbing is not possible on a real Dolomite peak. There are few spacious places to rest, and even fewer natural belays. It is fairly easy to find a place to drive in a piton — called *chiodo* in Italian — and one sees them once in a while. I well remember that, once on a Dolomite climb with a party of six, we had been climbing steadily up a face for three hours when we reached a piton. Immediately a wail arose from one member of the party, "Let's all tie onto this and have lunch." I hate to think of six men eating lunch, suspended from one piton. Pitons, however, are needed and used, much more in traversing.

Traversing is a favorite habit of routes on Dolomite peaks. Most of us have read Sanger Davies' blood-curdling account of the traverse on the *via commune* of the Kleine Zinne. I once went over that *via commune* and was unable to find any traverse which would n't be perfectly healthy, covered with banana peels.

Sanger Davies' account is a good deal of a joke; but we must n't think that all Dolomite traverses are easy — far from it. The average traverse is easy because it follows one of the bands of gentle gradient which so often encircle peaks. But every so often one meets the exception — a hand traverse on which all weight not supported by the friction of the clothes must be supported by the arms. Climbing by the arms alone, whether on an overhang or a traverse, is especially difficult in the Dolomites owing to the small size of the holds. At dangerous overhangs the leading guide, where possible, takes a long, laborious route around, then the others in the party come straight up. Also at dangerous traverses the guide tries to get above the traverse, or at least higher somewhere, so that anyone slipping would not have so far to fall before being stopped by the rope. It is here that pitons are appreciated.

There is a good deal of discussion about the etiquette of using pitons. The consensus of opinion seems to be that they may be used for the rope, as a security, or in "roping down," but that their use as handholds is n't proper. Mechanical methods of climbing are used more in the Dolomites than elsewhere. Pitons and roping down we have mentioned. Then when there are two spires very close together and one cannot be climbed, it is lassoed from the other, and the alpinists go over on the rope.¹ When one must get across a narrow slab and cannot climb it, he can drive in a piton, thread a rope through it, and pendulum himself across on the end of this doubled rope. Needless to say, these methods and many others like them — except roping down — are very seldom used, on account of the time taken in their preparation.

Climbing equipment for the Dolomites is somewhat different from that required in Swiss or Western climbing. Lighter clothes are worn. Snow goggles, hats with brims, wrist watches and other breakables, should be dispensed with. If an ice axe is used at all, it will be a single half-length one for the whole party. Dolomite guides stand in fear and ignorance of ice; when one meets ice in a hard place — such as the Schmidt Kamin on the Funnfingerspitze — one goes down and does another route. At the base of the rock or *attaco*, the nailed boots are left,² and scarpetti are donned with one pair of stockings only. These scarpetti — called technically *scarpe da Gatto*, or cat shoes — have uppers of leather and soles made of many layers of cloth or felt sewn

¹ Generally there are two ropes, and the alpinist lies down face upward between them with his feet in the direction in which he is going. The ropes pass under his armpits, outside his hips, under his knees, and between his feet. He thus hangs by his knees and armpits and pulls himself along by his hands.

² In traversing a mountain, a porter carries the boots from the beginning of the rock on one side to the end on the other.

together. The first day out they don't hold well, but as they become worn and ragged they grip firmly upon the sharp rock. Loose ragged bits of cloth are quite essential to the gripping quality of the shoe. Suits should be of close weave which will not tear. One has no need of cloth that will grip the rocks well, as, owing to the harshness of the rock, there is plenty of friction on any cloth. I once saw a climber who had managed to get himself suspended by a projecting rock caught in the seat of his trousers. The guide was urging him to take the projection with his hands and thus lower himself to some holds below. "That's all very well," said the poor man, "but where shall I put the seat of my pants?" I hope this illustrates the necessity of durable material in the seat of your pants. Gloves are seldom used, because the climbing is neither cold enough to require them nor easy enough to admit them.

In all things but the actual rock work Dolomite climbing is very simple. Equipment is not complicated. The weather does not play the tyrant. Most Dolomite climbs can be done even in the rain if one does n't mind tearing skin and clothes. The party starts comfortably late — about seven o'clock — and is back for tea. The monotonous walk to the *attaco* is cut to a minimum. The rock is generally firm, always interesting, and often sensational. For a man who likes rock work, and not snow and ice, the Dolomites offer the best climbing field in the world. Guides of course should be engaged long in advance. A little knowledge of German or Italian is almost an essential. And a word to the pocketbook — join the Italian Alpine Club. Hut accommodations will cost you one fourth as much; and the C. A. I. periodical is really worth having. The climbing season is twice as long as in Switzerland, and in the same time one can climb twice as many peaks, owing to their small size and the fact that bad weather generally is unable to stop an ascent.

May I meet you in the Dolomites!

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