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HIGH-LEVEL SKI ROUTE FROM LAKE LOUISE TO JASPER

By Hans Gmoser

A man should have wings to carry him where his dreams go but sometimes a pair of skis makes a good substitute. Every time I look from the many mountain tops that I reach during the course of a summer, I can see hundreds of fantastic ski runs and the desire to skim over these distant snowfields grows so strong, it makes me hurt.

Of course, you can get plenty of skiing by going to one of our modern ski resorts, but this gets dull after a while. In the end, to ski is to travel fast and free — free over the untouched, snow-covered country. To be bound to one slope, even to one mountain, by a lift may be convenient but it robs us of the greatest pleasure that skiing can give, that is, to travel through the wide, wintry country; to follow the lure of the peaks which tempt on the horizon and to be alone for a few days or even a few hours in clear, mysterious surroundings. This perhaps sounds like hard work and it is. But then, what is wrong with hard work, especially when through it we come once more into intimate contact with the very land and earth we stem from? This hard work gives us the kind of adventure we need in this age when we can think only of safety and security and forget that it took generations of adventurous and enterprising people to build this great country which provides us with so much wealth and pleasure.

Let us get our skis ready, our minds set on a great adventure and travel through a mountain range with huge glaciers and snowfields, wonderful powder snow and long, long ski runs. Mind you, there are no overnight shelters and no places to buy food along the way. We have to carry everything on our backs. It is not as difficult and strange as it may seem. I can vouch that it is a great experience for this is exactly what six of us did last spring.

On April 2nd, 1960, Neil Brown, Kurt Lukas, Pierre Garneau, Pat Boswell, Philippe DeLasalle and I started off from Lake Wapta in Yoho National Park, with loads of between 60 and 70 pounds each. Our route was generally north along the Great Divide, 130 miles to Jasper in Jasper National Park. This trip was to lead us over eight major icefields, each between 40 and 100 square miles in area. We would be travelling at altitudes of between 4,000 and 11,000 feet and hoped to complete the trip in 30 days. We had two small tents that joined together and our food was mainly dehydrated. Daily menus for six men were packed in one box weighing only 10 pounds. The purpose of our trip was to explore and prove the feasibility of such a ski route.

It would take much too long to give a step by step account of the entire trip and besides, there are only certain days and moments which are particularly vivid in my mind.

We started out in thick, wet snow. Our friends were waving good-bye and then we were alone in the woods with our heavy loads and the long trek ahead of us. The weather was uninspiring but we were glad to have left the last-minute rush and confusion behind. The quiet of the wintry forest was soothing and for once it felt good to sweat under the heavy loads…

. . . After a few days, the sun came out. The dark sky framed one of the most magnificent arrays of mountains you can imagine. We were high on the Wapta Icefield with its vast area of snow. What a great feeling! We were on top of the world. We could look down into the valleys and only the highest peaks were still above us. That evening we made our fourth camp. Pat Boswell and I emptied our packs and then continued to where a box of food had been dropped for us by plane previous to the start of our trip. There were seven such boxes along the way. We climbed over a small rise and there out of the snow were two red flags, the markers of our cache. We had been so eager to get to our cache that we forgot to bring shovels and iceaxes. The box was six feet in the snow, which was very hard. First we dug with our hands and feet, then we used our skis and then some more kicking with our boots and, finally, we were able to pull the hundred-pound box from the deep hole. We had plenty of food again and with our full packs coasted down to the small tent which looked lonely on the huge snow-field.

The following morning was clear and cold. We climbed to a high col east of Mt. Baker. This was our fifth day of uphill travel. There had been some short downhill runs, one two miles long, but once on the Baker col there would be a six mile run with a vertical drop of almost 6,000 feet. Our progress to the col was slow. The heavy packs dug into our shoulders and made it difficult to lift our legs and push higher with each step. The excitement grew as we approached the skyline.

Even though you can almost imagine the impressive panorama that awaits you on the other side, it always takes your breath away when mountain range upon mountain range unfolds before you — hundreds of peaks, many of them old friends, many of them strange, new, mysterious and tempting. Below us stretched the Baker Glacier and further down, the green forest along Wildcat Creek. It was a swift ride. The snow was so good that even with our heavy loads we could make nice linked turns and long schusses across the three miles of glacier. Then we were among the trees. It was a wonderful feeling to be back in a living world after five days on the glaciers. It was a lovely valley and we could have stayed there several weeks trying all the many runs which lead from the surrounding peaks. We pushed on, however, skiing through the open timber and over the snow-covered creekbed until we came to a nice open place where the clear water tumbled over the smooth, polished boulders. We were hot, tired and hungry. Soon a little fire was burning; we took off our shirts, relaxed and enjoyed the Spring.

Then there were storms again; thick fog, strong winds and bitter cold. Even the terrain was difficult to travel over. We had a tough day ahead of us. First there was a steep icy slope, dropping 1,700 feet right into the middle of the Cairns Icefall. It was so sheer that we were afraid our skis wouldn't track but our terrific Head Vectors did. What a blessing to have excellent equipment and, I must say, we had the best. One cautious traverse and then a quick stem-christie — it worked fine and away we went. Soon we were in the middle of the icefall. Now we had to find a way to the top of it. Back and forth we switched through crevasses and séracs, across some narrow ridges and then there was just a large ice wall ahead of us. It started to snow hard and a strong wind drove the snow like needles into our faces. We tried to find a way but there was always either a vertical ice cliff or a huge crevasse which stopped our progress. Finally we dropped down into a crevasse, went along it on a snowbridge, took off our skis and climbed up for 60 feet — we were on top of the Cairns Icefall. This was one of the major problems of the trip. Happily we charged across the upper part of the glacier and climbed up to a col. When we arrived on top of it we were quite puzzled. It was the wrong col.

In the fog we had gone too far to the left. There was nothing else to do but descend 500 feet, travel another half mile and then climb up a slope that was so steep it would make the headwall at

High Level Ski Route

Lambe Glacier.
Photo Philippe DeLasalle

Tuckermans look like a nursery slope. We had to make the trip twice; first with our skis and then with our packs. We had to kick steps for this and, to say the least, we were exhausted. When we looked over the other side, however, our enthusiasm returned. Six miles before us stretched the Freshfield Icefield and in less than an hour we had coasted across it, pitched our camp and fallen wearily into our sleeping bags.

The many miles behind us included a fantastic run from the Niverville col, the best we had on the entire trip, and a climb through an icy chimney where we had to kick steps and make our way over a large cornice. This cornice provided some excitement as a portion of it broke off, carrying Kurt Lukas for sixty feet with it. He was, miraculously, unhurt but annoyed at having to climb up again. The scenery was always beyond description, the snow conditions couldn't have been better and, on the whole, the weather had been very good to us. We were happy and tired every evening and very optimistic about the outcome of our trip.

. . . Another icy blast shook the little tent and I felt like disappearing into my sleeping bag. Even reading about the sunny island of Capri in Axel Munthe's "Story of San Michele" couldn't make me feel any warmer, or more comfortable for that matter. Next to me, Kurt was reading some works of Goethe and on the far side Neil Brown slept the long hours away. In the adjoining tent, our other three companions were similarly occupied. We had been trapped for three days by the snow which surrounded us and kept coming down harder and harder all the time. Apart from being a little cold and sore from lying all the time, we were hungry. Our food was running very short and it was next to impossible to think of anything but food. The maddening thing about this was that we had made camp in the storm only one mile from our next cache. Finally Kurt and I became desperate. We packed our things, dressed warmly and crawled from our tents. We set our compasses and headed off in the storm to try and find two red flags in a thick, white world. We hadn't gone 50 paces when our bright yellow-tents disappeared and all we could see were the two black skis pushing through the snow ahead of us. After 15 minutes, we became frightened and thought it best to try to find our tents again instead of the food cache. We switched our compasses 180 degrees and after another 15 minutes, our tents came out of the snow. We were very happy to be with our friends again.

The next day, it cleared abruptly. We went once more for our cache but it was completely covered by the storm. Luckily our friends, Eddie Amann and Jim Davies, flew over in the plane and we signalled to them that we needed food. They took off for Banff and returned later with the supplies. They dropped one box and on it was: "This is all the food, we hope it is enough, Happy Easter!" In it were six chocolate Easter Bunnies which we devoured so fast we almost choked on them. In a few minutes, however, the plane came back again and this time dropped a sack with steaks, pork chops and food more filling than Easter Bunnies. Our spirits were high and we were most grateful to our friends who kept such good watch over us on this trek.

We crossed the Lyell Icefield and camped beneath the Lyell Peaks at 10,500 feet. It was very cold and clouds threatened to close in around us again. They finally did, but we were desperate and determined to reach the valley the following day. We set out in fog and climbed to the highest point on our route, the 11,000 foot col between two of the Lyell Peaks. From here we had to descend one of the worst portions of the trip, the East Alexandra Glacier. This Glacier is at its best an icefall with a 6,000 foot vertical drop. What it was on this particular day is hard to describe. At one point, we stopped only six feet short of a 2,000 foot drop which was hidden from us by fog. Groping our way down a steep ridge which dropped off suddenly on both sides was just part of the game, but when a huge avalanche thundered down, stopping just short of us, it became rather uncomfortable.

Camp On Lambe Glacier. *Photo Kurt Lukas*

Camp At Lyell Icefield. *Photo Kurt Lukas*

The final blow came when I found myself 100 feet down in a crevasse, standing practically on my head with my pack driven so hard into the snowbridge that I was almost unable to free it. With the help of my friends, I was able to get out. Life felt pretty wonderful when we finally dumped our packs in the valley and pitched our tent on a patch of dry ground.

By now each of us knew that soon we would have to give in to the adverse weather and bad conditions but didn't admit it to each other and hardly to ourselves. We continued for a few more days but when conditions got worse instead of better, we had to stop. It had snowed for 12 days continuously and we were still always hungry. Finally we returned to the Banff-Jasper Highway. We were welcomed at a National Park road maintenance camp and in a short time devoured five pounds of roast beef, twenty-two eggs, two cakes and drank two gallons of milk. Needless to say, we were all sick afterwards!

The picture I have painted here looks rather grim but this is mainly because ours was the first real try and we had to tackle the thing with very little knowledge of what lay ahead. The trip is definitely possible. The hardships are due mainly to the absence of shelters along the route. Until such shelters are built, it is quite possible to take portions of this tour without having to struggle as we did. It is a worthwhile adventure and I can assure you that there are few places in the world which can match the magnificent scenery of this country.

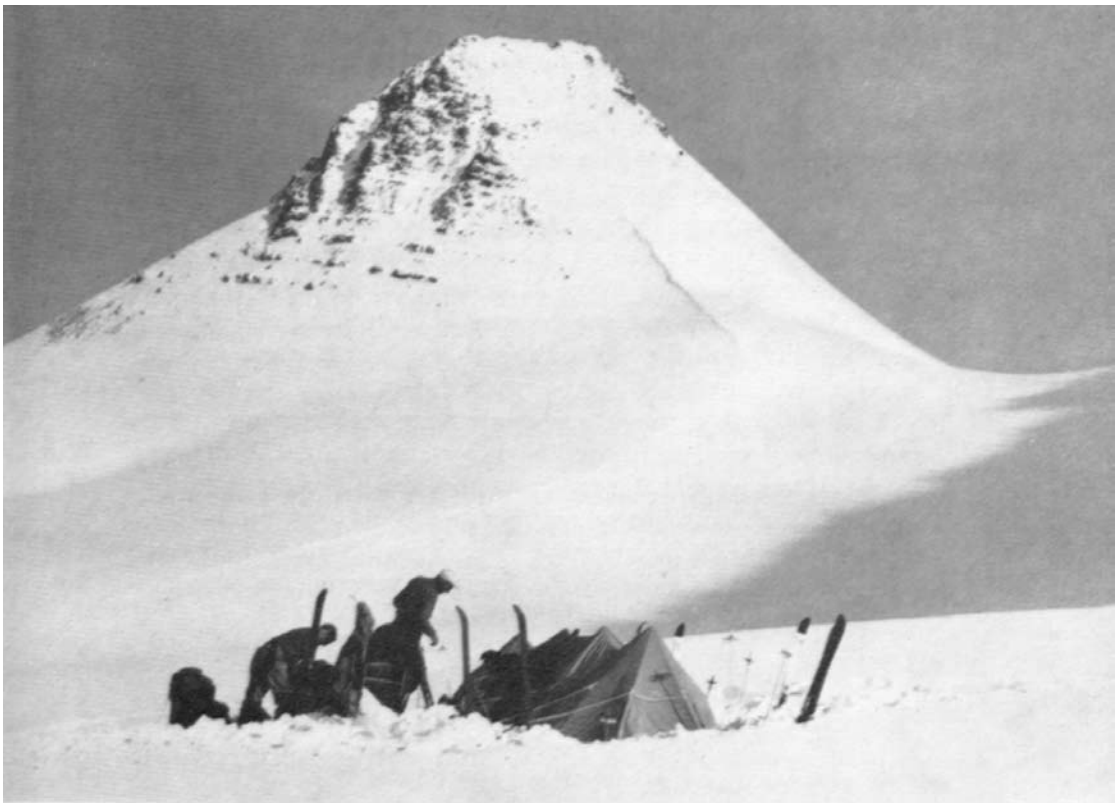
For others who would like to try the route, here are fuller details.

Canadian Icefield Expedition, 1960

From the starting point at Lake Wapta the route follows Sherbrooke Creek, past the lake and from there onto the Niles Glacier, underneath the west side of Mount Daly. The Daly Glacier is crossed on its upper part which brings one to a high col (10,000 feet) on the southeast ridge of Mount Balfour. From here a two mile downhill run on the east side of Mount Balfour leads into Balfour Pass; then a climb up the Vulture Glacier to the col between Mount Olive and St. Nicholas Peak and, next a descent onto the Wapta Icefield. The Wapta Icefield is crossed from south to north with a climb to the col east of Mount Baker (10,000 feet). Here is the first long downhill run on the Baker Glacier and on to Wildcat Creek.

The upper part of Wildcat Creek is best negotiated on the left bank. After two miles, cross to the right and climb up through some small trees to the right beneath the big cliff. This brings one past the large canyon and now a descent can be made to the valley floor, however, under bad snow conditions this can be extremely dangerous. Follow close to the creek all the way into the valley of the Blaeberry River; then travel four miles upstream to Lambe Creek and climb well to the right side of the Creek until above timberline. Join the creek again and follow it to the start of the glacier. The glacier tongue is best climbed on the left. In our case, we followed the Lambe Glacier to the Whiteaves-de-Margerie Col from where we descended 1,700 feet on a very steep slope to just below the upper icefall on the Cairns Glacier. It was possible to climb through the icefall with skis except for one slope, approximately 50 feet, at the very top. We then went to the col between Mounts Barlow and Low (10,000 feet, which is marked at only 9,500 feet on the map), where we had to kick steps and carry our skis for 300 vertical feet. This col opens onto the Freshfield Icefield. The run across the Freshfield Icefield (6 miles) was straight-forward and wide open. We would suggest, however, that future parties take the Lambe Glacier to the northeast side of Mount Lambe, then cross the Conway Glacier to the col between Solitaire Mountain and Mt. Lambe. From here several easy snow-chutes lead onto the Freshfield Icefield, about two miles down from Mount Barlow. This would cut out the rather difficult and dangerous portion of the Cairns Glacier.

On Niverville Glacier, Looking Towards Freshfield. *Photo Philippe DeLasalle*



Mons Icefield. *Photo Philippe DeLasalle*

After crossing the Freshfield Icefield, one climbs up the Niverville Glacier and passes over a narrow col to the right of the small peak. The col to the left seems to be much easier from this side, however, there is no way to get off it on the north side. From the right col, a steep snow-chute 25 feet wide and 150 feet long leads into a big basin on the north side of Mount Niverville where there is a fine run into Bush Pass and part way down Forbes Brook. One follows now the creek which comes from between Mount Cambrai and Golden Eagle Peak. Some dense brush on the right hand side of the creek has to be gone through in order to avoid a small canyon and waterfall. Once above the canyon, the country is quite open and without any difficulty, and the end of the valley, which terminates beneath a small headwall, can be reached.

A short climb through an icy chimney and then up a steep snow slope, sometimes topped by a fair-sized cornice, brings one on the Mons Icefield. Once across the Mons Icefield, since we had such excellent snow conditions, we could traverse high on the west side of the north ridge of Division Peak and thus come directly onto the Lyell Icefield. Under dangerous snow conditions, however, it may be necessary to descend from the Mons Icefield part way to Icefall Brook and then climb directly back to the col between Lyell Peak No. 5 and Division Peak. Another alternative would be to climb directly onto the north ridge of Division Peak and travel on top of it until a descent could safely be made onto the Lyell Icefield.

The Lyell Icefield is crossed from the south to north to the col between Lyell Peaks Nos. 2 and 3. This is the beginning of the East Alexandra Glacier. From here one traverses to the west beneath Lyell Peak No. 3 until the ridge, which comes from Lyell Peak No. 4, is gained. This ridge is followed to the Lyell-Farbus col. The upper part of the East Alexandra Glacier is a fairly straight run, however, after a few hundred yards it is advisable to keep well to the left beneath the steep slopes of Mount Farbus. This could be extremely dangerous under bad snow conditions but is necessary in order to get through the upper icefall which is only passable on this particular side. Once below the upper icefall, one crosses a huge basin, between 7,000 and 8,000 feet, from left to right which brings one to the top of the lower icefall. This icefall, no matter how fierce it may look, is quite simple and presents no great problems, providing you ski down the center of it.

At the junction of the Alexandra and Castleguard Rivers, there is a short climb through the trees on the east side of the Castleguard, until one reaches the trail which goes all the way to Watchman Lake. This is where we stopped our trip to return to the highway.

The route would continue as follows: From Watchman Lake over a wooded shoulder onto the upper part of the Castleguard Glacier; then on the Columbia Icefield in a northwesterly direction to the southwest corner of Mount Columbia. This may well be the major problem of the entire trip. The west face of Mount Columbia seems to narrow into a small cliff-band which runs in a southwesterly direction, causing a complete break in the icefield. So far, we have not been able to determine exactly how high this cliff-band is and, at its lowest point, it may be anywhere from 60 to 500 feet. If it is possible to rappel over this cliff-band, the rest of the trip should have no further problems.

One would then ski around Mount King Edward to the southwest, onto the Chaba Icefield, through the col to the east of Chaba Peak and over a fairly steep but easy glacier to reach the East Chaba Glacier. The Chaba River passes within less than one-half mile of Fortress Lake which is traversed from east to west and from there one goes up Serenity Glacier. One should stay well to the left on the lower part and then slowly work to the right and climb quite high on the ridge which separates the Serenity Glacier and the glacier to the southwest of it. This brings one almost to a small snow peak on this particular ridge. Traverse around it for a short way; then ski down

several hundred feet to pass below a small icefall; from here, straight up to the wide col southeast of Mount Hooker; then traverse the Hooker Icefield from southeast to northwest and climb up to a small col on the north side of it. There is a short rock cliff which has to be climbed down and then a wide open run over the Katie Glacier to the Whirlpool River. Following this river, one arrives at the Banff-Jasper Highway 12 miles south of Jasper.

Conclusion and Proposal for the Development of a High Level Ski Route between Lake Louise and Jasper

Looking back on our venture, I can honestly say that it was a very pleasant trip from which we returned with many fine memories. There were, of course, hardships and times when it was difficult to continue. The latter were due, however, to:

(a) the lack of shelters;

(b) the absence of good trails in the valleys; and

(c) insufficient knowledge of escape routes to the Banff-Jasper Highway.

I can speak for all of us in saying that we are firmly convinced that this is a trip that can afford a great deal of pleasure to many, many people, especially in our day and age when there is need of such adventure and intimate contact with nature. I feel that since we have all this fine country right in our backyard, it is our duty to do everything within our power to develop the ski route between Lake Louise and Jasper to such a point that the average skier who desires to travel this route or portions of it, will be able to do so.

The actual development of this ski-route should be in the hands of the Ski Committee of the Alpine Club of Canada and this body should have the full assistance and cooperation of the National Park Authorities. This cooperation is necessary as the route must be developed with the needs of the ski-mountaineer in mind but must not be spoiled by any greedy, commercial enterprise. We have here country which is at least as beautiful as anything else in the world, and lends itself perfectly to ski-mountaineering. It is our sincere wish not to spoil such places but to leave them in their natural state. However, all this wonderful country is of no use to the people for whom it is preserved if it is not made possible for them to enter into it. Unlike the construction of a superhighway, the development of this ski-traverse, at its worst, would be just a line on the map. The few shelters to be built and the few trails to be cut will, if anything, add to the charm of the country.

We feel that permanent type Alpine Huts should first be built at the junction of the Niverville and Freshfield Glaciers; at the bottom of the East and West Alexandra Glaciers and at the west side of Fortress Lake. The first and last of these shelters would serve some fine ski areas, in addition to being shelters for those on the ski-traverse. The shelter at the Alexandra Glaciers would serve a fine climbing area, as well as being an over-night shelter along the ski-route. For the other locations, temporary "bivouac boxes" could be installed (these are small prefabricated shelters with sleeping room for four to six people. They can be fastened to practically any type of terrain and, after a permanent building has been constructed, can be removed and used elsewhere). Such bivouac boxes should be put in place at Balfour Pass; the junction of the Wildcat Creek with the Blaeberry River; at the head of the Mons Glacier; at the head of the Castleguard Glacier; at the col east of Chaba Peak and at the foot of the Kane Glacier.

The following trails would have to be improved along the route: above Sherbrooke Lake; down Wildcat Creek; up Lambe Creek; partway down Forbes Brook; up the valley between Mt. Cambrai and Golden Eagle Peak; the upper part of the Castleguard River; the east Chaba River; from Fortress Lake to the Serenity Glacier and the upper part of the Whirlpool River.

The following escape routes would have to be explored and, if not already in existence, trails built along them: from Balfour Pass to Hector Lake; Bow Glacier to Jasper Highway; Peyto Glacier to Jasper Highway; Howse Pass, Howse River to Jasper Highway; Forbes Brook, Howse River to Jasper Highway; Mons Glacier, Glacier Creek, Howse River to Jasper Highway; Southeast Lyell Glacier, Glacier Creek, Howse River to Jasper Highway; Alexandra River to Jasper Highway ; Saskatchewan Glacier to Jasper Highway; Athabaska Glacier to Jasper Highway; Chaba and Athabaska Rivers to Jasper Highway; Scott Glacier and Whirlpool River to Jasper Highway.

We hope that through this report of our trip, we have shown the wonderful skiing terrain and the unlimited pleasure this country, if properly developed, has to offer.

SPECIAL NOTE FOR THE
CAJ DIGITAL EDITION

An oversized fold-out map, “Route of 1960 Icefields Expedition”, was included in the hardcopy version of the 1961 *Canadian Alpine Journal*. It is not included in this digital version due to size restrictions.

THE LILLOOET ICEFIELD

By Ralph Hutchinson

THE extensive icefields lying at the source of the Toba, Lillooet, Bishop and Lord rivers have captured the interest of many climbers and, strangely enough, the area has been climbed in exclusively by residents of British Columbia. The rest of the Coast Range has had its share of southern neighbours on exploratory expeditions.

No doubt many people have examined the approaches to these icefields, but the rigours of many days in the bush kept some eight hundred square miles of British Columbia from inquisitive feet and prying pitons. By 1959 a great deal more was known of the topography as a result of a complete aerial survey made in the late 1940's and early 1950's. The maps and photographs did not reveal the key — a lake on which an aeroplane might land and take off.

In 1959 we made an aerial reconnaissance of Mount Raleigh (1960 C.A.J. XLIII 30) and had chosen an approach route that flew over the Lillooet Glacier and Bishop Glacier. As the plane passed over the snout of the Lillooet Glacier an astonished shout from our pilot, Roy Mason, directed our attention to a muddy coloured lake that appeared to be one mile long, located where the Lillooet River emerged from its parent glacier. We circled the lake a few times, took photographs, and then carried on, this secret carefully tucked away in our minds.

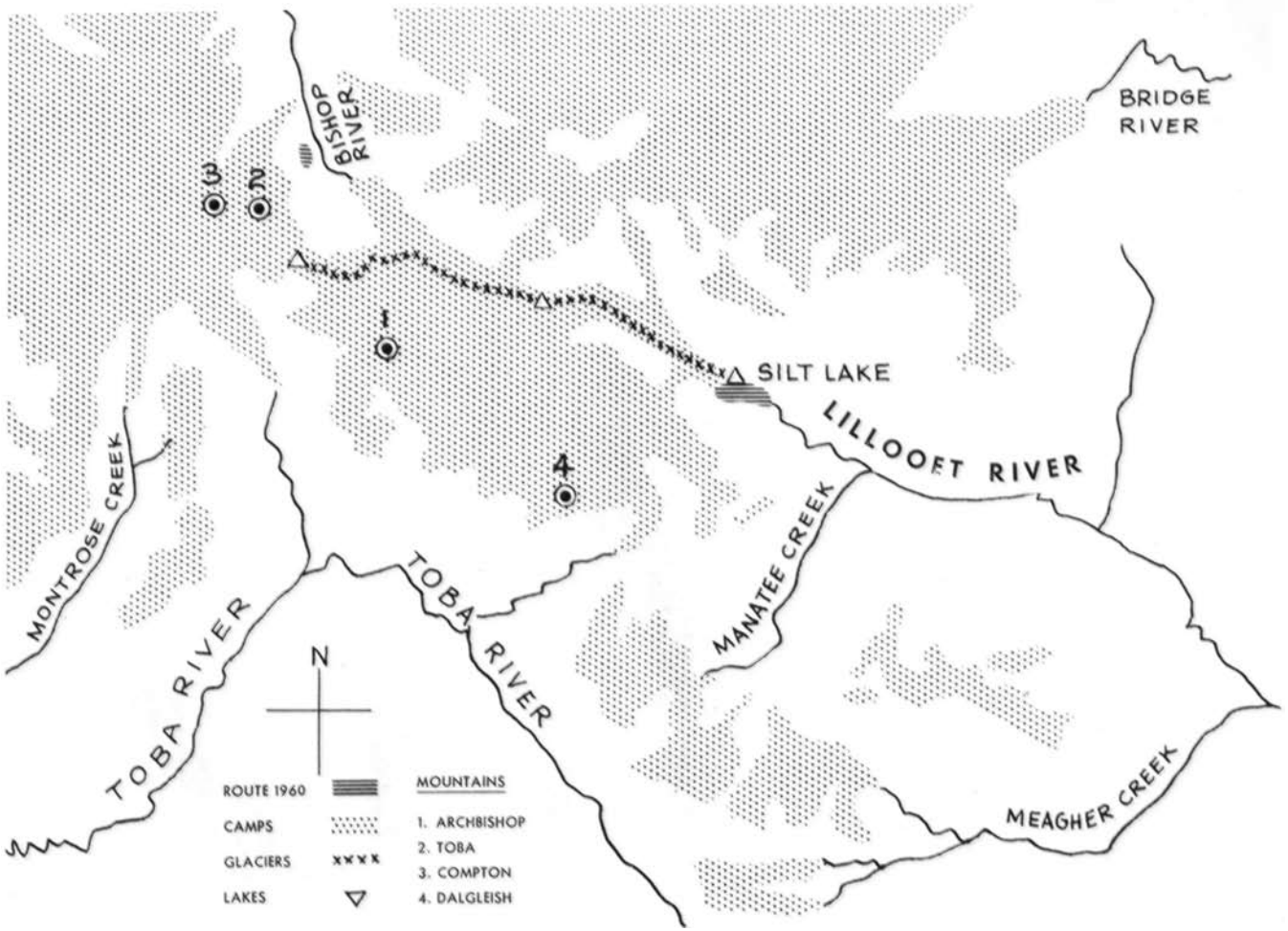
During the winter we speculated on the chances of landing on this lake. There was no way of telling its depth. It was quite opaque. The aerial photographs were studied endlessly but gave us no clue, as the lake had been formed only in the past five to ten years by the rapid retreat of the glacier, and did not show on the photographs available. We decided to risk an air fare, and therefore set aside a week in July for an expedition into the area.

Campbell River is a very convenient jumping-off point for lakes in the central Coast Range. We arranged with B. C. Airlines to fly us to the lake from Campbell River on 16th July, 1960, and they made a reconnaissance in June but gave a discouraging report on the prospects of landing. Nevertheless, a B. C. Mountaineering Club party composed of Werner Himmelsbach, Joe Hutton, Jim Woodfield and myself set off, hoping for the best. We elected to sleep the night preceding the flight on the airstrip at Campbell River, and were so certain of the balmy island breezes that we neglected to put up a tent. We were rudely awakened at 3 a.m. by the only rain of the trip. The rest of the night was spent—still in sleeping bags—upright in Jim's car, Werner cursing roundly but unintelligibly in his mother tongue.

The weather had improved by the time our pilot arrived. He was having second thoughts about the flight and spent some time trying to dissuade us from our plan. He would not make a firm commitment to land us on the lake and we took off still uncertain if we were not, after all, only on a wild goose chase.

One of the most spectacular sights in British Columbia is a flight up one of the inlets into the heart of the Coast Range. Green islands seem to float on crystal blue waters; these give way as the channel narrows to a thin ribbon of milky blue between green-forested hillsides; in a matter of minutes the tops of the hills have matured to brown and grey rock outcrops and soon patches of snow may be seen in sheltered folds between jutting peaks. Meanwhile, ahead of the plane, a brilliant sheen of white extending the full length of the horizon shows the heart of the Coast Range with its cloak of ice and snow.

Our plane left the twisting Toba River with its pronounced ox-bow lakes to glide round Mount Dalgleish, tumbling with glaciers, and slip gracefully over the green carpet that covered the



Map of Route 1960. *Cartographer R. Hutchinson*

Scale—4 miles to the inch (Approx). A Plagiarism of National Topographic Series 92 J and 92 K

Lillooet River basin in abundant virgin forest. The muddy puddle we hoped to land on appeared minute as we lost height and circled hopefully. It was long enough, the pilot reported, but was it deep enough? We were speechless as we had debated the point ad infinitum at Campbell River and there seemed no way of telling, short of trying. This course we suggested to the pilot.

During what appeared to be an age we circled tightly in the valley a few hundred feet above the lake. The air seemed crowded as cliffs, precipices and trees whizzed past close to the window and the pilot stood the plane on one wing. Then, mind made up, he made his final rim down the valley: an anticlimax—no crash, just the gentle swish of water and then glorious silence as the engine cut out and we drifted in to the shore. We beached the plane and gazed with awe at the hanging glaciers, the peaks all around and that phenomenal pillar described in the 1933 Alpine Journal,, Perkins' Pillar. Alpine flowers—Indian paintbrush and mirruilus crowded round the small creeks that tumbled into the lake. Despite the low altitude of the lake (2550′)the shores were bare of trees and evidenced a very recent retreat of the glacier. We named the lake "Silt Lake" for obvious reasons. After tea our pilot taxied down sounding the depth of the lake before filling the valley with a crescendo of noise that echoed round the walls and peaks as he took off. He was to return in eight days.

We now directed our attention to the west where the rubble-covered snout of the Lillooet Glacier gave the appearance of an inert, dirty monster. Beyond, we realized, was the clean glistening snow, the virgin peaks and all the glamour of a new area. So, eager to press ahead, we cached some supplies and shouldered our 60-lb. packs to tackle the ice, and by 10 a.m. were on our way.

Apart from an initial steep pitch that required crampons, the next two days were dull work. We climbed up onto the Lillooet Glacier and walked along the dry ice until a light covering of snow slowed us up. Then we started zig-zagging to find sound bridges over the crevasses. We picked up speed again as we came to firmer snow until, some nine hours later, we established an overnight camp near the névé that divides the Lillooet Glacier from the Bishop Glacier. The height of the divide was 5500 ft. The peaks around were close, but hung with fearsome icefalls, and as our objectives,

Silt Lake. *Photo By James Woodfield*

From shoulder having come off Lilloet Glacier from right. Looking east down Lilloet River.

Mount Compton And Toba From A Shoulder Of Archbishop.
Photo By James Woodfield

Compton and Toba, were at least a day's march away, we decided to proceed and leave the fine mountains for another party. The biting glacial wind soon drove us into our tents and to sleep.

On Sunday we followed the Bishop Glacier until we met a tributary glacier flowing from the south, which we ascended. After negotiating a heavily-crevassed area we crossed a snow basin and again swung west up to a fold in the glacier close to the rocks, where we pitched camp—our Base Camp—at 6300 ft. A stroll in the evening showed we were in a good position to try the closest peak, Mount Toba.

On Monday, 18th July, we made an early start and after climbing up to a plateau from base camp, made good going up undulating snow slopes to the base of the mountain. A short series of scrambles over rock and we were faced with a very steep snow slope. The exposure here was considerable but all four in the party were climbing quite strongly and we were almost oblivious of the change from sunshine to cloud. Soon the worst was over and we were groping about on the ridge trying to locate the summit. A bitter wind and drifting mist restricted the view to a few feet. Finally we chose a spot on which to build a cairn and, in desperation, eat luncheon. The 9,000 ft. summit was not generous with its flat spots so after an uncomfortable repast, during which time we compared frozen extremities and dripping noses, we retreated down the ridge, thus avoiding the steep face we had ascended, and emerged from the clouds to survey the morrow's route to Mt. Compton that lay to the west.

We returned in a leisurely way over the névé surrounding Mount Toba, and after supper turned in early as the next day promised to be long and hard. By dawn on Tuesday we were climbing up again out of our base camp to the névé we had crossed the previous day. We carried with us sufficient equipment and supplies to spend a night or more away from camp, as we had no idea of the difficulties confronting us.

Our route lay over the ridge leading to the summit of Mount Toba. We ascended to the ridge at 8,000 feet without incident, over steep, hard-packed snow. The day was cloudless and we had a second breakfast while considering the next move. We had to descend the rocky west face of

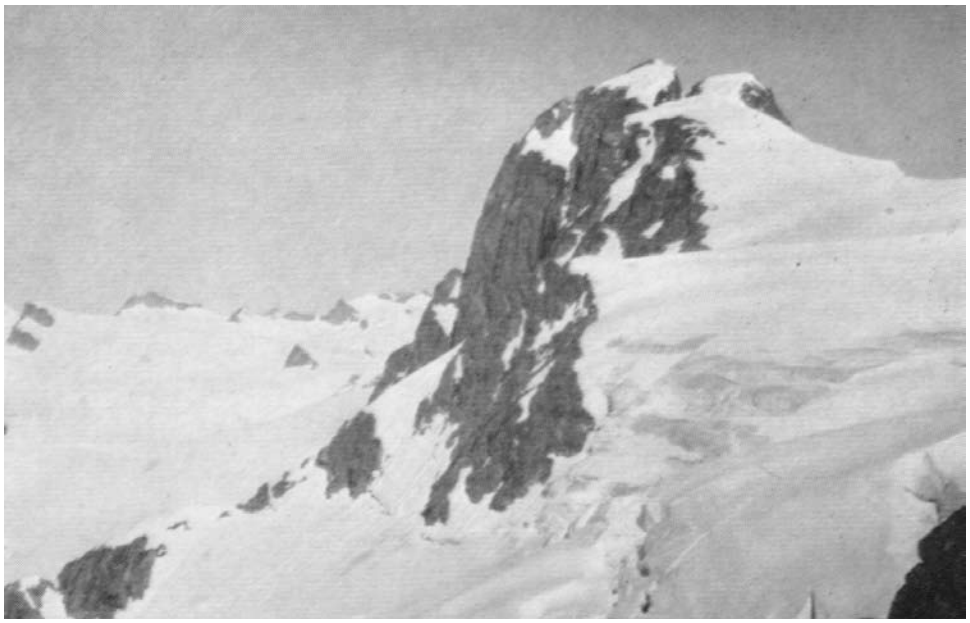
the ridge to traverse the easterly fork of the Toba Glacier. We anticipated a wide bergschrund, so when ready, proceeded down a rocky couloir with caution. Luck was with us and we struck the one sound bridge over the bergschrund which led us over a steep icy traverse onto the flat glacier.

We were now at the base of Mount Compton, at about 7,500 ft. The route for the next thousand feet was clear—up the glacier that was hanging in folds down the mountain's east face, thence onto the rocks that bounded the precipitous south face, and on up to a gap that might prove difficult, but was not clear from our previous vantage points. We proceeded with some excitement and after an hour came up to the gap. A hidden (but suspected) gully cleaves the south face and breaks the mountain into two summits. From the easterly summit we had to follow the rotten col connecting the two peaks, then traverse beneath an overhang on a narrow ledge before reaching a feasible route to the summit proper. The north face of this mountain was impregnable, presenting a magnificent, but awesome, granite precipice of 3,000 ft. before meeting a glacier that tumbled in waves of ice toward the Bishop River.

Werner led the route over the ridge and beneath the overhang. Two safety pitons were used on the exposed parts of the traverse. The gully seemed bottomless. Soon we were all over and climbing up the rocks and final snow slope to the summit. It was a glorious day and the peers of the Coast Range proudly stood up out of the glistening glacial expanses—Waddington, Raleigh, Good Hope, Gilbert, Monmouth were all visible. We were a shade over 9,250 ft high and looking back toward base camp we saw that Archbishop was quite clearly a few hundred feet above us.

After photographs, congratulations and lunch, we returned by the same route. As the mountain had yielded with such grace we had no need to spend the night in a bivouac, and returned to camp for a thoroughly good rest.

Wednesday was rest day, so in the afternoon we made a short trip up the spur behind camp (which we named Callum Point) to investigate the scenery. In particular, we had designs on Archbishop, and wished to examine alternative routes. The weather was being so kind to us that despite achieving our objectives of Compton and Toba we were now hankering after this monarch of them all.



Mount Compton From Ridge Of Toba, Looks West. *Photo By R. Hutchinson*

"Archbishop" Summit In Clouds From Approach To Mount Toba.
Photo By R. Hutchinson

On Thursday we set off at dawn, first losing height, and after crossing a snow basin at about 6,000 ft. starting to climb the glacial approaches. We circled the summit pyramid to approach from the south, all the time climbing steadily. By the time we had been climbing five hours we were nearing the bergschrund separating the glacier from the summit proper We found a sound crossing in the shadow of the rocks towering above us, and followed a snow couloir up until it steepened and became icy, with large slabs of rock resting on the ice. At that point we turned our attention to the summit wall and Werner led a series of fine pitches to gain a level spot. Then on again, over the extremely firm rock to come out, almost accidentally, on the summit. The final four hundred feet had been the most difficult climbing encountered and made the summit truly worthwhile. A corrected aneroid reading[1] showed the summit was 9,850 ft., and it was clearly the highest in the area. The highest point was a part of the cornice, which partially obscured the view. Nevertheless, we were rewarded with a fine view down the Toba River which showed the incredible bush through which our predecessors had forced their way.

Mount Dalgleish was quite close, and we estimated its height at closer to 9,500 ft. than the 9,150 ft. shown on earlier maps and as estimated by the 1933 party. After building a cairn and gazing longingly at a fine peak to the east, also overlooking the Lillooet Glacier, we returned by the route we had ascended. The hot sun was creating dangerous conditions on the steeper snow slopes and we hoped to avoid the avalanche areas before they became hazardous.

Our return to camp was with regret as on the next day we had to leave this fine area and begin the two-day hike back, over the valley glaciers. The evening light cast a romantic glow over Montrose Peak, the fine rock-buttressed, cheese-shaped peak at the bifurcation of the Toba River and Montrose Creek. Around us the endless ranges that had at first seemed so new, so exciting and so different now seemed old friends that we were seeing for the last time—and the tumbling icefalls

1 The aneroid reading on 21st July, 12:30 p.m., was checked against barometric pressure at Sea Island, Vancouver, B.C., at the same time, to arrive at the corrected reading.

that had many imaginary routes carved up them—all so familiar and recorded in our cameras. It was hard to believe that we had been in the area only four days.

The following day we struck camp and returned down the Archbishop Glacier, over wider crevasses, and, as the hot weather had removed many bridges, we spent a good deal longer in the icefalls making extended zigs followed by equally extended zags. It was with rather edgy tempers that we reached the same camp site we had used on the way up.

The next day, as we anticipated only a six-hour hike back, we slept in and left at noon. We chose a route that took us to the moraine on the north of the Lillooet Glacier, and thus avoided the steep snout of the glacier where it flowed into the lake. Running water and the balmy evening at 2500 ft. induced all in the party to strip down and wash. Then we found the rum— the larger part of the bottle had been cached at Silt Lake—and the successful week was celebrated by a stiff snort. Early the next day our pilot landed in the Beaver looking incredibly dapper and clean-shaven. We gazed at our own scruffy faces and worn clothes in astonishment; in the mountains and on the glaciers sartorial smartness had been of no significance, unless it was the bright shirt for the camera. Later, as we flew down the rivers and along Toba Inlet, more signs of civilization brought us back from our idyllic week to harsh reality.

APPENDIX

I

Access to the area presented the greatest problem. The difficulties of B.C. bush need no new chronicler—their name is legion. This area may have been traversed by the occasional trapper but he has left no record. In 1932 a party from Vancouver utilized the good services of a trapper, Bert Perkins, and his horses to take them some forty miles up the Lillooet River from Pemberton before turning south-west to climb some peaks lying between Meagher Creek and Manatee Creek (1932 C.A.J. XXI 8). The depression forced many people into the forests of British Columbia and the trail used in 1932 was maintained until 1936 or 1937. The prosperity of the postwar period eliminated any use for the trail, and it reverted to slide alder and devil's club. Interviews with residents of the Pemberton Valley in 1958 and 1959 brought the discouraging information that the trail had not been used for over twenty years and had been lost.

The party that had explored the area west of Meagher Creek was attracted by the larger peaks and glaciers to the west and north. In 1933 they ventured up the Toba River and climbed Mount Dalgleish before retreating back through the bush, a remarkable feat, considering the small amount of climbing they had as their reward. (1933 C.A.J. XXII 56).

II

There was some dispute while we were in the area over the names of the mountains. The maps show Compton and Toba as being close together, and Compton the westerly of the two. Reference to the article in the Alpine Journal of 1933 is confusing. Facing Page 59 is a photograph showing Mount Toba, and that is the mountain we called Mount Toba. The photograph facing Page 58 has a different mountain shown as Mount Toba, one we later called "The Archbishop" as its position over the Bishop River was one of dominance. The rock peak showing between Mount Raleigh (called Mount Gilbert) is the one we called Mount Compton.

III

The names in this area had puzzled the writer for some years The following information was supplied by W. R. Young of the Geographic Division of the Department of Lands and Forests, and has been augmented where indicated by asterisks:

TOBA :	The Inlet was discovered and explored by Galiano and Valdez in 1792 and while there they found an Indian table. Consequently it was named "Canal de la Tabla". The spelling of "Toba" was the result of a chart-maker's error.
MOUNT COMPTON:	Named after the birthplace of Sir William Gilbert.
MOUNT GILBERT :	Named after Sir William Gilbert, half brother of Sir Walter Raleigh, and the father of English colonization, who took possession of Newfoundland in 1583.
MOUNT FALCON:	Named after the vessel of which Sir William Gilbert was captain jointly with Sir Walter Raleigh.
LILLOOET:	After the Lillooet tribe of Indians. The name means "Wild Onion", or Alium Cernuum.
*THE ARCHBISHOP:	Named (1960) as it was above the Bishop Glacier and Bishop River. A gendarme on this ridge was known to us as the "Pope's Nose".

SEATTLE MOUNTAINEERS IN THE MT. WADDINGTON AREA

By Frank Fickeisen

Early in 1960 The Seattle Mountaineers decided to have a climbers' outing in the Mt. Waddington area of the Coast Range of British Columbia. To suit the interest of the participants, two climbing groups were formed. The first group planned to see as much of the area as possible. The second group planned to climb Mt. Waddington.

An advance party of four flew from Campbell River to Ghost Lake on July 28. Two members of this party, James Kurtz and Roger Jackson, went to Rainy Knob near the head of the Tiedemann Glacier. The other two, Mike Kennedy and Mike Boyko, made a camp at Nabob Pass. The party of Kurtz and Jackson arrived at Rainy Knob on Friday afternoon July 29. They were greeted by a group of four Canadian climbers, John Owen, Elfrida Pigou, Joan Stirling and Derrick Boddy. The Canadians prepared tea, and there was considerable discussion of the route up the Bravo Glacier. Later that day the Canadian party moved their camp to the top of Rainy Knob.

On Saturday the other thirteen members of The Mountaineers' outing were flown to Ghost Lake, and air drops were made at Nabob Pass and Rainy Knob. Several times during the day Kurtz and Jackson saw the Canadians relaying loads up the Bravo Glacier.

By Sunday evening the two groups were assembled, the first group at Nabob Pass, and the Mt. Waddington group at Rainy Knob.

Monday morning the Waddington party proceeded up the Bravo Glacier, following the tracks of the Canadians. The snow was quite soft. At the 8,000 foot level a crevasse crossing used by the Owen party had disappeared. The glacier was traversed to the right until a new crossing was found and then traversed back to the left to rejoin the tracks.

The tracks continued left across the glacier and disappeared in a flat area covered with ice debris. The debris came from a collapsed ice cliff immediately above and covered the whole area down to a crevasse system below. A sleeping bag cover was observed on the lower edge of one of these crevasses. The cover could not be reached and there were no other signs of the disaster. Crossing the debris area was accomplished as rapidly as possible since the stability of the ice wall above was still unknown. Beyond the debris area there was a multiple set of tracks that led both out of and back in to the debris area. These tracks terminated at the base of the rock ridge on the left side of the Bravo Glacier.

Scaling this ridge took a great deal of care since the large packs made good balance a problem. The crest of the ridge was reached at sundown, and small but comfortable camp sites were located. The following morning the ridge was followed to the snow just below Bravo Col. The snow was soft and there were no signs that a party had been there earlier. The only reasonable conclusion was that the Canadian party was buried in the debris area below.

Camp was made at the Bravo Col by noon. The following morning the party proceeded to the base of the summit rock. The tents had been left at Bravo Col and while Neal Jacques and Arnold Bloomer established the route on the lower part of the rock, the remainder of the group dug two snow caves.

The following morning was clear and wind free. Kurtz and Bloomer were feeling below par and so decided not to try the rock. The notch at the base of the key chimney system was reached with ease. Bob Latz made the lead around the first chockstone and the remainder of the chimney

went rapidly. At the top of the chimney system a left traverse led to a steep gully. The gully was topped by several icy gargoyles which could not be circumvented. After returning to the base of this gully a ledge system that angled right above the previously mentioned chimney system was found and followed. This led to another gully that went directly to the summit. The summit provides a view in every direction: the Snow Peak of Waddington, the Tiedemann-Asperity group, the Tellot and Tiedemann Glaciers, Mt. Munday, Ice Valley, the Franklin Glacier, and the peaks of the Mt. Geddes-Mt. Roovers area.

The descent of the summit rock was facilitated by three long rappels. We returned to Bravo Col on Friday August 5th with Jacques and Cal Magnusson, taking a side trip to climb Mt. Spearman, On the Saturday trip down the Bravo Glacier the ice debris area was inspected after observing that no further activity of the ice cliff above the area had occurred. The inspection led to the discovery of a water bottle and a piece of tent pole. Lower on the glacier several snow bridges which were previously used were gone and the problem of getting Mike Boyko back from a crevasse was considerable.

The following week was used for a trip to Whymper's Dome; and for climbs of the Upper Claw Peak, Mt. "S" and Tellot Spire from a camp on the Tellot Glacier.

Meanwhile the other party of the outing had a fine tour of the whole area. This group led by Keith Gunnar, had eight other climbers; Mike Rees, Marilyn Loranger, Barbara Bigley, Gene Dodson. Dave Nicholson, Mike Kennedy, Sharon Fairley and Vern Edlin. This group first operated from Nabob Pass, making climbs of the lower Claw Peak and Mt. Jeffry. They then moved camp to Photo Point on the Tellot Glacier. From this camp the Upper Claw Peak and Tellot Spire were climbed, and an attempt was made on Serra III.

The camp was moved back to Nabob Pass from where a climb of Mt. Williams was made. Also from this camp a three day attempt on Mt. Marcus Smith was nearly successful. To supplement this climbing activity this group located nearly every good viewpoint and comfortable camp site in the area.

The whole party returned to Ghost Lake on August 12 and to Campbell River on August 13. The trip had shown us all of the beauty and all of the impersonal forces that mingle so freely in the mountains.

THE CENTRAL PURCELLS IN 1960

By Robert West

Climbs from the Lake of the Hanging Glaciers

On July 31st we piled aboard George Tegart's three-ton truck, huddled under a tarpaulin for shelter from the rain, and rode into the Horsethief Valley. Ever since our trip to the Farnham Valley in 1954[1], my wife Peggy and I had wanted to revisit the Central Purcells, and now we were on our way into this country once more. This time we were bringing our son David, age 3. Doug and Betty Anger brought their children, Peter and Susie, aged 4 and 2. Art and Claudia Maki rounded out the party. Our plan was to camp at the Lake of the Hanging Glaciers, twenty miles by trail from the end of the truck road. George Tegart had been packing supplies for a timber survey crew working on Stockdale Creek, so his horses were already in the valley. George and his son Dennis packed our loads and we started off. Two saddle horses were available so that the children could ride, much to their excitement. About four miles brought us to the main forestry camp, a whole colony of palatial walled tents, at the junction of Stockdale and Horsethief Creeks. From here the travel became more difficult. We were the first party over the trail this season, so there were many downed logs blocking the way, necessitating delays for clearing. At 7 p.m. we camped on a gravel flat along the creek after a long and tiring day.

Next morning we travelled past Horsethief Falls, forded Hellroaring Creek, and reached "Thunder Camp", the site of the 1928 ACC summer camp, at the junction of the main creek leading from the Starbird Glacier with its tributary from the Lake of the Hanging Glaciers. After lunch here we forded the Horsethief and picked up the trail to the lake, which follows the east bank of the stream past a series of fine cascades. The trail leads steeply out of the forested valley into open alpine country near the lake. Here we placed our base camp on a sheltered bench a quarter of a mile from the lake shore.

It rained hard during the night, but in the morning Art and I set off to climb the prominent 9,800 foot peak at the northwest corner of the lake, called "The Dome" by the 1928 party but since renamed "Mt. Starbird". This mountain is one of the most accessible from a camp at the north end of the lake, and provides a fine viewpoint. Every adult member of the party eventually climbed Mt. Starbird at least once.

Our standard route, probably closely similar to that used by the 1928 party, was as follows: Cross the lake at its outlet and ascend grassy ledges on the bluff to the west, working somewhat to the north to avoid cliff bands. Then traverse south along the top of the bluff, and up over snow patches to a small glacier. Continue traversing southward below cliff bands, past the main peak, and ascend on snow to the ridge several hundred yards south of the peak. The ridge is then easily followed to the summit. The entire climb can be done in less than four hours from camp.

On this first day, however, Art and I followed a somewhat more difficult line of ascent, and so unwittingly put up a new route on the mountain. From the top of the first bluff we continued west to the top of a sharp rock ridge. This provided sound climbing until it abruptly ended, forcing a descent onto the steep glacier on the north slope of the peak. The glacier and the snow above it were followed directly to the summit. Peering through broken clouds we plotted climbs on neighboring peaks.

Our descent was by the standard route. We paused for photographs on the ledges, which provide the best viewpoint for the lake. The Lake of the Hanging Glaciers is a striking natural

1 *Canadian Alpine J.,* xxxviii, 68.

The Lake Of The Hanging Glaciers And The Lieutenants. *Photo A. Maki*

feature, in my estimation as beautiful as Lake Louise and far more interesting scientifically. Only its inaccessibility can account for the fact that it is not known to millions of tourists. About one-fourth of its surface is still covered by a great ice front, built by icefalls from the glacier to the south of the lake. The next morning was clear and Art, Doug and I set off at 6 a.m. to climb Mt. Commander. The former trail along the east shore of the lake has been obliterated by rockslides. Halfway down the lake one can follow the crest or trough of a moraine some distance above the lake shore. The ice front in the lake is nourished principally by an icefall from a bench glacier just southeast of the lake and more than a thousand feet above it, which is in turn fed by still higher icefalls from the Jumbo Névé. One must cross the bench glacier on the way to any climbs on the high peaks to the south. Direct ascent of the lower icefall seemed impossible, and we reached the bench glacier by climbing a waterfall which provided a break in the cliffs of Mt. Maye. The waterfall is marked by a prominent talus cone nearly at the end of the moraine. There is some rockfall hazard here. One 100-foot pitch directly up the waterfall and another diagonally right bring one to easy scree-covered ledges and snow patches which lead gradually upward to the bench glacier. We usually reached the glacier in about two and one half hours from camp.

On this occasion we crossed the glacier and ascended steep snow and rotten rock to the 9,200-foot Commander-Maye col, which we reached about 10 a.m. We then started up the north ridge of Mt. Commander, last climbed by John Noxon and Arthur Read of our 1954 party. There were several airy pitches near the col, then a short traverse to the west. Shortly afterwards the ridge abutted a prominent tower which forced a long traverse well down onto the west face, perhaps 300

feet below the ridge. The face here is a complicated jumble of chimneys, ledges and scree gullies. Eventually we regained the ridge at the base of another large tower and crossed to steep snow on the east side and eventually back to the ridge.

One difficult pitch on the rock and we were up on the long, sharp, nearly level arête which leads to the summit. The climbing was exposed but nowhere really difficult. We reached the summit at 1 p.m., just as it began to snow, and we immediately turned to descend. Our ice axes were buzzing as we hurried along the ridge, and the storm soon developed into a blizzard. We watched lightning flash from cloud to cloud below us in the valley. We hastened off the ridge and on to the long traverse and promptly lost ourselves in the maze of gullies and ledges. Several false leads took valuable time before we finally found the correct line of descent. At the base of the waterfall, the rock climbing over, we finally stopped for lunch — at 4 p.m.!

One principal objective of our trip was to ascend the unclimbed high peaks immediately south of the lake. These peaks, which rise in great cliffs nearly 4,000 feet directly from the lake, we called "The Lieutenants" because of their proximity to Mt. Commander.

On the next clear day, August 5, Peggy, Art and Doug set off at 7 a.m. to attempt these mountains, from the west side of the lake. They started up the Mt. Starbird route, continuing along the glacier and ascending to the main ridge somewhat farther south than for Mt. Starbird. Once on the ridge a number of minor bumps had to be climbed and descended to reach the base of the first "Lieutenant". On the peak itself the last 500 feet required exposed roped climbing over steep rotten rock. They reached the summit of the first "Lieutenant" about 3.30 p.m., and Peggy waited while Art and Doug dashed on to the second "Lieutenant", arriving at 4 p.m. The long return journey was completed after dark, the party arriving at camp at 9.30.

While the climb was going on Betty, Claudia and I stayed in camp with the children. The children found plenty to do in camp. We brought only a minimum of toys, but the boys were quick to invent them. A favorite game was "mountain climbing" up the bank in front of camp, using sticks for ice axes and an old piece of line for a mountaineering rope. Near camp we found a natural sandbox.

We wished to find a way from our base camp over to the Farnham Valley to the east, in order to revisit the Commander Glacier which we had observed in 1954[2]. The next day Art and I left camp late, hoping to find a negotiable pass north of Granite Peak. From camp we traversed north into a prominent valley leading to the 9,600-foot col between Granite Peak and the unnamed summit to the north. We reached the col in three and one half hours from camp, and from there followed the rock ridge to the unnamed summit at its north end, only 10 minutes away. A large cairn indicated that the peak had been climbed previously. From this peak we could see that our projected route looked impractical, since there is about 2,000 feet of rotten cliffs east of the col. We returned to the col and then climbed Granite Peak by its northeast ridge. The climb required one hour from the col and was straightforward.

The next day I had 'flu, which sooner or later afflicted us all. On the following day, which dawned cloudless and brilliant, Art, Doug and I left at 5.45 for Mt. Jumbo, following the usual route to the bench glacier and then going up the icefall leading from the Jumbo Névé. This icefall had not been ascended previously, although it was descended by Cromwell, Hillhouse and Thorington, with Conrad Kain, following their ascent of Jumbo from the Farnham Valley.[3]

2 *Canadian Alpine Journal,* xxxviii. 99.

3 J. M. Thorington, "The Purcell Range of British Columbia", American Alpine Club, New York, 1946, pp. 53-54.

Our route started on the east side of the icefall, near Mt. C˚ommander, and worked gradually to the right. Three particularly large crevasses required exacting ice work, but once over the last of these the way was clear to the névé, which we crossed to Mt. Jumbo. The ascent of the peak, a corniced snow summit, presented no real problems and we reached the top after six hours of climbing. Mt. Jumbo is the second highest elevation of the Purcells and provides a superb viewpoint. On the return trip we traversed over to West Guardsman. We returned via the icefall and arrived at camp just at nightfall.

During the next five days Art and I were out of camp on a traverse to the west (described later in a separate section), and little climbing was done from base camp, though Doug and Betty did climb Mt. Starbird. Claudia and Peggy climbed the same peak the day after our return; Doug, Betty, and their two children accompanied them part way and brought down a nylon parachute, part of a food drop lost several years back.

On August 15 the weather turned bad. Since major climbing was out of the question, Art and I decided to try again to reach the Farnham Valley, this time via the Commander-Maye col. We reached the col by the usual route and looked for a way down. We decided to attempt direct descent to the snow, and started down a prominent gully. The rock was rotten near the snow and required some care, but we had no real difficulty in reaching the glacier. We went down the snow until crevasses forced us off onto the north lateral moraine, which we followed for some distance before dropping into the valley below the glacier tongue. The clouds had lifted somewhat and we were able to get pictures of the glacier and carry out measurements, which showed that the glacier has advanced about 800 feet since 1954. We then followed the creek down to a cabin near the site of our 1954 base camp. Rain started during the night and we made the trip back to camp, by the same route, in most unpleasant weather.

It was still overcast the next morning. Ever hopeful, Doug and I started off for Mt. Maye at 8.15. We crossed the rockslide east of the lake to the first meadow, which we ascended for about 1,000 feet to the base of a rock-filled gully leading up through cliffs to the Granite-Maye col. Crystals of chalcopyrite and molybdenite were found in quartz boulders in the gully. By the time we reached the col at 10.30 it was snowing, and fresh snow on the rocks made otherwise easy climbing rather difficult. We followed the northwest ridge of Mt. Maye, making one long traverse to avoid a prominent gendarme, and arrived at the summit at 12.30.

We descended on the snow of the north face, traversing over to gain the northeast ridge. This we followed to the col between Mt. Maye and the unnamed 10,000 foot peak to the northwest. Since this was unclimbed, we decided to try it. The ridge was well broken and presented no difficulty; we reached the summit in half an hour. We built a cairn and crossed back to the Granite-Maye col over the glacier north of Mt. Maye.

The next day, August 18, we were expecting George Tegart to come in and pack us part way out. However, when the day dawned brilliantly clear we couldn't resist the temptation to make one more climb. Art and Peggy left camp at 5 a.m. to climb Mt. Karnak via the icefall above the bench glacier. George and Dennis arrived in camp later in the morning and we packed up and descended to Thunder Camp in the Horsethief Valley, where we waited for Art and Peggy to return. We grew somewhat concerned when they didn't arrive by dark. About 9.30 p m. they managed the tricky task of fording the swiftly-flowing river by the light of our flashlights, and we learned that they had reached the summit of Mt. Karnak via the snow of the northeast face, thus making the second ascent of this 11,000-foot peak by a new route, as a fitting climax to the expedition.

THE MACBETH NÉVÉ AND ITS MOUNTAINS

By Robert West

Several maps of the Purcell range indicate a large snowfield west of the Starbird glacier and east of Duncan Lake, between Glacier and Little Glacier Creeks. The snowfield was unnamed and no record existed of its exploration. It was decided that Art Maki and I would visit it.

We left camp late on August 9, going down the horse trail to the Horsethief Valley, and crossing the river.

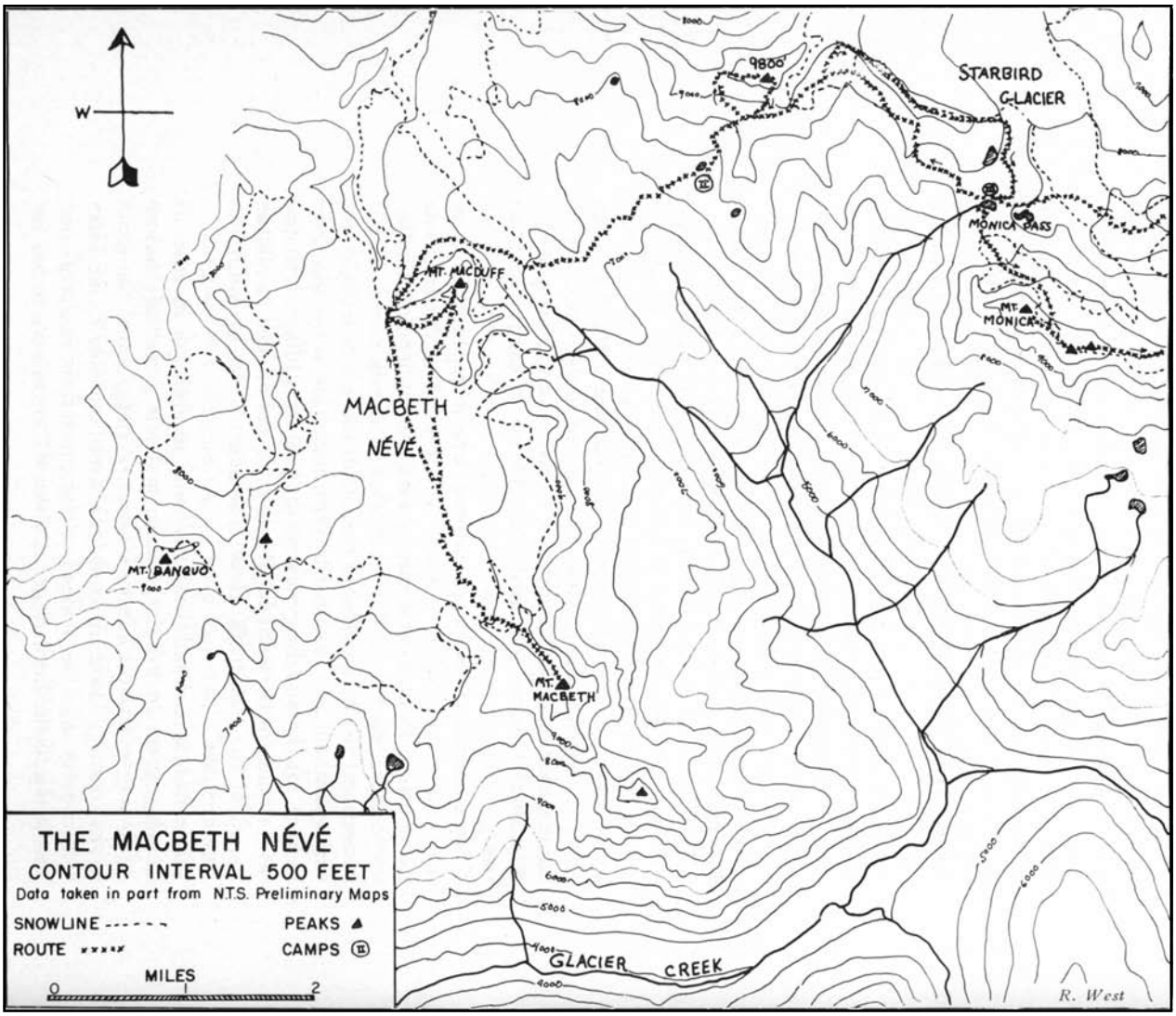
We followed the north side of the river, through dense swampy country with many moose and bear tracks. Finally we broke out into open country just below the point where the valley narrows to a canyon passing between high cliffs. There the valley is choked with old snow. We crossed to the south side of the creek on snow and were soon forced up on to steep rocks. It was late, so when we found a broad ledge we camped at 5,900 feet.

Next morning a half-hour more of scrambling brought us to the front of the Starbird Glacier. We ascended on the ice, made the 90° turn to the north, then got off the glacier and climbed to "Monica Pass", on the main Purcell divide north of Mt. Monica. At the pass there are two small lakes, one milky green with glacial silt and the other brilliant blue. Across the lakes, we had our first breathtaking view of the peaks guarding our snow-field, shining in the sunlight. By now we had decided to call the snowfield the "Macbeth Névé", because of its proximity to Duncan Lake.

We had agreed on the lakes as a rendezvous in case of trouble, so we built a large cairn and left a message before continuing westward. We were now travelling across the grain of the country. Three major ridges barred our way to the Macbeth country, and we plodded up and over them in succession. At the top of the third ridge, at about 8,800 feet, we rested for lunch. This ridge abutted an unclimbed peak, the highest one between Eyebrow and the Macbeth group, and since the summit was only about a thousand feet above us we determined to climb to it. We traversed west from the ridge on to snow and scree, and then up broken rock to the west ridge of the peak, which we followed to the summit, a tricky climb over steep rotten slate. We reached the 9,800-foot summit in an hour and forty minutes from the top of the ridge. Descending we found an easier route down a waterfall gully just east of the summit, which led to snow and thence back to our lunch spot atop the ridge. We then dropped off the ridge to the west, to a tarn 1,000 feet below, where we made advance camp. As we made supper we were treated to a glorious sunset over the Macbeth peaks.

We left camp in the half-light at 5 a.m. The way toward the snowfield led over numerous small rock ribs and through beautiful grassy and flower-carpeted glades. Finally we climbed a major ridge which brought us just across a glacier from the cliffs which bar the way to the névé. The glacier flows from a break in these cliffs and as we had hoped, it provided an easy route up almost to the level of the névé. From the top of the glacier we had only to climb a short headwall, and suddenly, at 8.15 a.m., we were gazing over the pristine snows of the Macbeth Névé.

Our first objective was one of the high peaks about the névé, just south of the glacier which we had climbed. This mountain rises 3,000 feet above the valley to the east, but only about 600 feet above the névé. We followed the snow to the base of the west face, which we climbed over easy broken rock. By 9.15 we were on the summit, at 9,800 feet. From this vantage we had a splendid view of the entire snowfield and the peaks around it. The highest peak we decided to call "Mt. Macbeth"; it is at the south end of the névé, and its altitude is estimated at just over 10,000 feet. Another fine mountain rises to over 9,900 feet to the west of the névé; this we named "Mt. Banquo". The mountain which we were standing on, third highest, we named "Mt. Macduff".


W
9800
STARBIRD
GLACIER
MONICA PASS
MT. MACDUFF
MT. MONICA
MACBETH
NÉVÉ
MT. BANQUO
MT. MACBETH
GLACIER CREEK
R. West
THE MACBETH NÉVÉ
CONTOUR INTERVAL 500 FEET
Data taken in part from N.T.S. Preliminary Maps
SNOWLINE
ROUTE
PEAKS
CAMPS
MILES
0
1
2

On The Summit Rocks Of Mt. Macbeth. *Photo A. Maki*

Mt. Banquo From Below Mt. Macduff. *Kodachrome R. West*

Mt. Macduff Across The Macbeth Neve, From Mt. Macbeth. *Kodachrome R. West*

In the background, L. to R., the Four Squatters Group, Mt. Conrad, and the Bugaboos.

The névé proper is about three miles in length, north to south. It has five glacier outlets; two principal ones at the north and south, and three subsidiary ones, two on the west and one on the east. The main exit glaciers add perhaps another mile and a half to the total length. The width varies from a mile at the north to about two miles at the widest point near the southern end. As is typical of the high névé fields of the interior ranges, the snowfield is nearly level, with an altitude of about 8,800 feet.

Since the day was young, we crossed the névé to its southern end and started up the steep snow of the north face of Mt. Macbeth. An hour's climbing brought us to the rocks of the first fore-summit of the mountain. Two more fore-summits were crossed in short order. The ridge then drops steeply to a notch where the climbing began in earnest. It was thoroughly enjoyable climbing, just on the verge of requiring belays. The most difficult pitch was the final summit block which had to be climbed via a narrow chimney. At 1.15 p.m. we shook hands on the summit, which we had reached in two hours.

We were now ninety percent of the way across the Purcells toward Duncan Lake. The view was superb. To the north, across the névé, peaks of the Bugaboo, Four Squatters and Battle groups were visible. To the west, Mts. Cooper and Marion of the Southern Lakes Groups dominated the landscape. To the southeast an attractive group of unclimbed 10,000-foot peaks could be seen, just north of Mts. Truce and Cauldron. A real prize is a fine twin summit of about 10,400-feet, lying in decidedly inaccessible country to the south.

Our work in the Macbeth area was now completed. We returned across the névé and after a night there we started back for base camp via a high level route. From the lakes we climbed straight up a small glacier on the north face of Mt. Monica, to the Starbird névé. We wanted to climb Mt. Monica en route. The steep northeast snow slopes, the usual route of ascent, had suffered a slab-avalanche about half way up, and looked hazardous. We therefore crossed the usual route and continued on past Mt. Monica to the col between it and the 9,800-foot peak to the south. Leaving our packs, we then ascended Mt. Monica by the tilted ledges of the south ridge. Only one pitch provided any difficulty, and we reached the summit in two and one half hours. We retraced our steps to the col and continued along the ridge, ascending and descending both of the unnamed 9,800-foot snow summits first climbed by the 1928 ACC party, and crossing over several smaller bumps to reach the névé. We then had a long slog over the snow toward Mt. Starbird, which we reached at 12.30. Two hours more brought us back to base camp, and a happy reunion with families and children.

THE CARIBOOS IN 1960

By Frances D. Chamberlin

THE idea of an expedition into the Cariboo Mountains originated in September 1959, after a short trip I had made up Sand Creek to attempt to climb Mt. Chamberlin during the previous month. The Mondolfos of Chicago had been talking about and planning on a trip such as this for some time, and when they heard of this region, they decided that it was just the place to go. The fascination of relatively unknown country with fine peaks and tremendous glaciers provided a strong attraction. Sand (or Tête) Creek had been pretty well worked over and it was decided to approach via the Canoe River.

The plan was to hire a packer to cut enough of a trail to get pack horses to the head of the Canoe Valley and set up a base camp. From there, we would backpack supplies up to two or three high camps and climb from these. Mr. Stan Carr, a local rancher, suggested Cliff Brooks as packer. He was to cut a trail and pack in most of the food and some equipment before our arrival.

Our party consisted of A.C.C. members Lucio and Vicki Mondolfo who planned and organized everything, with much correspondence through the winter and spring. Roger Neave of Sarnia, Ontario, Gertrude Smith and Scipio Merler, both of Vancouver, Jack Cade of Williams Lake, B.C., Barney McNabb of Edmonton and Freddie Chamberlin of Tyron, N.C.

The advance party, consisting of Lucio, Jack and Barney, went in on Saturday, July 30th to complete setting up base camp, finish cutting trail (Cliff had been detained fighting forest fires) and get set to put up a high camp. They found rough going and looked slightly the worse for wear when the rest of the party arrived on Monday.

On arrival in the Tête Jaune-Valemount area, the starting place for this part of the Cariboos, Mr. Carr greeted us with the encouraging news that he had been here since 1927 and the mosquitoes were the worst he had ever seen. We found the no-see-ems as bad or worse than the mosquitoes at first, but later these disappeared and were replaced by black flies. It required energy to battle this assortment, as they greedily drained our blood.

The trip in to base camp was easy by contrast to some later going. From Valemount it was possible to drive four miles south along the road to Kamloops and then 8 or 10 miles in by a logging road to where we left the cars. On Monday, August 1st, five of us started walking up the road at 7.20 a.m. After an hour and twenty minutes, we were on the trail cut by the packer.

The valley is a large one, broad and flat, laced with pleasant-looking meadows which are actually swamps. The river swings in wide S curves, making a route following it circuitous. Snow peaks show at intervals up side valleys, and the appearance of the peaks and glaciers at the head of the valley inspired us to push on.

We went up the south side of the river, through swamps and alder thickets which had been cleared for horses. We crossed one creek on a large log which had fallen naturally into just the right position. It was a surprise to reach base camp at the early hour of 11.40 a.m., a long distance short of the mountains at the head of the valley, and some distance (about two hours) short of S-4 Creek, up which we hoped to ascend for a high camp. Our packer had stopped here due to a creek he said he couldn't get horses across. The afternoon was spent cutting trail above camp, packing supplies up the valley, and wading through swamps and sorting food at camp. A large bull moose was seen close up. During dinner and around campfire that first evening, a very friendly gray bird walked all over us, snatching at and devouring flying insects by the hundred. He — or she — was never seen again. We hoped it was not a victim of overeating.

Next day we cut trail through tough alders, willow and other assorted bush (including devil's club), and backpacking loads up the valley to a cache. Bridges were built (a long one across 8-4 Creek, which the advance party had scouted and reported that we would be unable to use for access to the peaks above) and "twig bridges" (made of alder) in other spots. The twig bridges had a springiness in them and gave a choice of places to step, some of which proved unsuccessful at times. There were occasional stretches on gravel flats or through swampy meadows where the going was easier, but these were all too few and brief. When a reconnaissance was needed, Roger would go up the nearest large tree like a cat.

On Wednesday we took tents, sleeping bags and more supplies and all day worked our way up the valley, adding food at the cache and setting up a not-so-high camp at the foot of an old terminal moraine near the Canoe and 30 or 40 minutes below the head of the valley where the North and South Canoe drainages join. R. T. Zillmer in his article (A.A.J. 1944) estimates the elevation at the head of the valley to be about 3500 feet. The peaks were still a long distance above us.

Lucio and Scipio ascended the left or South Fork next morning up smooth cliffs, slabs, alder and timber to look for a higher camp site. Upon return, they reported no possible place to camp and very difficult going. Roger, Gert and I went down to the cache to bring up more food. The weather seemed to be clearing that evening and it continued good during most of the trip.

On Friday Lucio, Vicki and Scipio moved two tents and half the food to a site near two small lakes, used by Sterling Hendricks' party in 1949, when they came over the névé from Sand Creek.

Roger, Gertrude and I left at 4.55 a.m. to try an attractive looking rock peak to the northwest. This proved a long climb, involving fording the Canoe in the only fording place we'd seen, where it spreads out at the head of the valley on a gravel flat, then ascending smooth, glacier-polished rocks and a high moraine, and crossing the glacier tongue on bare ice. Above the glacier we found some really tough and steep bushwhacking. (We often remarked on how far down the glaciers come and how far up the timber goes in this region.) Above this were pleasant meadows and then the upper glacier which furnished a good snow climb. The rock climb we expected never developed. The peak turned out to be Holway's Penny, 9,820 feet, with the penny intact in the record box.

This is a fine viewpoint and for the first time, gave us an idea of just where we were. From the depths of the Canoe Valley much is left to the imagination. However, a traced copy of Alex Fabergé's map (C.A.J., 1950) was very useful. Sir Wilfred Laurier rose above us to the west and the other mountains of both Sand Creek and the Canoe basins were displayed around us. Some unnamed and unclimbed peaks south of the Canoe intrigued us, as they had been one of the planned objectives of the expedition. A peak on the skyline, south and east of the valley head was selected as an objective. This had a long ridge leading west and a trifle south, connecting a series of other summits. Roger traced a possible route of approach which appeared to avoid the difficulties encountered by the recce party the day before.

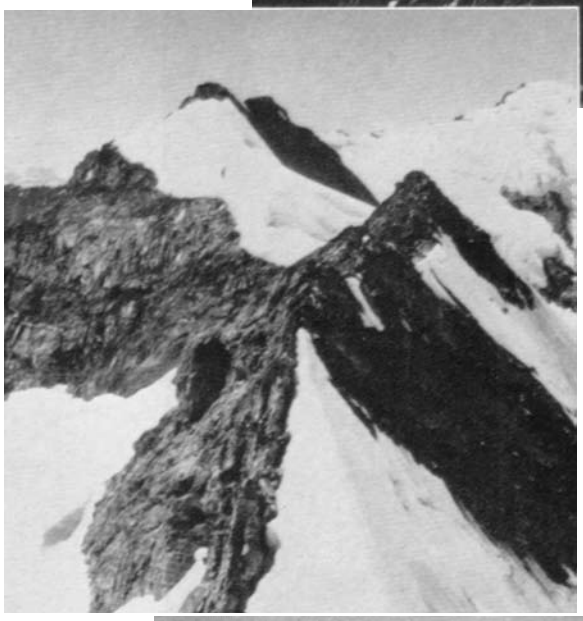
On the descent, in fording the Canoe, Roger caught a fish by stepping on it in shallow water. It was enjoyed at breakfast next morning. Camp was reached at 10.15 p.m. after a climb of around 6,000 feet.

Next day, hot and sunny (in spite of heavy clouds and a large ring around the sun the previous afternoon), we rested, except for the usual exercise of swatting bugs. An attractive pool for bathing was found.

Next morning, August 7th. at 5.00 a.m. Roger, Gert and I left to explore the southern situation. We walked to the head of the valley, then up the rocks and through some alder to a fine goat trail which led up to a high moraine. From here, about three hours from camp, we reached

Mt. Penny, Tongue Of Canoe Glacier. *Photo Gertrude Smith*

Mt. Pyramid, Mt. Crescent, Mt. Thompson To Right Of Picture.
Photo Gertrude Smith



Snow Ridge Between 2nd And 3rd Peak. Mt. Apex In Background.
Photo Gertrude Smith

South Side Of The Canoe River
Photo Gertrude Smith

Showing ridge leading up to the 5 Peaks.

some lovely small meadows, complete with flowers, water supply, spruce and a fine view of the tremendous icefall below Crescent Pyramid, etc. — a perfect campsite. Above this, the climb consisted of a pleasant ridge running eastward, directly above the Canoe Valley, then the crossing of a fine glacier, leading to the peak, which is of good, solid rock with a lovely pointed summit, reached at 1.05 p.m.

A characteristic of the Cariboos is mica, with smooth, rather greasy, crumbling, mica-filled rocks, but here it was ideal. From this peak, we traversed the whole interesting ridge to the west, over four more varied summits. The last two are the highest and are probably slightly lower in elevation than Penny, all of them being probably 9,000 footers. It was lovely mixed climbing. A couple of snow arêtes were so sharp that our feet had to be placed sideways, giving a clear view down the sheer north face. There were some good rock pitches, one of them a face with tiny holds and another, an impressive chimney and crack leading to the top of the next-to-last summit. All were first ascents. We built three or four cairns and produced one sardine can for a record and used tinfoil for a couple more. The weather was beautiful, the scenery likewise and we thoroughly enjoyed the day. Roger said it was one of the best he had ever spent in the mountains. It was decided that perhaps the peaks should be named the Chilkst Peaks, the name being Shuswap Indian dialect for "five".

However, it was a long descent, down the northwest rock ridge, alternating with snow, picking our way among large crevasses, down the east side of the glacier, around the end of the ridge that separates two glaciers, following the junction of the two glaciers, ascending slightly to the moraine and goat trail, then down rocks and slabs and through bush. It was tricky getting down the smooth cliffs above the Canoe in the dark. Fortunately a full moon came to our assistance, but the moon seemed to find it hard to rise above the high ridge on the south and reached us only intermittently.

Camp was reached after midnight, a welcome being furnished by a pair of eyes, well above the ground, shining from the nearest bush. We didn't make the acquaintance of their owner, but after a belated dinner, retired to our welcome sleeping bags at 1.30 a.m. The climb had taken nineteen and one half hours.

By now the food was running low and we left next afternoon for base camp to get another load of food. Arriving in the dusk (most evening meals seemed to be eaten in darkness), I spoke to a noise in a nearby bush which apparently was a bear. I got no reply from the bear but woke up Jack, who had had a good rest and was now feeling ready to climb.

Next morning the four of us backpacked supplies up the valley, picking up more at the cache and the first high camp, and continuing on up to the flower meadow by the moraine where camp was set up in the dusk and dinner eaten in darkness.

Wednesday, a start was made at 7.40 a.m. for Apex, which appeared to be relatively close to the southwest, but distances were deceiving. We crossed two glaciers, with some step cutting, and the rock rib between, involving some descent, then up a rock ridge, with grassy ledges on the lower part, and on to the upper glacier, beneath the heavily corniced summit of Apex. Gertrude counted 12 glaciers in view at one point, a glorious display of them. The upper glacier was split by a few large crevasses, necessitating some probing around for a route. We traversed down and to the left to a point just below the final ridge where Roger walked across a snow filled crevasse and cut his way up a vertical 18 foot snow and ice wall, where in following, I managed to break down quite thoroughly the holds he had constructed. Just below the summit, we ascended a fine rock

wall, which was bypassed on snow on the descent. The summit was reached at 2.55 p.m. and left at 4.25. An unusually handsome cairn was built here and a record left.

This is supposed to be the hydrographic apex of the Canoe, Raush and North Thompson watersheds, but we thought the actual apex might be a rock peak, half a mile or more southeast of us. We climbed that too, left a small cairn but no record, and looked down an unusually high vertical wall, perhaps well over 4,000 feet, on to a large glacier way below, at the head of the North Thompson. A suggested name for this peak is Trigon, based on its three watersheds. There were three handsome unclimbed peaks south of us that were tempting, but they are probably easier to reach via the North Thompson.

Descending a high angle of heavy, wet snow on top of ice and threading among crevasses was a bit trying, but we reached camp by 8.40 p.m. Forest fires were sending up a lot of smoke, as they had earlier in the season.

Next day nobody had the energy for a long climb (the only variety available), so we relaxed around camp, listening to frequent avalanches from the glacier west of us, across the valley. A fine waterfall in that direction, draining a number of glaciers, we named “Black Nun Falls”, from a prominent rock figure there.

Friday we left at 8.50 a.m. and backpacked everything to base camp (an all day job) and Saturday came out to Valemount. The fine weather appeared to be deteriorating and apparently it did just that, quite promptly and completely. Meanwhile the Mondolfos and Scipio had set up their camp and climbed Penny, Canoe and the Little Matterhorn. They came down on Wednesday, Scipio going out on Thursday and the Mondolfos leaving Friday. Our party met them at Valemount.

The heavy bush and difficult travelling up the Canoe Valley from our remote base camp made the trip much longer than had been expected and therefore curtailed the time left for climbing.

HOW STEEP IS STEEP?

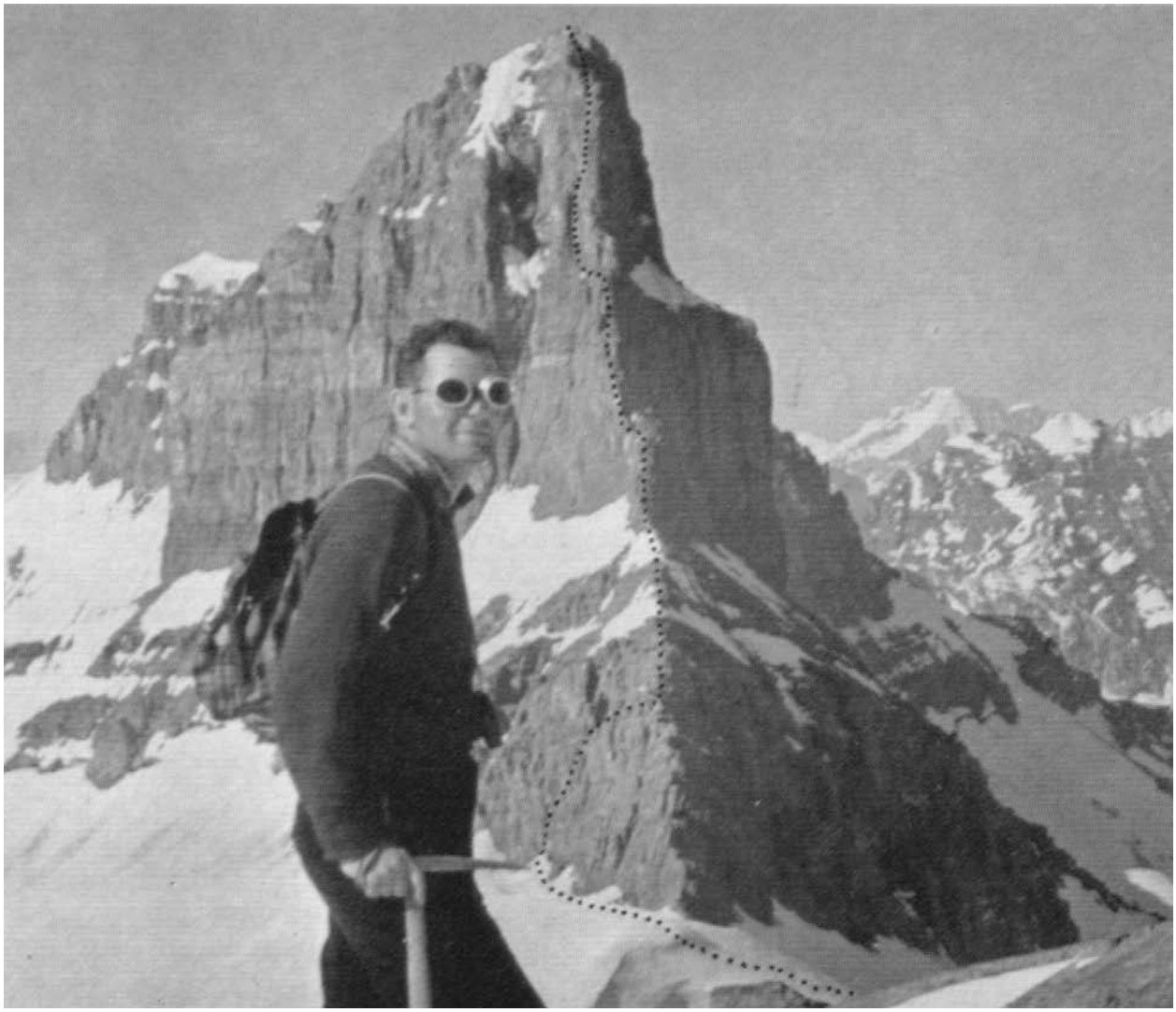
By Hans Gmoser

AFTER reading the reports in various alpine publications one can come to only two conclusions: either there are still a few supermen climbing in those mountains, or else most of us are so impressed by our deeds that we tend to exaggerate them, sometimes to quite an extent. 1 could write a book about the many instances where I simply had to laugh at the description of the steepness of a snowslope. This is where we get carried away most easily. According to those reports our mountains are full of 60 and 65 degree snow and ice slopes. It would be a good idea if some people would stop for a minute and consider just how steep 65 degrees actually is.

First of all, we have to realize that some of the very difficult and well known walls in the Alps have an average incline of only 60 degrees. I can assure you, that when you climb such a wall you not only have the impression of climbing a vertical face but of climbing a partly overhanging face. A snowslope, on account of its smoothness and because of the very appearance of the snow, seems always steeper than rock of the same incline. Therefore a 60-degree snowslope would look at least vertical to us with perhaps a slight overhang near the top.

My main reason for criticizing this kind of reporting is that it makes it very difficult for the reader to comprehend what he is getting into. 1 can give a number of incidents where my companions and I have been so impressed by an account of a climb and so worried about it that we almost felt perhaps we didn't have what it took. However upon doing the climb we found that the report was so exaggerated, it was not even funny. For instance prior to our climb of Mt. Logan I read in the AAJ: 'There was no practical route onto the ridge on the north side because of a 60 degree ice slope." Well this is absurd. That slope is certainly no steeper than 45 degrees. The same writer goes on to say: "Above 13,000 feet there is probably very difficult ice climbing on slopes up to 65 degrees." There was nothing even near to 65 degrees. The steepest places on the entire ridge never exceeded 45 degrees. (See editor's note)[1] In giving an official report in a specialized magazine or Journal it is absolutely necessary to stick as close to the facts as one possibly can and not get carried away by one's own exploits. 1 am prompted to write this, not only because of many occasions where people exaggerated the difficulties of various climbs, but also because of the way people dispose of certain parts of our mountains as not good climbing areas after having barely had a chance to see those places. It is thanks to those "explorers" that almost the whole chain of the Canadian Rockies falls under the category of "rockpiles, vertical scree, etc. . . ." There is loose rock to be found in every mountain range. Granted there is more loose rock in some than in others, but I have yet to see a steep rockface which is composed of loose rock. It has to be of good rock because of the very nature of it. And since those Canadian Rockies show more formidable cliffs

1 Editor's Note: Much of this needed saying, and more CLINOMETERS should be carried, but Mr. Gmoser has perhaps gone too far to the other extreme. He should know better than most that differing conditions can easily change the angle of the snow or ice pitches 10-15 degrees from season to season. Assessment of rock routes is always subjective, hence not entirely reliable unless you personally know the author's standards. A man at his limit will always be more impressed by a problem than a man who is expert at Grade VI. Many a climber uses "unnecessary" pitons. Yet the same man may disdain another's "essential" spike.
And men will argue forever the respective merits of different ranges. Many Coast Range climbers are unfavourably impressed with their first experience of different and rotten rock on famous Rockies peaks. A different technique and considerable experience is needed to cope with it safely. Climbers who reach the Rockies at most once a year often don't want to climb the great faces, or take the time to search out short routes where the rock is good. P.L.S.)



Mt. Brussels. *Photo Heinz Kahl*

than any other mountain range I have ever seen they certainly rank among the best rock climbing areas we have.

The possibilities for good rock climbing, even in the near vicinity of Banff, have hardly been scratched and I am sure I will be too old to climb before I can do a tenth of the many climbs which I see all around, which have never been done and which have gone unnoticed to most. Only five miles west of Banff there is an area practically untouched. Sure there are five routes on Mt. Edith but what is this when there is a mile long eastface, composed of the best limestone, 1,500 to 2,000 feet high, and with no route on the face proper?

Last July, Jack MacKenzie from Calgary and I drove on the old Lake Louise road underneath the Hole in the Wall. Just to the west of it is a beautiful triangular face, 1,000 feet high with a crack right through the centre of it from the bottom to the very top. Thirty minutes' walk from the highway and you can start on this climb which is of Grade IV almost throughout, with two pitches of V. It was one of the most enjoyable rock climbs I have ever done. The rock was as solid as concrete and from the top it was an easy walk back to the highway.

To the east of Banff in the Kananaskis Range there are unlimited possibilities for the rock climber without even mentioning Yamnuska, which has already achieved great popularity. Even along the main chain of the Rockies, apart from all the major peaks there is a most interesting field for rock experts and it is all a virgin land except for a few climbs such as the Sunburst Peak northeast face at Assiniboine, or Don Morrison's and Jim Tarrant's route on the northeast ridge of Mt. Odaray at Lake O'Hara, which is probably one of the most formidable climbs in the country.

Then there is of course the one peak of which I was to give an account when I started this, but I had so much on my mind that it took me that long to get around to it. It has been called "vertical scree" and "impossible to be climbed without pitons." There was an account of the "flesh crawl technique" with legs dangling in the air, pitons and expansion bolts, nine hours up from the col and five hours down, an airy summit ridge, in short a frightful climb, enough to scare away anyone.

I admit Heinz Kahl and I were scared before we took off to try Brussels Peak. We both tossed and rolled in our sleeping-bags and were glad to be at last on our way from Fryatt Creek to the Christie-Brussels Col. We went fast and didn't speak much. Shortly after the col we roped up and Heinz went ahead. We found the climb most interesting and the rock very good. The climb is actually quite short. There are only four rope lengths which we took alternately. The formidable Lewis Crack which had been surmounted with bolts and the "flesh crawl technique" before, was this time climbed with one piton below it and by simply utilizing the two sides of the outer crack. Apart from being the hardest part of the climb it was also the most enjoyable. There was certainly no need to kick the air with your feet. As a matter of fact I would have been a little concerned had I found myself in such a position and I am sure I am speaking for Heinz also in saying this.

Only five and a half hours had passed from the time we had left the ACC camp at Fryatt Creek till we reached the summit. We were the third party on top and two Californians had climbed the mountain with only three pitons, compared to our four. I am sorry to have forgotten their names. One was Mickey, and I believe he was on the first ascent of the Wishbone Ridge on Robson in 1955.

To sum it up, Brussels Peak is a wonderful climb. It is not easy but neither does it take superhuman beings to climb it. I go as far as saying that if one wants to make a point it can be climbed without pitons.

To sum up my little tale, let's go easy on those 65 degree snowslopes and let's flavour the accounts of our climbs with a little less exaggeration. And also let us not write off a whole mountain range as a "pile of gravel", especially a range like the Canadian Rockies. Mark my words, it will be known as one of the finest climbing areas, even for the rock experts.

"COSTIGAN'S BOIL" – CA. 8,700 FEET

By Pat Duffy

THE climbing is different in the vicinity of the east end of Lake Minnewanka in Banff National Park. The locality is seldom visited by climbers, the scenery is a pleasing combination of foothills and front range scarps and in some zones the routes lie over firm rock at a high angle.

In August 1958, a party consisting of Patty and Les Clark, Kenneth Betts and the writer drove north on the Forestry Trunk Road from the old Banff-Calgary Highway. Turning west at the Bar-C Ranch they proceeded for 18 miles to the Ghost River Diversion Project, then southwest on the road which leads to the valley of Lake Minnewanka. It was their intention to explore the valley to identify several peaks in the area. The car was parked at the Banff National Park boundary marker and the four continued west around the south side of Phantom Lake and, after a numbing wade in the stream which drains west to Lake Minnewanka, they passed along the north side of Lake Minnewanka for one mile.

En route they hiked over a good trail beneath 400 foot high canyon walls which are broken by widely separated tributary canyons. One such fissure was seen from a distance. It seemed too narrow and steep for exploration but since it lay in the direction of Phantom's Crag, the position of this "canyon formidable" was noted. At the second tributary canyon leading from the north, the climbers scrambled up to its entrance to view the terrain above the hemming cliffs of the Minnewanka canyon. After a 500 foot climb they were greeted by a spectacular sight: a walled canyon fully half a mile wide and over one mile in depth, terminated by a horseshoe of vertical precipices mounted one on the other to the 9,000 foot crests east of Mt. Costigan. The party retired to the lowland to enjoy Les' able interpretations of the local geology; then they proceeded home over the Forestry Road to Calgary.

Early in July 1959, the writer returned to the area with Dr. Sev Hieberg, Karl Ricker and Linda Campbell-Brown. The group succeeded in exploring and penetrating the "Canyon Formidable" (i.e. the first tributary canyon on the right as one proceeds from the Ghost River Diversion Dam to Lake Minnewanka). The climbing was fascinating. The route lay beneath 400 - 500 foot cliffs in a twisting canyon in which several waterfalls of various proportions made the intruders resort to all manner of acrobatics to avoid a thorough wetting. About one mile from the canyon entrance was the first major obstacle, a 100 foot pitch bordered by a spraying waterfall on the right and by high overhangs on the left. After several attempts the section was passed using two piton belays. The route above lay for several rope lengths over moderate pitches and traverses on the canyon walls. The head of the canyon was two rope-lengths of Grade IV climbing. By 3 p.m. the party had passed the 500 foot cliffs which form the major obstacles to the summits north of Lake Minnewanka. It was strange to look upon the steep slopes above, clothed in deep spruce-fir forests. The peaks were further on, fully 3,000 feet higher. The climbers withdrew to the bottomland using the up-route. Three exhilarating rappels hastened the descent.

Late in August of 1960, the writer returned to the area with J. K. Gray, Heinz Kahl and Heinz' wife, Delnorah (Del). The group camped at the Banff National Park Boundary marker. On the morning of August 21, they set out in the direction of Phantom Lake. They were astonished to find in its place a vast silt plain. Phantom Lake had vanished. The bed of the illusive lake was traversed. The fantasy was left behind at "Canyon Formidable". It was a surprise to find that the stream leading from the cleft was very low. The waterfall which was bypassed in 1959 was scaled without a belay for there was barely a trickle tumbling over the rocks.

The second waterfall at the head of the canyon was bypassed and a final 100 foot pitch was negotiated on belay. At 8 a.m. the party began to bushwhack through the dense forest at the crest of the cliffs. After an hour they emerged onto a steep meadow and still another hour later they reached the crest of a long open ridge which connects with Phantom's Crag to the east. The view was magnificent. To the north the Devil's Thumb stood in stark profile; to the east, Phantom's Crag; to the south were the ramparts of the Fairholme Range with their uncanny folds and multi-coloured stratigraphy; and below, the shining turquoise surface of Lake Minnewanka. To the west, about two miles distant, were the plumb walls of Mt. Costigan. Between Costigan and the party stood another unnamed peak with a sharp, craggy summit.

After lunch the group moved up the east ridge of the new peak, keeping to the broken north-face side. As the airy and shattered summit crest was approached, a rope was donned and vertigo passed to exhilaration. There was no sign of a previous ascent so a lofty pile of rocks was carefully built, and the mountain was dubbed "Costigan's Boil". The descent lay over the up-route except for a hot 100 foot rappel at the head of the canyon. One other short rappel was set up at the bottom waterfall and the descent was resumed without a rope. The Phantom Lake bed was crossed as a strong westerly gale whipped up clouds of lake silts and clouded the canyon in grey billows. The party was home in Calgary by early evening.

The mountains at the eastern end of Lake Minnewanka are wild and the climbing is interesting but not severe. Even though the summits are within a weekend of Banff or Calgary, they are seldom trodden. The area is recommended for its moderate climbs and its unusual terrain.

THE ROYAL FUSILIERS ROCKY MOUNTAINS EXPEDITION, 1960[1]

By Capt. Richard Jones

NORTH of the Peace River in B.C., the Rocky Mountains rise to three major groups: the most southerly and smallest is the Redfern Group; the central contains Mts. Lloyd George and Glendower; and the more extensive northerly mass contains Mts. Churchill, Stalin, Roosevelt and Sylvia.

In each group the highest peaks rise boldly to over 9,500 feet, carrying sizeable snowfields and glaciers. In 1947 Frank Smythe and N. E. Odell and their party set a base at Haworth Lake in the Lloyd George Range and climbed the principal peaks there.

Since the Smythe expedition, it seemed no further climbing had been done in these northern Rockies. When the opportunity arose for me to organise a regimental mountaineering expedition to Canada, the object of which was to visit unexplored terrain and attempt unclimbed peaks, the Churchill Range seemed an ideal target.

Our team was an unusual one. The only two Alpinists were Major John Biginell and myself. The other four members were young NCO's: Sgt. Roy Lemon, Cpl. P. Hassett, Cpl. Harry Rogers and Cpl. B. Holmes. All were trained rock-climbers, but had no snow or ice experience. In addition we had with us Lt. Col. S. W. Archibald, aged 66, of London, Ont, former C.O. of our affiliated Canadian regiment, and his survey assistant and friend Sam Chappise, a stalwart Cree Indian aged 78.

As our base we chose Wokkpash Lake, 21 miles from the Alaska Highway. But as we could not afford to fly in the bodies as well as the food, we left the stores at Muncho Lake to fly in with Sam on July 23 and began the walk in from Mile 403 on July 20. We arrived in a downpour, but once the weather cleared there were magnificent views down the lake and up the valley to the glaciated peaks surrounding Mt. Stalin, 10 miles away. The stores were flown in next day.

Our first climb was an attempt on a fine nine-thousander on the east side of the valley five miles from base camp and 5,000 feet above it. It seemed to have an easy northwest ridge, but it was built of chunks not stuck together. By 4 p.m. we had reached a deep gap separating us from the crazy-looking arête leading to the summit ridge. Without much regret we called off the attempt, deciding to concentrate on snow and ice peaks in future.

Next day we practised snow and ice climbing on the steep glacier nose overlooked by a striking snow-peak we named Fusilier Peak. The day after that we pushed up the mountain, stopping at the bergschrund only 300 feet from the summit because of steep wet snow and a storm.

After two days' rest at Base Camp, we packed eight laborious miles up the main valley to prospect Mt. Stalin. Next day we climbed a conical snow-peak we named Mercers Peak after one of the livery companies who helped finance the trip. It was just short of 9,000 feet, and showed a comparatively easy way up the "back stairs" of Stalin. The reconnaissance finished with a climb up a subsidiary snow-peak about 8,500 feet high.

A day was spent on rock peaks near Base Camp, then we tried Fusilier Peak again, this time from an advance camp. We crossed the schrund, then cut up a vertical and dripping ice wall, through a slightly overhanging eave of snow and onto the upper face. This seemed much

1 (Names of mountains suggested by this expedition have been submitted to the Geographic Board of Canada, but it will be some time before a reply is received. Ed.)

Beauchamp Peak, 8750′ From Blizzard Lakes.

steeper than expected, starting at an angle around 70 degrees. It eased to 50 degrees, but was very exposed, traversing above 700-foot ice and rock cliffs. We reached the summit, about 9,250 feet, in mist. It had been a splendid climb, at the upper limit of the party's capabilities, but immeasurably worthwhile.

After this effort, the rest of our climbing was perhaps a bit of an anticlimax. We were kept in camp for some days by bad weather, then explored recesses of the western range. Col. Archibald climbed 7,800-foot Red Ridge above Base Camp and set a survey station on the summit for three days — a fine effort.

On Aug. 20 he and Sam flew out to Fort Nelson, and the rest of us set out for Mt. Stalin. Its icefall provided an easy highway to the foot of a steep but straightforward icefall. This led to the south col of the mountain, from which a long and easy but heavily snow-drifted ridge ran to the summit. Cloud deprived us of the finest view in the area, over range upon range now plastered in new snow. The summit is just under 9,500 feet, and on the way down we took in a second summit beyond the col.

This success sparked a mountaineering marathon in which we climbed four more peaks of over 8,500 feet in the next two days. Two were fundamentally easy rock peaks; the others were taken: from the icefield, including Stalin's northwest neighbor. It was a fitting climax to five weeks of excellent mountaineering, and we headed back to the Highway.

In all we had climbed 13 unclimbed peaks. Two were over 9,000 feet (Stalin and Fusilier). Six more were over 8,500 feet (Long-Mountain, White Spur, Devereux, West Tetsa, Mercers and Merchant Taylors). The rest were over 7,500 feet. We lost Mt. St. Sepulchre through inexperience

on loose rock and Beauchamp Peak largely through the weather.

Future expeditions would find much to interest them remaining around Wokkpash Valley, in many ways the ideal base for operations. Here there are 45 peaks over 8,500 feet, and nine over 9,000 feet. The more complex basin of Racing River (the next valley west) has an even greater number of summits, including Churchill (very remote) Roosevelt (which may turn out to be the local Everest) and an unnamed, challenging ridge of 9,500 feet. Pack trains will be necessary to penetrate this area, and the big rivers may be difficult to cross. Tuchodi Lakes (2,800 feet) are an alternative base for a fly-in. They are a long way in, but there are attractive mountains within back-packing reach, notably Mt. Sylvia, the southern peak of the Stalin Group, and the 9,500-foot ridge.

Mt. Stalin Group, From Spyglass Peak

ALPINE NOTES

MT. BAKER: ROMAN NOSE (NORTH-WEST ARÊTE)

By Ed Cooper

Looking up as we approached from the Coleman Glacier, we could understand why the Roman Nose, the last major unclimbed route on Mt. Baker, had not been attempted. The glacier on both sides of this 2000-foot snake-like arête was littered with fallen rock. We had chosen early in the season to attempt it (June 27) with the idea that more snow would make it safer. If it proved to be too dangerous we were prepared to turn back. Early that morning, Gordon Thompson from Bellingham, and Mike Swayne, Don Ihlenfeldt, and myself from Seattle, gained the crest of the lower part of the ridge (ca. 200 feet up) by a snow finger that led to it from the west. The first lead was a knife edge ridge of crumbly mud-lava. Once across, I anchored in to belay Gordon. Halfway across, the ridge disintegrated beneath him and he found himself fifteen feet lower, luckily prevented from going any further by the fact that he had somersaulted and landed on the soft part of his anatomy, which had stopped him. We held a conference in which we very nearly decided to turn back, but we went several more leads to make sure. Gordon led up a 20 foot vertical step (+IV) which was better rock.

Things improved and we found that we could traverse on the 45-60 degree snow slopes just below and east of the ridge crest. We alternated leads to make step kicking easier, one rope leading, then the other. After 1000 feet we came to the first vertical step (150 feet) we had observed from below. Frontal attack of this step appeared very dubious and bypassing it to the left was out of the question. We hopefully followed a ledge leading out of sight to the right. It was necessary to chop some steps in the black ice encountered on this tilted ledge. We saw a line that was least unpleasant and I led up rotten rock (IV) to a belay ledge. Pitons would have been desirable, but it was impossible to fix any because they only forced the rock apart.

Gordon led off on a short traverse to the right, clearing the ledge of several hundred pounds of loose rock before continuing up. Again it proved impossible to fix pitons on this pitch (—V). To facilitate progress and make it safer, we joined ropes on this pitch. We were soon at the base of the second vertical step, 300 feet above. Again we followed a ledge that led to the right in the hope that we could bypass this 200-foot step. To gain this ledge we passed under a cascade of water carrying various-sized pebbles, caused by the hot afternoon sun. Deep wet snow overlying black ice made the going slow and hazardous, but we managed to fix a few pitons on this traverse, which gave us the illusion of safety. In 200 feet we were able to climb back to the crest via a short awkward rock pitch running with water (IV). From here the rock ridge gradually merged into a snow ridge, which soon led to the summit ice cap. The difficulties of the climb now behind us, we had time to look upon the spectacle surrounding us. Small indeed we felt as we gazed at the high summits of the Northern Cascades piercing the sea of clouds which stretched as far as the eye could see.

NIGHTMARE ROCK

By Ed. Cooper

Searching for rock climbing areas around Vancouver, Jim Baldwin and I were rewarded beyond expectation by discovering good clean granite cliffs off the Squamish highway, several miles southwest of Squamish in the only small canyon the road goes through. On November 5, we climbed artificially on “Nightmare Rock”. Fifty yards through bush and rocks bring one to the

base of Nightmare Rock, about 300 feet wide, where a variety of routes, almost all of them being artificial, and 100-200 feet in height, are possible. The route we ascended climbs 50 feet to a cut in a large overhang (the sentry box), over a ceiling, thence 40 feet more up a good piton crack to a belay ledge. A short free traverse to the right, a scramble for 30 feet, brings one to easy ground. Several pitons were left in. The top of the climb overhangs the base by ten feet. Piton usage: 16-20; time: 4 hours. Grade 6 A-2 (European grading) or 6.5 (Sierra Wilts Decimal grading). Also possible on Nightmare Rock is a 20 foot horizontal roof and a 150 foot continuously overhanging diagonal crack, among others.

THE ACCIDENT ON MOUNT WADDINGTON

By Ian B. Kay

Derrick Boddy, John Owen, Elfrida Pigou and Joan Stirling, the last three of whom were members of the Club, disappeared between July 30th and August 1st, 1960, while attempting an ascent of Mount Waddington, and are presumed to have been killed by an avalanche.

The party flew to Ghost Lake on July 23rd, left a cache at Nabob Pass, and started relaying their supplies up Tiedemann Glacier. They were followed five days later by eight American climbers led by Frank Fickeisen of Seattle. Two members of this group, James Kurtz and Roger Jackson, went up Tiedemann Glacier on July to receive an air-drop of supplies. At the foot of Rainy Knob, at the junction of Tiedemann and Bravo Glaciers, they met the four members of the Canadian party, who had seen them coming and prepared tea. It was noticed that Elfrida's hand was bandaged and seemed to be painful. This was apparently the result of an injury she sustained during a rock climbing practice shortly before leaving Vancouver. John Owen, the leader of the A.C.C. expedition, said that they intended to cross Lower Bravo Glacier and go up on the rock ridge to the left. Then the A.C.C. party moved the last of their gear up to the top of Rainy Knob while Kurtz and Jackson camped at its base.

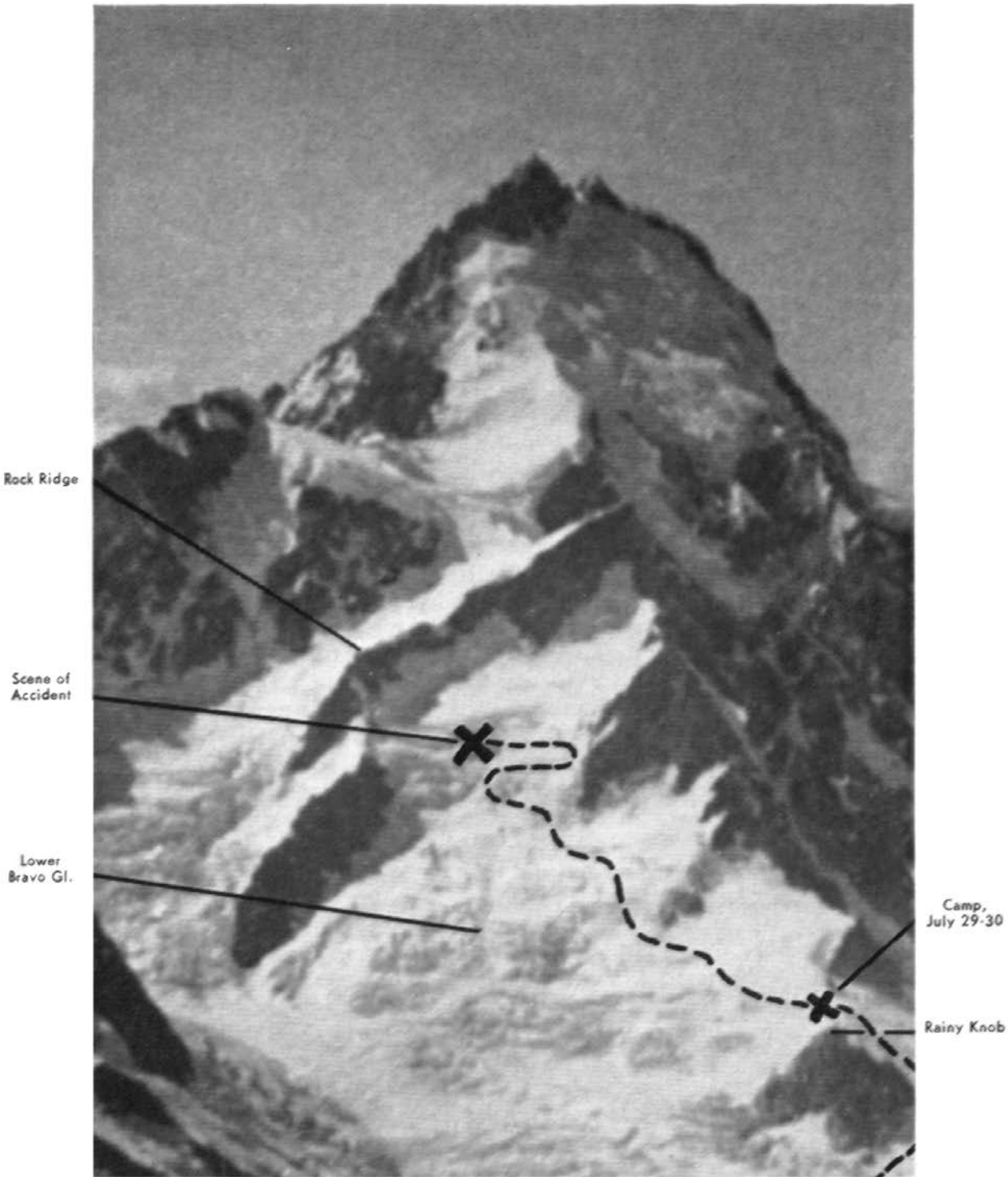
On Saturday morning, July 29th, Kurtz and Jackson received their air-drop. While picking up their supplies they saw the four members of the A.C.C. party moving up Lower Bravo Glacier. Later two of them were seen to return to Rainy Knob, and then go up again, presumably with more supplies.

On Sunday July 31st, Kurtz and Jackson looked for the Canadian party, especially on and above the rock ridge, but did not see them. Meanwhile the remaining six members of the Seattle party moved up from Nabob Pass to Rainy Knob.

On Monday August 1st the eight Seattle climbers went over Rainy Knob and up Bravo Glacier, generally following the A.C.C. party's steps, which were almost knee-deep. Slightly more than half way across the width of the glacier and at an elevation of about 8,200 feet these tracks ended at the edge of a mass of avalanche debris extending for about 200 feet under the face of an ice cliff. As they crossed the debris they saw a sleeping bag on the edge of a crevasse below the avalanche area. The time was now about 4 p.m., and the day was warm. The Americans considered it unwise, owing to the danger of further avalanches, to remain in the area longer than absolutely necessary, and went on.

Beyond the debris they saw the tracks and ice axe marks of two people, going toward the rock ridge, returning and disappearing again under the debris.

The Americans camped on the rock ridge and the next day continued up it and on to Bravo Col. They found no tracks on or above the ridge.



Mt. Waddington From Above Tiedemann Glacier.
From Photo By W.A.D. Munday

Returning over Bravo Col on August 6th, after a successful ascent of the mountain, they arranged to reach the scene of the avalanche early in the morning, and spent about 15 minutes examining the site. The area swept by the avalanche was about 200 feet in each direction and sloped at an angle of about 15 degrees. The upper edge was bounded by the ice cliff from which the avalanche had fallen and the lower edge was formed by a crevasse 10 to 15 feet wide. The whole area was littered with large pieces of ice from the avalanche but most of the debris appeared to have swept right across the area and fallen into the crevasse.

A plastic bottle, a metal pot-holder, and two sections of aluminum tent-pole, joined together, were found in the surface debris near the lip of the crevasse. Two of the climbers looked into the crevasse and saw some unidentifiable dark objects lying on the debris about 40 feet below the surface.

Fickeisen's party later described Lower Bravo Glacier as very active, noting that the crevasse mentioned had opened noticeably since their ascent, leaving the ice debris standing free within the crevasse.

After the search they proceeded down the glacier but found no further sign of the Canadian party.

On returning to Nabob Pass they checked through the A.C.C. party's cache and removed valuables and items of identification, which were later turned over to the R.C.M.P. at Campbell River together with the articles recovered from the scene of the avalanche. The remaining items were left at Nabob Pass, stowed in 5-gallon cans and covered with a tarpaulin.

Several members of the Club met with Fickeisen and other members of his party in Vancouver on Sunday, August 14th. Fickeisen stated that in his opinion all the members of the A.C.C. party had been killed by the avalanche.

Immediately after the meeting with the Seattle party, arrangements were made with the R.C.M.P. to accompany them on an examination of the site at the earliest opportunity. On August 19th, after several days of inclement weather, Fips Broda and the writer accompanied two R.C.M.P. officers on an air reconnaissance of the accident area. Fresh snow had fallen and no tracks or other signs of life could be seen.

From the air reconnaissance and from the statements of the Seattle party, the following conclusions were reached:

(a) There was no evidence to indicate that anyone might have survived the avalanche.

(b) Due to the danger from further avalanches in the area, a ground examination of the site would be hazardous.

(c) The lapse of time since the accident and the subsequent snowfall made it very uncertain whether the exact scene of the accident could be located, further evidence found, or bodies recovered.

It may be inferred from the available information that the party reached the spot where the accident occurred sometime during the afternoon of July 30th. Due to the softness of the snow or for some other reason they decided to camp there rather than continue across the glacier to the rock ridge. Two of the party then went back to Rainy Knob for the remaining supplies while the other two, without packs, went ahead to examine the route to, and possibly up, the rock ridge. Both pairs of climbers returned to the campsite and were there when the avalanche occurred, which was probably that after noon or evening, but possibly the following morning. The avalanche was caused by the collapse of an ice cliff not more than 200 feet horizontally above the camp, and probably swept all the climbers together with most of their equipment and supplies into a large crevasse.

NORTHERN GARIBALDI PARK AT EASTER

By Donald Lyon

At 11:30 a.m. on Good Friday Dave McRae and I peered eastwards into the mists towards Mt. Wedge (9484 feet), from Parkhurst Station. We had just disembarked from the P.G.E. train, and were about to head out for ten days of ski mountaineering in the northern section of Garibaldi Park. The first day we hiked a mile up the tracks, then into the bush near Wedge Creek, complete with sixty-pound packs plus Head skis. Mid-afternoon found us with skis on, and discouraging weather surrounding us. We camped well within treeline, and settled in for the night with the first of those soupy one-course meals.

Saturday morning we pushed on up the ridge, through the trees, and over a number of cliff bands, most of them surmountable on ski. Late afternoon we camped in a clump of trees as protection from what appeared to be an approaching storm. This, of course, was our introduction to the weather Hans Gmoser and his crew were encountering in the Rockies. We had, however, finally managed to view parts of the Spearhead Range, south of Wedge Creek, and Wedge itself, right ahead of us, and appearing easily climbable.

The Sunday night we camped at 7500 feet on a small glacier to the north-west of Wedge. That day we had received good views of Wedge, and the valley below. Our route had taken us over an unnecessary hump, then up a wind-blown slope of very hard crust. Dropping down over the other side of this lesser pass, we selected our glacial campsite. We were somewhat behind our schedule, due to poor conditions and our ample packs.

After a windy night, Monday morning showed considerable promise, but all this changed before we had broken camp. Weart had disappeared in the clouds, and even the Wedge-Weart Pass was indistinct. A wolverine moved towards us across the glacier, but a few shouts let him know he was unwelcome. By the time we reached the top of the pass, it was almost impossible to face into the blizzard. However, by dropping down the east side, we found relative comfort again.

We decided to shorten our route and reach Wedge Pass more quickly. We skied south through what we still only believe to be the rocky Wedge-Little Wedge Pass, and down through a deep-powder snow bowl and small canyon. Since we wished to go to the Spearhead Range from slightly east of Wedge Pass, we traversed east and dropped onto a flat. Since it continued to rise eastward, our presumption was that we were still west of the pass. However, by five p.m., with still no sign of an eastern slope, we threw up the tent, threw down supper, and sacked in. My usual optimism for weather improvements was balanced by Dave's pessimism—and he was right this time, too!

Next morning, crawling outside about five-thirty a.m., I found the sky beautiful, and clearing after having dumped about a foot and a half of snow on us overnight. We discovered our position to be southwest of Mt. James Turner, 8913 feet, and near a triangular lake. We had not lost enough altitude the day before, and were still above the pass, in a side valley.

Since this looked like an excellent chance to accomplish something, we decided to climb Turner, on foot, via a south ridge. We crossed a forty-five degree slope, to our waists in powder snow. At the base of the mountain, however, something happened to my "promising" weather. We kept on the ridge, consisting of mixed snow and rock at about a constant forty-five degree angle, until we reached a gendarme. We circled this, then kicked up a very crusty slope to the summit ridge. Here we put on our crampons, and moved easily along the ridge. Upon reaching what we thought to be the summit, we looked about, but could see nothing higher. We could

not look directly into the storm now surrounding us. The cold was biting, so we quickly moved down the south slope, angling across it in a south-easterly direction, then west down the formerly glaciated corrie back to camp. The climb had taken us seven and one-half hours return. Only when I contacted Dr. Neal Carter much later did I find that we must have reached only a subsidiary peak about 8700 feet in elevation.

By this time we felt we were fighting a losing battle, and so decided that the next morning would see us skiing west, down and out Wedge Creek. To our surprise, it took two days to cover only ten miles!

We had, in six and one-half days, covered about twenty-five miles, climbed a total of 9700 feet, each picked up fifteen pounds of moisture in our gear, and been through an area which is seldom visited in summer, and perhaps has never before been skied. We found that there is a need for a properly marked trail up Wedge Creek to help open up a magnificent area for spring skiing and moderate climbing. A cabin in Wedge Pass would make an excellent base camp about one day's hike from the railroad.

CLIMBS IN THE NORTHERN SELKIRKS

By Sterling Hendricks

Alex Fabergé first explored the approaches to Mt. Chapman (10,150 ft.) in 1951. Five mountaineering parties in as many years have since entered this northernmost region of the Selkirks.

Our party of four, Polly Prescott and three guides (Don Hubbard, Alvin Peterson, and Sterling Hendricks) left the mouth of Mica Creek on the morning of July 21st and made the thinning timber of a high cirque on Fred Laing Ridge by nightfall. We followed Fabergé's route (his map is in C.A.J. Vol. 37, Page 51), deviating only in using a pass to the north of the one by which he crossed from Mica to Yellow Creek. A shoulder on the prominent western buttress of Mt. Northeast (9,954 ft.) was reached on the fifth day, with one rest day in the flower covered meadows of Yellow Creek. Northeast was climbed in any easy day from a camp called "Stonehenge" on this ridge. One further day took us through moderate bush to a small lake beside the Chapman Glacier. The three guides climbed Chapman by its south face in a thirteen hour day from this camp, following Fabergé's route. Five easy days were used in returning to the mouth of Mica Creek.

We recommend the trip as an ideal one for a ten to fourteen day excursion, preferably the longer period to allow some time for just ambling along the way, which is too beautiful for hurrying. Alps and easy snow passes extend from Fred Laing Ridge to the south side of the Windy Range. The distance to Mt. Chapman is about 20 miles, with about 8,000 ft. of climbing and a day and a half of easy bush.

GEOLOGICAL SURVEY OF CANADA IN THE SELKIRK MOUNTAINS

By J. O. Wheeler

Reconnaissance geological mapping is currently being undertaken by the Geological Survey of Canada in the Illecillewaet map-area (N.T.S. map-sheet 82N, west half: lat. 51°-52° N, long. 117°-118° W). This area embraces the eastern Selkirks, the Rockies west of the Continental Divide between Sullivan and Blaeberry Rivers, the northernmost Purcells, and the Dogtooth Mountains.

In the course of the survey numerous ridges and peaks have been climbed. Many of the peaks are unnamed. A summary of our travels and more important ascents may be of interest to mountaineers.

In 1959 the party consisted of Peter Fox, David Elliott, Bob Gerlib, Fred Peitzsche, and myself. We began work in mid-July around McMurdo Creek in the northern Purcells. Ascents were made of David, Cony, and Twin Towers Peaks, and of Silent Mountain and the ridges to the north and northwest of it. Fox and Wheeler traversed Beverley Peak and continued along the ridge to the east to an unnamed 9250-foot peak (Peak 7, West and Robinson, 1954)

In August we made a month-long trip across the northern Selkirks. Airdrops were made at timberline south of Tabernacle Mountain, on Gothics and Haworth Glaciers, on the pass between Sir Sanford and Goat Glaciers, at Bachelor Pass, and on a glacier below Mount Sorcerer near Tangier Pass. All the drops were made free-fall onto snow from a Pacific Western Airlines Beaver from Nelson piloted by Don Thompson. About one-third of the tinned food was damaged but the rest survived intact.

On the afternoon of August 2nd we crossed the Columbia River by the cable crossing at Surprise Rapids. (The key for the cable crossing was kindly loaned by the District Engineer, Water Resources Branch, Department of Northern Affairs and National Resources, Vancouver, B.C.) By evening we had bushwhacked to the first prominent gully that descends into the Columbia Valley south of the summit of Tabernacle Mountain. Next day we climbed up the gully thus avoiding the bush and reached our airdrop early in the afternoon. One day's travel took us from there to Fairy Meadow at the head of Swan Creek. Our route crossed the ridge south of Tabernacle Mountain and continued via the glacier north of Mount Stockmer — the col between Mount Wotan and Mount Yggdrasil — Gothics Glacier and Friendship Col.

From Fairy Meadow we climbed the ridge north of Granite Glacier and made an attempt on Mount Austerity which ended for lack of time on the summit of Ironman. Elliott, Peitzsche, and Wheeler traversed Mount Unicorn from south to north to Mount Colossal and descended the latter by its east ridge.

Enroute to the "Cairn" below Silvertip Glacier Gerlib, Peitzsche, and Wheeler went off-course on Gothics Glacier in a blinding snowstorm. They missed Thor Pass and descended to the Adamant Glacier valley by battling their way down a steep, hard snow gully on the south side of Mount Thor. The "Cairn" was reached the following day via Azimuth Notch under cloudless skies. After Fox and Elliott rejoined the rest at the "Cairn" ascents were made of Palisade and Azimuth Mountains. Gerlib and Wheeler climbed Mount Guardsman by its rotten northeast ridge and descended by the northwest ridge. A projected attempt on Mount Sir Sanford was frustrated by bad weather.

We moved over to Moberly Pass via Haworth, Sir Sanford and Goat Glaciers. At Moberly Pass we endured a couple of days bad weather before traversing Goldstream Névé and climbing Gold stream Mountain. Our last really fine day of the trip was spent moving to Bachelor Pass.

The weather was so miserable from August 21st on that we were unable to do much geology. When our food finally ran out we sloshed our way from Tangier Pass down the overgrown wagon road in Tangier River valley to the "Farm". From there we continued up Farm Creek and over Bostock Summit to Flat Creek where we arrived on August 21st.

On September I2th we picked up by helicopter the rock specimens cached at several points along our route.

In 1960 the party consisted of Peter Fox, John Ricker, Gordon Antenbring, David Gilbert, and myself. In late May we had the services of a helicopter for a week. At this time we set out food caches at several places. Food was packed in 50-lb. lug top grease pails. In mid-June we completed the caching by dropping the food pails each attached to a 12-foot diameter flare parachute at Tan-

gier and Sorcerer Passes. Out of some 40 pails cached we lost only one. A grizzly got into one pail at Tangier Pass.

Because of the cool spring the snow remained low well into July. Consequently during June we did most of our geological work below timberline in the Columbia River valley except for a 10-day sortie into the Dogtooth Mountains west of Canyon Creek. On the latter trip we were hampered by the soft snow and would have been well-advised to have taken snow shoes.

On June 29th we began our second trip across the northern Selkirks. Caches had been made just north of Sentry Mountain, at Six Mile Pass, below Cherub Glacier, at Ventego Lake, and at Tangier and Sorcerer Passes. Stan Peterson and Len Johnston of the B.C. Forest Service took us across the Columbia River and deposited us among the alders and devil's club about a mile above the mouth of Gold River. Three hours of bushwhacking took us a mile and-a-half to the bottom of a gully that descends from the cirque on the northeast side of Sentry Mountain.

Next day we climbed the gully, once again avoiding most of the bush, and reached our food cache above timberline late in the afternoon. For three days we travelled along a series of connecting ridges to Six Mile Pass and then to Cherub Glacier. A fine sawtooth ridge bounds Cherub Glacier on the south. The four easterly peaks on this ridge were climbed by Antenbring and Ricker and the westerly peaks culminating in Seraph Mountain were ascended by Ricker and Wheeler. Fox and Antenbring climbed the rotten ridge north of Cherub Glacier.

Two days' travel along a further series of connecting ridges took us to Ventego Lake. On the way we climbed Mount Iconoclast. Fox, Gilbert, and Wheeler climbed the easy north ridge arriving at the summit at 7.45 a.m. Antenbring and Ricker climbed a rock rib farther to the east on the north face. Both ropes descended by the north ridge.

From Ventego Lake ascents were made by Fox and Antenbring of the spectacular rock peak east of Mount Iconoclast and by Fox and Ricker of a sharp rock summit at the head of Alder Creek. From Ventego Lake Fox and Gilbert travelled directly southwest across Mountain Creek eventually reaching Tangier Pass. They climbed a peak southeast of Mystic Mountain. Antenbring, Ricker, and Wheeler journeyed around the head of Mountain Creek and crossed over the ridge to Tangier Pass at a point about two miles southeast of the summit of Mount Sorcerer. Ricker and Wheeler climbed Mount Sorcerer by its southeast ridge. The descent was made by the snow of the southeast face and the southeast ridge.

From Tangier and Sorcerer Passes we were able to complete the geological mapping of the surrounding country left undone the previous year because of bad weather. In so doing we climbed two peaks north of Sorcerer Pass and two summits west of Tangier Pass. Fox and Antenbring climbed Mount Sorcerer by the west ridge enroute from Sorcerer Pass to Tangier Pass.

On our way out to Flat Creek we stopped a day at Moloch Creek. Unsettled weather there prevented any major ascents.

At the end of July while working around Glacier the whole party climbed Mount Sir Donald by the northwest ridge. We descended by the ordinary route through the Feuz chimney. Our greatest difficulty was getting onto the snow of the Vaux Glacier.

For the first two weeks of August the party split. Fox and Antenbring worked in the Adamant Range. In the course of their work they climbed Gibraltar from Gothics Glacier, Toadstool, and Mount Sir Sanford by Michael's route.

Ricker, Gilbert, and Wheeler packed into Glacier Circle. From there they climbed Hasler Peak from Bishop's Glacier and then continued over Mount Selwyn and down its east ridge. Mount Wheeler was ascended by its northeast ridge and descended by the northwest ridge. Mount Fox

was traversed ascending by the east ridge and coming down to the Selwyn-Fox Col and returning by the Fox Glacier. Beaver Overlook was climbed after a long trek across the Deville Névé.

The backpacking phase of our work ended in the middle of August. For two weeks we enjoyed the use of a Bell G-2 helicopter that allowed us to retrieve caches of specimens from all over the Dogtooth and Selkirk Mountains and to undertake a geological reconnaissance in the Rockies.

Geological mapping of the Illecillewaet map-area should be completed in 1961. A preliminary map, published on a scale of 1 inch to 4 miles showing work done to date, should be available from the Geological Survey of Canada, Ottawa, early in the summer of 1961.

REFERENCE

West, R. C., Jr. and Robinson, Peter (1954) Climbing and Exploration in the Northern Purcells: Amer. Alpine Jour., vol. 9, pp. 39-65

SOME CLIMBS FROM MACDONALD CREEK

By Robert West

Before our expedition to the Lake of the Hanging Glaciers, reported elsewhere in this Journal, Art and Claudia Maki, my wife Peggy and I, with our son David, spent a few days climbing from the headwaters of Macdonald Creek, east of Mt. Farnham in the Purcell Range. A road, passable to jeep or truck, has been constructed in the Macdonald Creek valley to the Ptarmigan Mines high on the flanks of Mt. Law. We camped at timberline in the valley of the east fork, Red Line Creek. Our camp was two miles by trail from the road and about a mile up the valley from an old mining cabin.

From here Art, Claudia, and I climbed the 10,300 foot peak directly to the south, the highest point on the long ridge leading east from Mt. Delphine. We reached the ridge east of the summit by going up the snow of the small glacier on the north face of the mountain, and then followed the ridge to the summit over broken rock. Though the peak is not mentioned in Thorington's guidebook, it bore a large cairn. It was probably first climbed by prospectors. The name "Red Line Peak" is suggested for this mountain.

We made an attempt on Farnham Tower, which was unsuccessful, but at 9,300 feet on the east ridge we found a record of a successful ascent by Frank Stark and Vitus Germann in 1956. We later talked with Frank Stark about the climb. Just above the point where the northwest ridge abuts the tower proper, a steep chimney cuts the cliffs of the tower. Their route led directly up the chimney. The successful ascent was made on Stark's second attempt by this route.

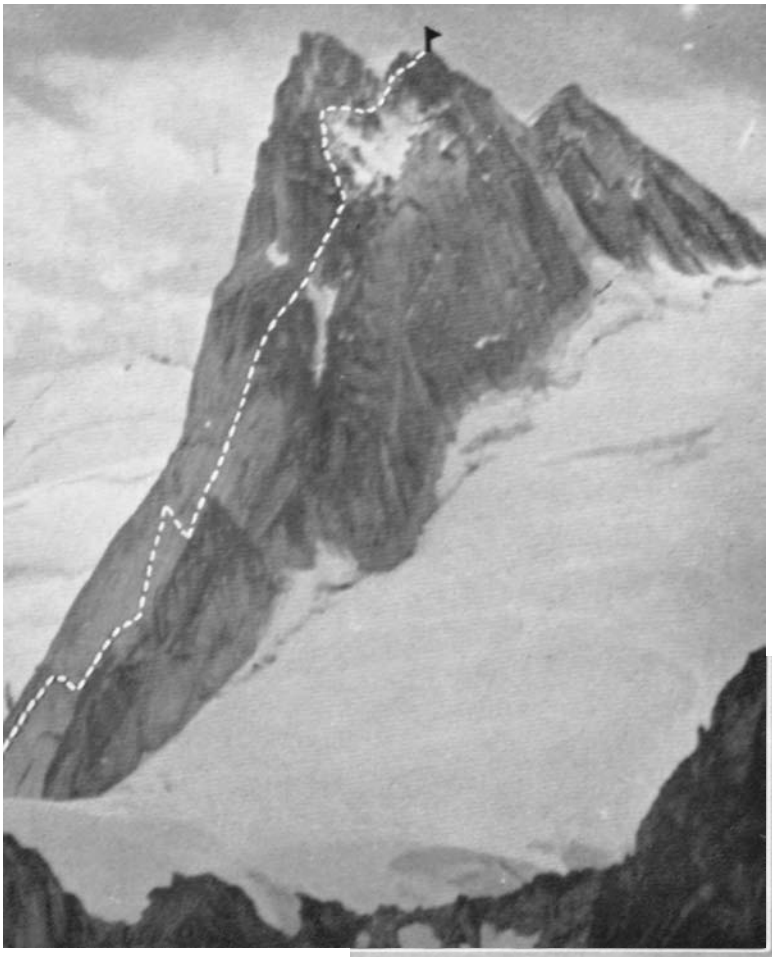
North of Farnham Tower, on the ridge between it and Horsethief Creek, there are three unnamed and unclimbed peaks above 10,000 feet in altitude; two of these probably exceed 10,500 feet.

NEW CLIMBS IN THE BUGABOO GROUP

HOWSER PEAK: NORTH FACE

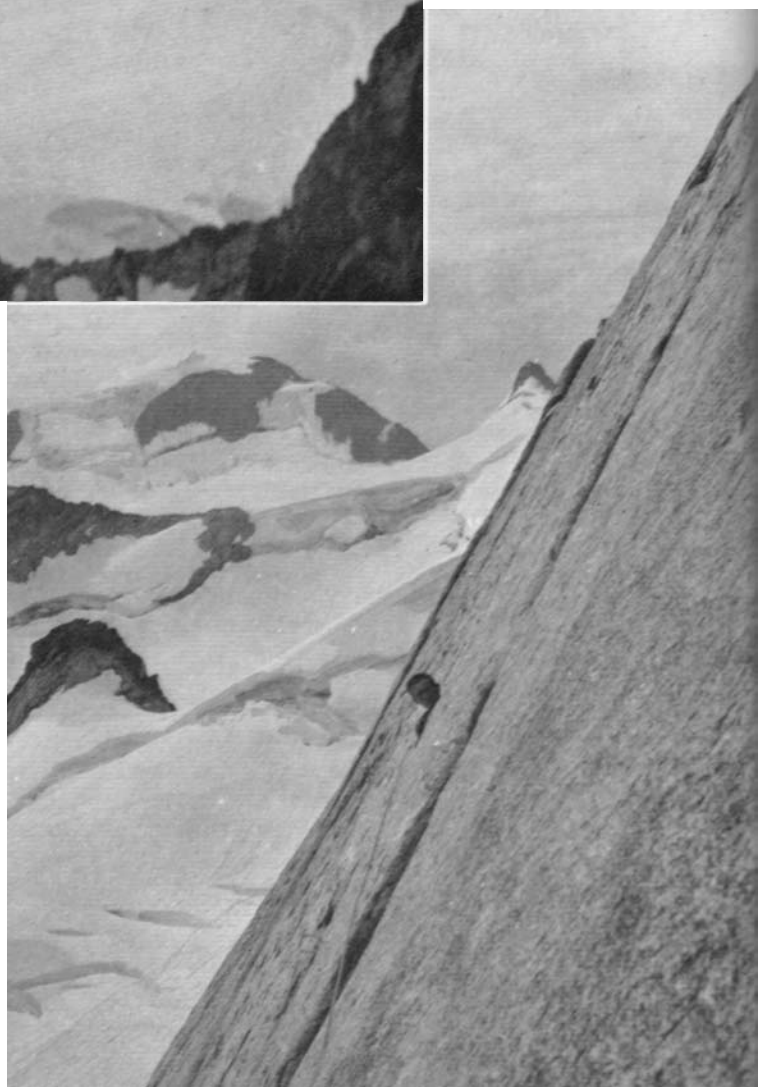
By Ed. Cooper

This seldom-visited peak saw Eric Bjornstad and myself in late July at the bottom of the North Face staring up at a giant ice cliff. Impressed, we moved right, out of the line of fire to a less menacing start. We crossed the bergschrund and headed up a 50-degree snow finger between



Pigeon Spire. Route Taken On East Face Is Marked. *Photo Ed. Cooper*

Enlargement of picture taken from Brenta Spire. Giant Slab continues out of sight, left of picture.



On Giant Slab Of Pigeon Spire, Approximately 2/3 Of The Way Up. *Photo Ed. Cooper*

the ice cliff on the left and the rock face on the right. Several close avalanches together with very unstable snow gave us a scare and we moved to the rock face on the right. This proved a dubious choice. The reputation of the fine Bugaboo notwithstanding, it was so rotten that we dared not rope up as the mere action of the rope sent down rocks. We reached the top of this with relief, having added more debris to the heavy burden that the Conrad Icefield carries on its long journey down the Bugaboo tongue. The final 300 feet to the summit snowfield were 50 degrees and were perfect for step kicking, the snow fortunately being stable here. From the summit we enjoyed interesting cloud formations, wondering whether they would prove too interesting in typically Bugaboo fashion.

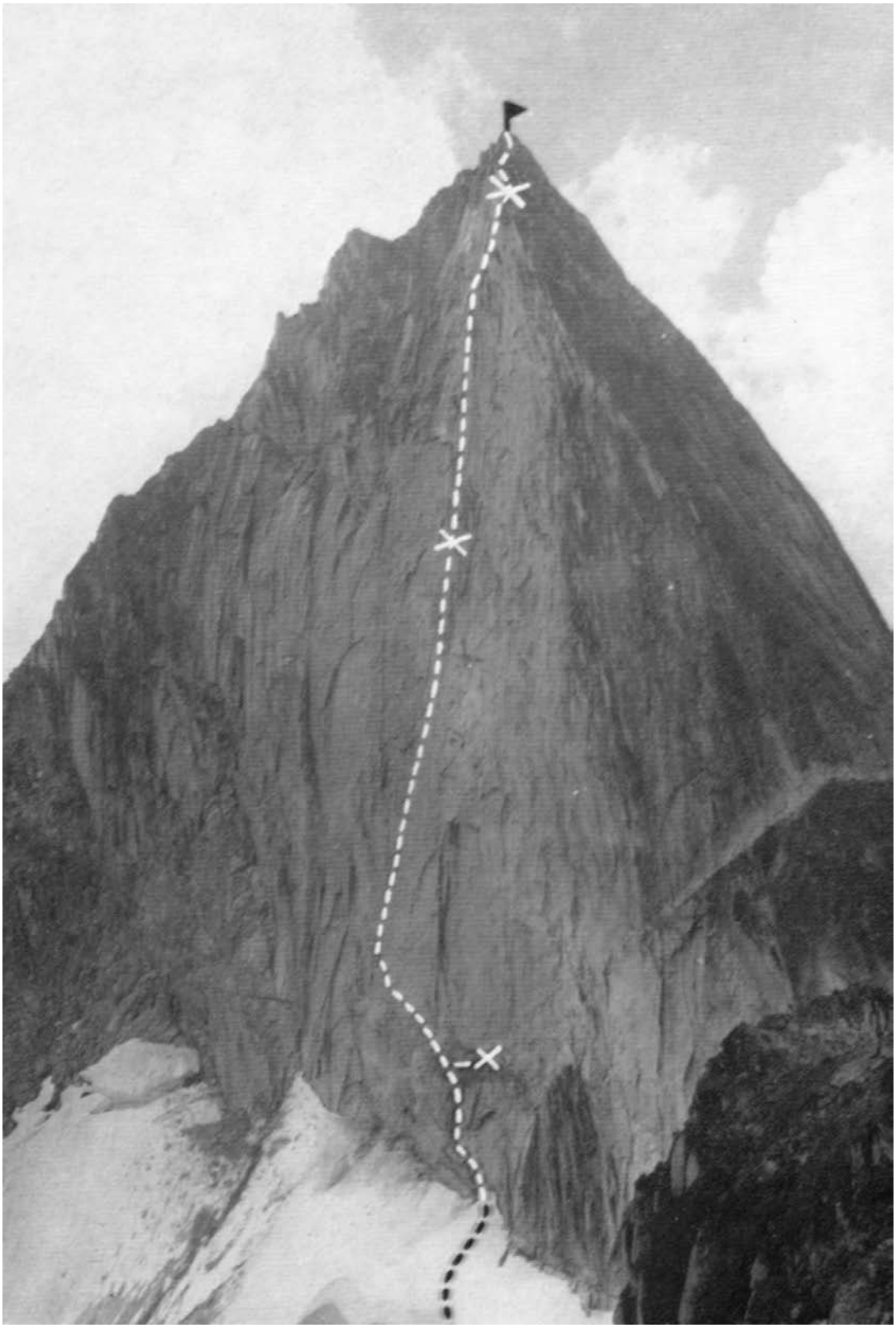
PIGEON SPIRE: EAST FACE

By Ed. Cooper

The sun never did rise that morning of August 16, there being a thick high overcast, but rather than waste another day in camp during the prolonged spell of bad weather Layton Kor and I decided to "look at" the East Face of Pigeon Spire, something he had been thinking about for several years. It was so cold that morning that even climbing rapidly to the base of the face we were still cool, with the result that we felt awkward and used aid on the very first pitch of the glacier, on the lower left corner of the giant slab-face. We soon warmed up to the climb, however, and climbed 300 feet in a right diagonal line until reaching a large ledge that crossed the face. A few stones whistled over our heads. Following this ledge right, to its end, we ascended a left diagonal line for another 400 feet until it became possible to traverse back to the right to the base of a 120-foot left diagonal roof lying against the face. This was climbed in two leads using direct aid, with a stirrup belay halfway. Being right handed, I felt quite ungainly as I placed pitons to my upper left, the roof tending to push me over. The first l000 feet of the face is a smooth slab at a constant angle of 60 degrees with the result that no matter where we were on the face, it looked like only a few feet down to the glacier. I kept thinking I was on an ice slope.

The difficulties were beginning in earnest now, as we were approaching the top of the slab, and the angle steepened considerably. Two leads later of free climbing (—VI and —V) found us on top of a pedestal admiring the smooth crackless rock above us and yodelling over to some friends on the summit of Snowpatch. This was no time for admiring anything, however, as the clouds were lowering on Pigeon Spire and the Howser Spires were clouded in. Spurred on by this I dropped down the pedestal on a rope and started swinging. I managed to pendulum over to a crack and after a delicate lead of —VI, found a belay spot. The next lead up an inside right corner was also strenuous. Using a piton that sank as I moved up on it, I reached a good handhold that led to easier territory. The last problem was a short face leading to the right hand ridge, and then a large step across in a cut where we used a piton for a handhold to save time. We reached the summit, 300 feet above, as the first flakes of snow hit us.

Eight-and-a-half hours were spent on the face, and some 50-60 pitons were used on this climb, the longest on Pigeon Spire. The rock on this face is excellent, a real joy to climb, and is bound, in the future, to become a classic route.



East Face Of Bugaboo Spire. *Photo Ed. Cooper*

Lower x the balcony; second x - bolt bivouac; third x - summit bivouac.

FIRST ASCENT OF EAST FACE, BUGABOO SPIRE

By Art Gran.

On August 1, 1959, Bill Kemsley, Dave Craft, Roman Sadowy, Peter Geiser, Claude Suhl and I packed in to the Bugaboos. Soon after our arrival we were joined by Ed Cooper and after climbing some of the standard routes, Ed and I decided to attempt the first ascent of the east face of Bugaboo Spire.

This wall rises at an average angle of 85° for about 1800 feet. As we looked at the nearly vertical, almost blank face, it became apparent that there was only one feasible route. However, three-fifths of the way up, we had a choice of one of three lines, covering 400 feet of the face. From the ground, we could not tell which one would go. In addition, we had our doubts about climbing the face at all, even with considerable aid of pitons and bolts. We calculated that there would be about 2,000 feet of rope climbing and that the climb would take three days.

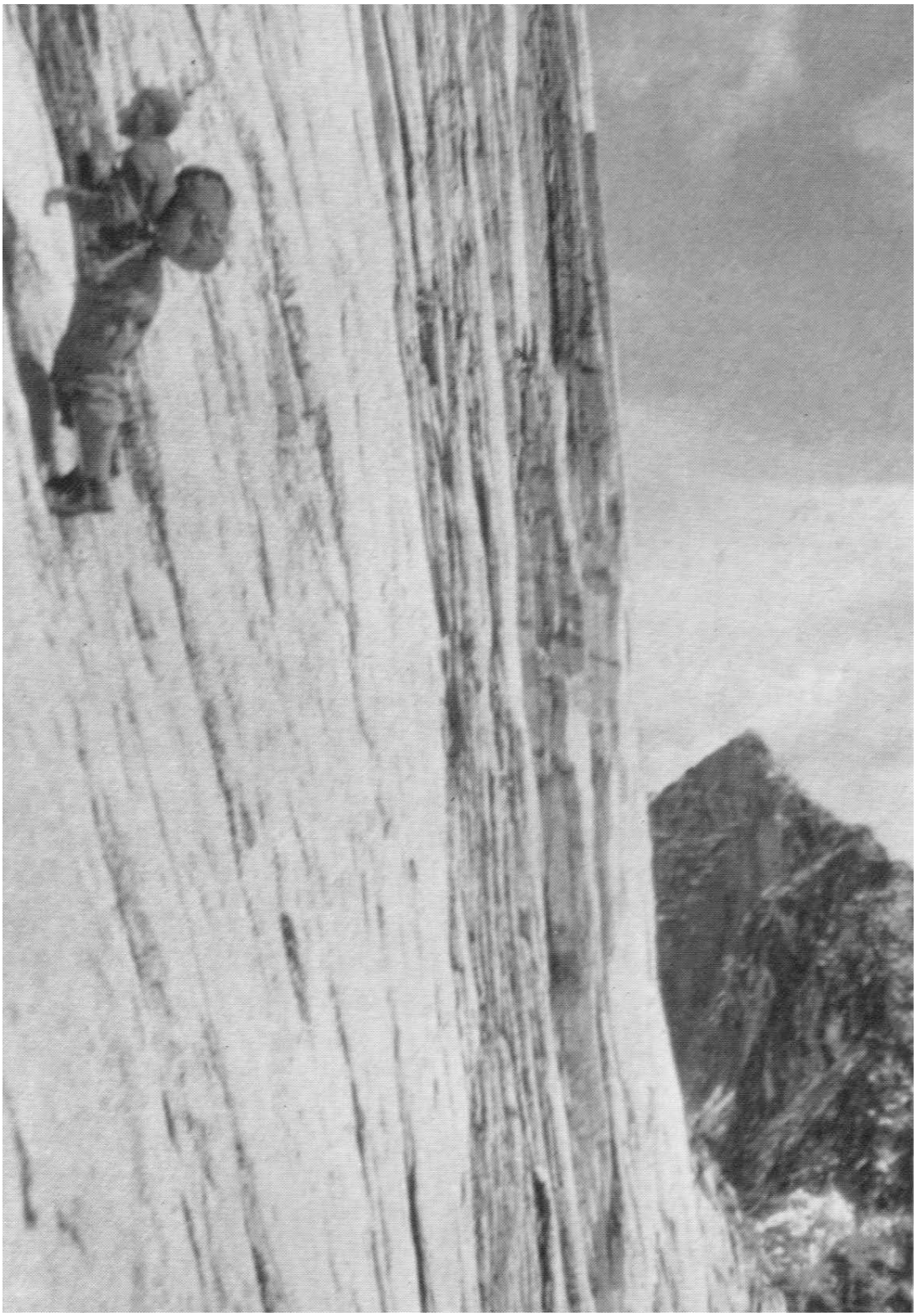
The plan was to get as high as possible the first day, putting fixed ropes in as we went. After leaving pitons, food, water and bivouac gear at our high point, we would rappel down at night. In this way we could reach the top of our fixed ropes in about three hours of prusiking. It would also allow us to rest and wait for good weather for the summit attempt. When we reached the top of our fixed ropes we would take the last two for climbing ropes and climb until dark. After a bivouac on a ledge or in stirrups, we would then make the push for the summit. The lower fixed ropes would be retrieved from below another day . . . That was the plan; some of it worked. But it took us two, separate attempts, a year apart, to make it a success.

At dawn the first day, we started the climb at a point directly below the North Summit. We crossed the schrund with ease and by climbing diagonally up to the left (south) we reached the right (north) side of a large partly detached pillar, and chimneyed to its top (80 feet; 2 pitons). Ed then gained a large ledge (60 feet) and traversed left. After 130 feet, it became ascending and we followed it for another 120 feet. (There was some falling rock here.) At this point I climbed a shallow, inside corner facing south, to a ledge (90 feet; 2 pitons and 2 aid pitons)[1] traversed this ledge to an inside corner where it became a shallow chimney with a small (room for one) belay. Ed took the lead, climbed up the chimney to an overhang at its top and went out to the right, climbed over the overhang (using aid) and then climbed up a shallow, inside corner (90 feet; 2 pitons, 5 aid pitons). Halfway up the pitch, it became too dark to climb so we descended, leaving in the fixed ropes.

On the next clear morning, we prusiked up the fixed ropes but by the time we reached the high point it was cloudy. We decided to go on but fix rope as we went. I climbed an inside corner to an ascending ledge and then climbed on to a belay point (90 feet). Ed traversed this ledge to its end, climbed up a shallow, inside corner, passed a ledge and then went 10 more feet to a second ledge (120 feet; 3 pitons). On the next pitch, I traversed to the left on the ledge and went around a corner. Climbing the wall for 15 feet, I traversed back around until I was above the belayer at an inside corner. I ascended the corner to a small ledge at the bottom of a chimney (90 feet; 2 pitons, 3 aid pitons). By this time it was snowing. We decided to descend to the large ledge, 2 pitches above the schrund, and bivouac for the night, hoping the storm would end. It snowed all night and most of the next day so we descended to camp.

After waiting for three days, the weather again warranting, we prusiked up to our high point at the bottom of the chimney. I climbed the chimney to a large ledge and traversed diagonally

1 When the number of pitons is noted on a pitch, they are used for the protection of the lead. When they are designated as "aid pitons" they are used for direct aid with stirrups.



Art Gran Prusiking On The East Face Of Bugaboo Spire *Photo Ed. Cooper*

Circa 200' above the balcony.

up to a large inside corner (120 feet). We were again bothered by some rockfall to the south. In our 1959 attempt, with much aid, we ascended this corner for about 300 feet until the line ran out. This corner was the right (north) route of the three possible lines. Because we could go no farther on this route we attempted to make a 100 foot pendulum traverse of the face to the center line. We were halted after 30 feet because the bolt kit broke. We gave up the climb at 10 p.m., descended, and reached the schrund at 4 a.m. At this point a falling rock struck me and I was knocked down the snow slope for a rather appropriate finish.

In 1960 Ed and I met again in the Bugaboos "called by this lovely mountain". He had arrived first and had put in fixed ropes to a point 350 feet below our 1959 high point .. a brilliant job of solo climbing. We had decided, after our unsuccessful 1959 attempt, to try the center of the three possible lines in 1960. The right one was impossible and the left one appeared the same. The center line started at a point some 30 feet above the center of the large traverse ledge so we decided to place expansion bolts, for direct aid up a sheer blank wall to reach the start of this line. When I arrived, Ed had already placed the 12 bolts needed to connect the route with the new line. We planned an all-out attempt for the summit. We calculated that by leaving camp at 2 a.m. and reaching the top of our fixed ropes by 9 a.m., we could make it in one day. Then we waited for acceptable weather conditions. Three times we got up at 2 a.m., on seemingly clear days, only to be stopped part way up our fixed ropes by bad weather. On the fourth try the weather held and we reached the high point, just as we had calculated, at 9 a.m.

Ed, with the use of the 12 bolts and three pitons, for aid, reached the new line and climbed a further 50 feet to a small ledge (100 feet; 2 pitons, 15 aid pitons). Falling rock nearby made me glad that I had taken a helmet along this year. With the aid of my shoulder, Ed reached another small ledge and climbed an inside corner to a foothold ledge (90 feet; 2 pitons, 2 aid pitons). Both walls then became almost vertical and the holds ran out. With the use of direct aid on poor, shallow cracks, I pushed the line to another minute ledge (100 feet; 16 aid pitons).

We switched the lead and Ed, with the use of eight aid pitons, reached the top of the corner and traversed right to a ledge (70 feet). Then I progressed diagonally up to the right on easy ledges, entered a chimney and passed a large chockstone. I belayed from the top of the chockstone (140 feet), Ed finished the chimney and went out to the right (east). He traversed diagonally up (north) on ledges and short walls (140 feet). I ascended the ledge to a wall, traversed right (east) to the outside corner and belayed (70 feet; I piton).

By this time it was completely dark and starting to cloud up. I started the next lead on the sheer right wall of the outside corner. With the use of aid (a Chouinard knife blade piton), I leaned far to the right (north) and felt a thin, vertical crack. By using aid in this crack, which widened as I ascended, I gained a ledge (60 feet; 8 aid pitons).

I was now on the East ridge about 150 vertical feet from the summit. It was 11 p.m. by the time Ed reached me and the clouds had completely closed off the sky. Vision was very poor except when lightning flashed occasionally in the East. Ed tried the next pitch but found it too dark to continue. We bivouacked until dawn. We had down jackets but nothing for our legs. It snowed a little and the temperature dropped to below freezing. We sat on the ropes and put our feet, boots unlaced, in our packs. We ate the rest of our food and drank some water but, because of the cold and strong winds, could not sleep. A bolt of lightning struck a peak to the west and we got jumpy. It reminded us that a whole party had been killed by lightning on this same mountain only a few years before. We decided to climb on if another bolt struck, but there was no more lightning so we remained in bivouac.

In the pre-dawn light, Ed continued the climb on the ridge (140 feet). I took the second lead (100 feet). We reached the North Summit by dawn and then went on to the South Summit. Still eyeing the weather with caution, we descended the Conrad Kain route (West Ridge), and at the col it started to snow again. It snowed for five days. The third day of the snow storm, I decided to prusik up the fixed ropes and retrieve them. I got completely soaked prusiking through waterfalls on iced-up ropes. Wearing a hard hat helped because there were large amounts of ice-fall. On the way down a rope jammed and I left it behind. Later, Ed retrieved the last two ropes, and the climb was over.

NOTES ON THE CLIMB

There were 2,010 feet of rope climbing with 280 feet of direct aid. We used 100 pitons, including 21 for belay points. Most of the cracks were poor. Pitons used ranged from knife-blades to a few giant angles used for 1½" cracks. All the bolt hangers were left in. I would advise a helmet for this climb. With the bolts in, I think this face could now be done in two days.

FIRST ASCENT OF BUGABOO – NORTH FACE

By Layton Kor

Bugaboo's North Face consists of a long series of slabs, nearly 2000 feet long. The first 600 feet of the route used by Claude Suhl and myself followed an obvious line. Fourth class ledges and cracks brought us to where the wall surges up at a steep angle— 75°. From this point a long traverse of 3 to 4 rope lengths left, put us in center of face. Two more difficult rope lengths brought us to a doubtful position. Two expansion bolts were placed here (leader fall—15 feet) for traverse right into other series of cracks. These cracks were followed for 3 rope lengths. We then branched off to the right once again where we gained the east ridge route, half a rope length from the summit. The climb took 9 hours and about 45 pitons were used, including 18 for belay points. Three pitons and two bolts were used for aid.

OTHER NOTES

By Art Gran

Our 1960 camp was excellent. Everyone was climbing, even on poor weather days, which were in the majority. The party consisted of Ed Cooper, Layton Kor, Claude Suhl, Bill Sanders, George Bloom, Ken Weeks and Yvonne Chouinard. Almost everyone did Snowpatch and most of the other standard routes. Kor and Suhl did the east ridge of Bugaboo Spire in four hours. Sanders and I, Suhl and Bloom did Snowpatch in five hours, from the meadows. Kor did a large number of new routes. In addition to the route which he describes below, he also did the south face of East Post (coming out on the ridge at a point just to the west of the Summit) with Bill Sanders. They also did a traverse of the ice-fall and an ascent of the Marmolata Hound's Tooth, mostly on snow, on the North-east face.

EXPLORATIONS IN THE BATTLE RANGE

Notes on names and elevations

With reference to the article which appeared under the above heading in C.AJ. Vol. XLIII, page 37, the following is an extract of a letter received by Mr. S. Silverstein from the Surveys and Mapping Branch, Department of Lands and Forests, Victoria, B.C., dated June 30, 1960:

"When naming Mt. Butters in 1946, Mr. L. I. Smith specifically submitted two mountains for the Board's choice. The north peak, and the mountain actually climbed by Mr. Butters, was chosen. The name has now been applied to Government maps and Gazetteer records, and Mr. Brewster was so notified in January, 1948, when he submitted his names through the Canadian Board on Geographical Names. However, the southern peak, some 112 feet higher, was chosen by Mr. Brewster and appears in his article. We will record the name 'Mt. Ishmael' for this feature.

The practice of naming the various peaks on a single mountain massif was used extensively by early Alpine Club parties, particularly in the Glacier Park area. Thus, Mr. Brewster named the two peaks of Battle Mountain "Beowulf" and "Grendel", but on small scale maps we will only be able to show the name Battle Mountain."

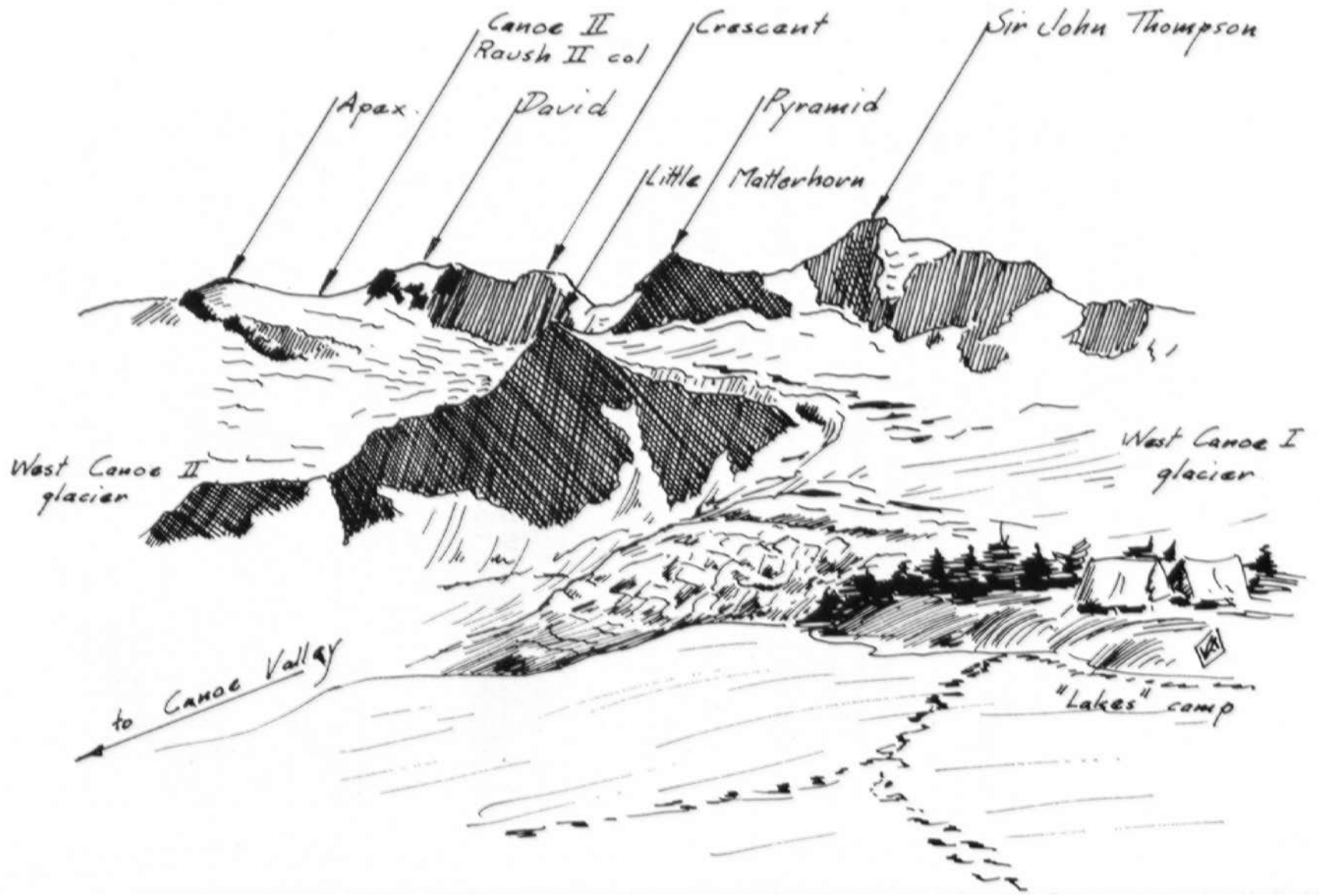
Names acceptable and recorded: Mt. Goodrich, Thumb Spire, Butters Creek and Oasis Lake. The following names were not acceptable: Mt. Evening, Iron Ridge, Wrong Peak and Glacier.

THE PREMIER TRIP

By John Fairley

Everybody except Bob McFarlane had arrived at Valemount by noon on Saturday June 25, 1960, and as Bob had had troubles at Quesnel arranging for an airdrop, it was expected that he would not arrive for a day or two. So, a coin decided I should wait for him, and Ken Baker, Dennis Holden, Alec Faberge and Carman Smith (leader-organizer), started off for the Canoe River valley. Up to this point weather prospects had been rather damp and disheartening, but then a few rays of sun brightened the forecast. Bob arrived Sunday morning with the news that the airdrop had failed, the P.G.E. had misplaced his pack, and the supplies from the abortive airdrop would not arrive at Tête Jaune Station for two days.

Tuesday was a busy day. We picked up the supplies at 6 a.m., drove to Valemount and up to the road washout in the Canoe valley. Here the trek up the north side of the river started. The first five miles walking along a logging road were a morale booster, to prepare us for the next twelve. For the next twelve, "A picture is worth ten thousand words"—unprintable words.


Canoe II
Raush II col
Crescant
Sir John Thompson
Apex
David
Pyramid
Little Matterhorn
West Canoe II glacier
West Canoe I glacier
to Canoe Valley
"Lakes" camp

By evening, however, the West Canoe Glacier lay just a few miles ahead. With the weather improving and the white peaks and glaciers of the Premiers showing, the valley really was beautiful. Travelling on Wednesday was more pleasant, and we easily gained the 1800-odd feet to the main camp ("Lakes" camp), beside the icefall on the West Canoe I glacier. Alec met us: "Looked all over for the airdrop—what happened ?—Got any food ?" Later, Ken, Carman and Dennis wearily came in. Eleven hours of fine climbing on a ridge of rotten rock, ice, and soft snow, had put them at a point just short of the summit of Pyramid (10,500 ft.), but time and conditions had made it inadvisable to continue. The next day four of us set out. In slow succession, Mts. Thompson, Pyramid, Crescent and David were left behind on our right. We had had to drop a thousand feet from Matterhorn-Pyramid col to the Canoe II glacier, and soft snow in the Canoe II icefall made going awkward, so it wasn't until 5 p.m. that we split at the Canoe II-Ranch II col.

Alec and Carman went to Apex; Bob and myself to David. On the south-east ridge of David we encountered a bit of rotten rock and some snow, then we were on top in a snowstorm at 7 p.m. (a first ascent?—10,400 feet). Carman and Alec were successful on Apex, too (another first ascent—10,000 feet). Ken and Dennis, leaving after us, had climbed Little Matterhorn (a second ascent— 9,350 ft.). Everyone felt rather pleased. Friday we broke camp, went up over the Tête-Canoe pass, across the Tête névé in brilliant weather, down past the east side of the "Cleaver", the knife of rock which splits the ice flow like a submarine surfacing, and finally down to the snout of the Tête Jaune glacier. Saturday morning dawned golden on Mt. Robson to the north-east, and towards it we walked, or rather, waded, for the first three miles down Sand Creek, away from the Premiers.

A great deal of credit for the success of a good trip is often due to those who were not even along. Ann Prevost made up our food list, and with the help of Gillian Broatch, bought and packaged it. The Blom family of Valemount showed us wonderful hospitality, and a roof over our heads, and Dirk Blom with his jeep and his knowledge of roads, old trails and cabins, helped greatly. Many thanks.

ANDROMEDA (11,000 FEET)

By John Fairley

One morning when the dangerous séracs in the Andromeda hanging glacier all appeared to have gone, Bert Parke and I strapped on crampons and found a route through this very shattered icefall to the northern cwm. There were no real difficulties and only a few steps to cut where the walls became very steep. It was very pleasant climbing as we steadily "crunched" upward, moving together (although I must admit our ankles were really working!). Snow facets and ice-flakes blinked in the morning sun.

Traversing the snow cwm and crossing a bergschrund we then gained the steep snow slope (about 50°) which eventually joins the crest of the north west ridge. Half of this was easy step-kicking but the other half was extremely hard snow—another ankle-bender! Mounting the last three vertical feet, we were rather surprised to find a broad summit plateau and not a corniced knife-ridge. It was noon so we ate and then snoozed for an hour in the brilliant sunshine, but cool breeze. Descending towards the Athabaska-Andromeda col we ran into some very rotten rock; and all the rock we kicked off was starting avalanches. Cornice and avalanche danger would not allow us on the col so we had to descend toward the Saskatchewan Glacier side. The reason for the avalanches was three feet of snow on black ice. However, we cramponed down in the avalanche

tracks with no trouble and then jumped a bergschrund at the bottom.

There was no time left for continuing up Mt. Athabaska as intended, so we walked down the Saskatchewan Glacier, to the road (wading North Saskatchewan River in the process) by 9 p.m. No ride was forthcoming, so we walked for a while and then slept beside the road. The nights are apt to be cool in Sunwapta Pass. The next morning we trudged back to the geophysics camp on the Athabaska Glacier—arriving somewhat hungry, tired, and late for work—but very satisfied.

THE TOWER OF BABEL

By John Fairley

The Tower is one of those rock scrambles which doesn't demand too much strength or stamina, doesn't take too long to climb, but which still offers quite enough interest to keep one very wide awake. One Saturday in August, Ken Baker, Peter Fuhrmann and I left Banff at noon and drove to Moraine Lake. From here, a short, pleasant walk along the Consolation Lakes trail, and a not so pleasant "scree shag" for half an hour, took us to the base of the rock climb. Ken marked this place with a stick in a cairn.

Ken and Peter alternately led, traversing on a ledge to a weakness that would take us to the next higher ledge, traversing again, and so on. The lower part of the climb was often on quite rotten rock, but one solid jug-handle of limestone was quite amusing. It was so inviting that no one would trust it—until it became obvious that it was the only bit of rock in the slight overhang that was solid. There were overhangs, most of the rock was quite vertical, but there were always good belay points. On a fairly pronounced ledge about one hour from the top, we rejoined the usual route and had a bite to eat. Rock from here up was considerably more solid. The whole climb (about 800 feet) took about 3½ hours, and a quick run down a scree chute, and across the valley, took us back to Moraine Lake in time for 6 p.m. tea.

CLIMBS AROUND POCAHONTAS

By Eric Hopkins

Edmonton Section spends a good deal of time around the Hut at Pocahontas and (luring the years its members have found a number of good rock climbs in the vicinity.

In the hope that others may enjoy these climbs I list some of them here.

ROCHE a PERDRIX - three routes

This rock mountain (see illustration) is right opposite the Jasper Park East gate. Our members have worked out three routes on it, two of which are very good.

Route No. 1:

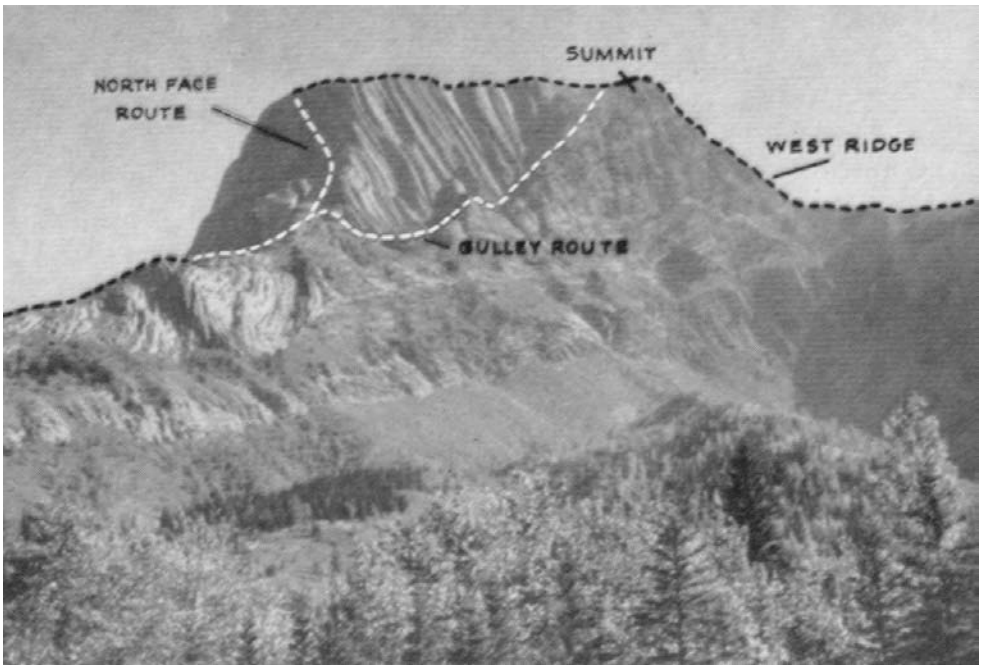
This is the west ridge route and can be seen as the right-hand sky-line ridge in the picture. This ridge is reached by cutting off from the highway approximately four hundred yards inside the Park gate, then by cutting up to the left and finally a little back to the right to reach the lower ridge. Follow the ridge to the base of the west ridge proper where you rope up.

The broad rock ridge is then climbed straight up. Near the beginning you turn up a small holdless wall by a traverse to the left and then up the corner (nice exposure here). Farther up, a steep slab brings you to a resting place below another higher wall. This is avoided by going to the right — across the top of a rock gully — up a corner — along an exposed but wide ledge and then up an easy scramble to the summit.

Use at least sixty feet of rope between climbers. Time up three to five hours.

Route No. 2:

This we call the "Gully Route". It is up the north ridge to the corner of the face and then across the west face following the natural gully that runs across this face and then up to a point just a short distance from the summit. This is not as good a climb as the west ridge due mainly to loose rock. Time approximately the same as route No. 1.



Roche A Perdrix Showing 3 Routes

Route No. 3:

This is the north face route and is a fairly difficult rock climb. Follow the north ridge (can be seen as the left hand ridge in the picture) to the base of the north face. Then climb up the bottom of the face towards the bottom of the big crack that runs across the north face to your left as you look up at the face.

There is a tricky pitch to get into the bottom of this crack which requires a little hard jamming to make it. (Pass rucksacks up here.) Once in the bottom of the big crack the climb is quite straight forward. Take along a couple of pitons; you may wish to use them for protection getting up to the bottom of the big crack. If three on party take two ropes.

This route was first done by Jaro Mares, Bob Scholes and the writer. Since then it has been repeated a number of times that I know of. Time approximately same as route one or two — maybe a little less.

The easy way off.

This makes these climbs more enjoyable. From the summit scramble down the east face, down a wide gully and out to the left so as to hit the top of the ridge at tree line. From here bear north down steep slopes and cut into a canyon that runs at the bottom of the east face. At the bottom of this canyon cut across and up a little to the left and follow the goat trail around the base of the cliffs until you come out on the north ridge where you started the climb of the gully on north face route. Time off — two to three hours.

ROCHE RONDE

This mountain is across the river from the cabin. Drive towards Jasper and go in the Celestine Lake road. Follow this past both wardens' cabins, then east along the pipe line road until you come to the railway. Leave car here and walk about three miles along the railway until you come to the ridge opposite the mountain. The route we do is up the slopes on the left of the ridge and then up the ridge until you gain the prominent notch below the south west face. Then climb up this face to the bottom of a large chimney about half way up the face. This chimney ends in an overhang. Traverse back out to the left on a small ledge (approximately 30 to 40 feet) until you reach the corner, then climb up the corner. This is the key to the face climb and an easy scramble then takes you to the summit.

By going northwest off the summit you can avoid the face and after some steep scrambling down you can cut back across and south to the notch

Time from car to car: six to ten hours.

MORRO

This one is our standard training climb; 2,000 feet of most enjoyable rock climbing. The west face may be reached by an easy trail that leaves the highway at the bridge. The farther south you go along the west face the better the climbing. It can be made as easy or as difficult as you like. The slabs are sound and in places steep.

This is an enjoyable climb that can be made early in the spring or late in the fall when the bigger peaks are all snow covered.

The route off is down the big tree covered ledge that runs across the west face. Don't let Morro's round top fool you — there is some very enjoyable climbing on it.

C. 2½ - 6,800 ft.

Situated in the Colin Range approximately two miles from Maligne River picnic grounds. Easily recognized from road by its smooth west slabs, a double summit.

Route 1 — Go to the fish hatchery and then on to Maligne River picnic grounds and leave cars here. Cross bridge and follow well trodden path until you come to first large creek (about two miles) and follow this creek up its canyon to meadows at the top. Climb tree covered slopes on your north to first summit, then cross small gully to bottom of knife edge ridge. From here is very interesting ridge rock climb to summit.

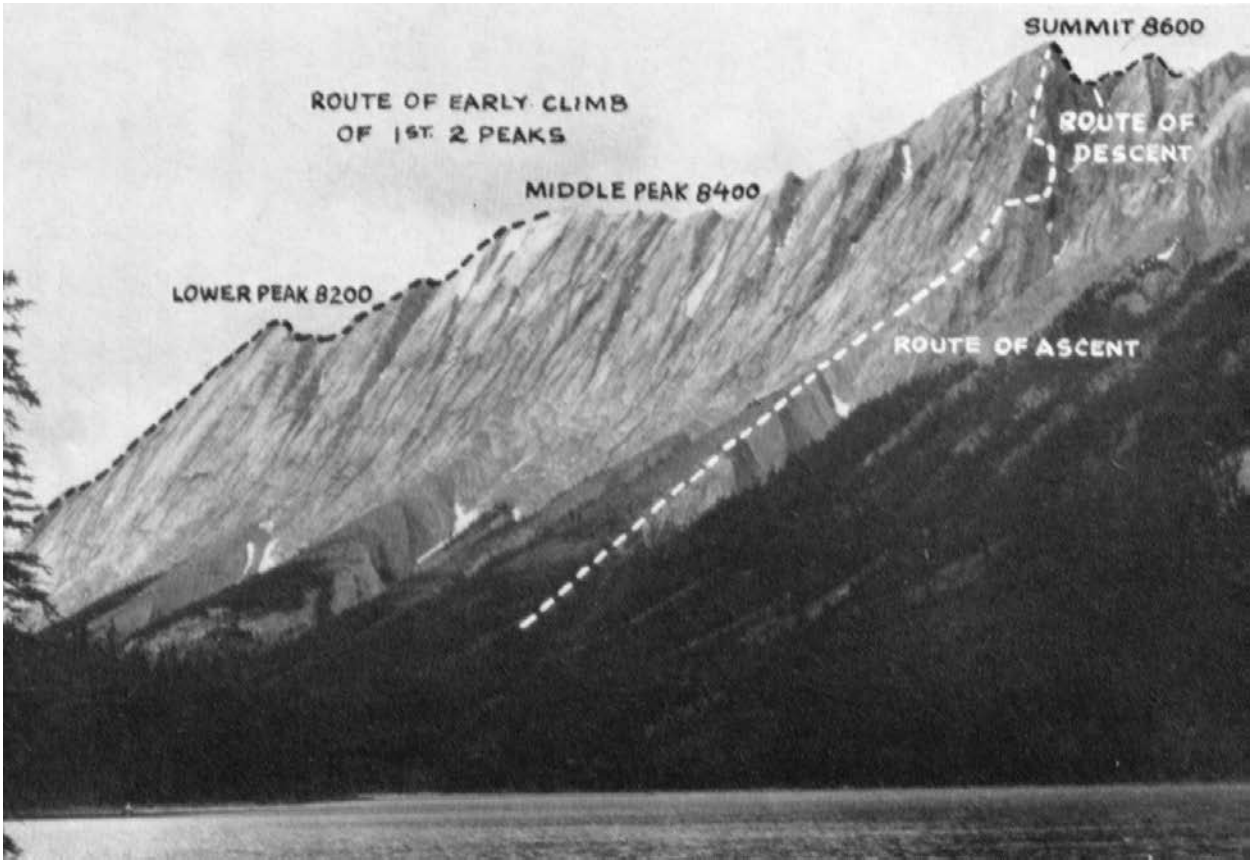
Route 2 — Instead of climbing up canyon, climb directly up Southwest ridge from north side of canyon. Very steep parts may be avoided by traversing to the right. This route includes another combination slab and ridge climb before reaching the final ridge.

FIRST ASCENT OF THREE UNNAMED PEAKS NORTH OF BEAVER LAKE

By Eric Hopkins

Running north from the southeast end of Medicine Lake is the Jacques Lake trail and about one-and-a-half-miles north along this trail is Beaver Lake. North of Beaver Lake and running parallel to the valley is a range of three un-named peaks. The highest of the three, which is approximately 8,600 feet lies directly north of Beaver Lake.

Two years ago a party led by Toni Meisner of Jasper made the first ascent of the two most northwesterly summits by climbing the northwest ridge of the most northerly peak (8,200 feet) and traversing the ridge southeast to the middle peak approximately (8,400 feet). At that time, because of lack of daylight they had to come off the ridge without attempting the third and highest peak.



First Ascent Of 3 Unnamed Peaks N. Of Beaver Lake. *Photo E. Hopkins*

During the summer of 1959 another party led by Toni Meisner attempted this highest peak by climbing to a prominent col lying southeast of the objective peak, and then trying to climb the ridge to the peak. The last 300 feet was found to be steep, loose and rather rotten and so an attempt by this route was abandoned.

On August 21st, 1960, another party consisting of Toni Meisner as leader, Patricia Payne and Eric Hopkins of Edmonton, made the first ascent of this third and highest peak by climbing the southeast face.

The route used leaves the Jacques Lake trail approximately a mile beyond the north end of Beaver Lake and then follows almost straight up the steep front slabs to a point just a few feet to the north of the peak.

The climb consists of a series of fairly steep cliffs and steep slabs for approximately 1,600 feet. The party took ten hours to make the ascent from Beaver Lake. Some time was spent in finding a climbable route. A certain amount of hardware was used for security on the climb and for rappelling on the way down.

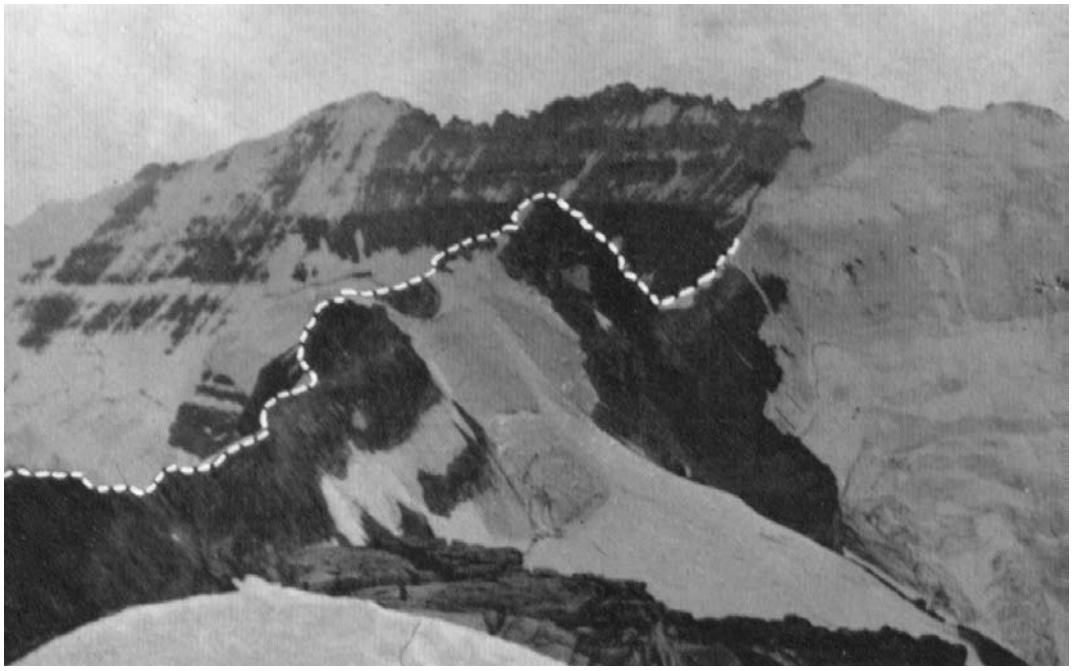
The descent was made by the southeast ridge, one ninety foot rappel to a col, then around the back (north) on ledges and scree to the main col south of the peak, thence down easy scrambling to the trail. Time of descent five hours.

TRAVERSE OF VICTORIA, COLLIER AND POPES PEAK

By George Stephens

Miles O'Reilly and I had come from Chateau Lake Louise up Abbot Pass the night before — in fact, we had arrived five hours ago — in anticipation of traversing Mt. Victoria today, July 30, 1960.

Now we sat over hot soup and coffee, all indecision. If it were going to storm, the arête of Mt. Victoria was no spot to be caught on, especially if we had passed Centre Peak and were



The Arete Of Mt. Victoria And Collier Taken From Pope's Peak.
Photo By G. Stephens

Victoria Arete From North Peak. *Photo G. Stephens*

Bottom left: Abbot Pass; background middle: Mt. Hungabee.

on rock unknown to either of us. The whole arête of Mt. Victoria, right on the continental divide, is exposed to wind and storm. Miles had already turned away twice from plans to traverse Mt Victoria, because of poor weather.

By five o'clock, we decided to gamble on the weather, and in the cold morning air began up the broken rock of the northeast draw behind the hut. We both knew the route to Centre Peak, and at eight a.m. we were sitting at the summit watching the Chateau awaken to its duties of the day. Suddenly two figures appeared on the arête we had just travelled. A few minutes later we greeted Neil Brown and Peter Wuhrman, both from Calgary.

The four of us started from Centre Peak together, but soon Peter and Neil were out of sight ahead of us. We continued across the Victoria arête, up and down gendarmes, across deep cracks and along the narrow ridge, often traversing on the Lake Louise side.

We were on North Peak at 10 a.m., and then decided to continue a traverse of Mt. Collier and Popes Peak, as the day was still young.

We said goodbye to Peter and Neil, who descended to the Glacier and the Plains Chalet. We had a good rest and a meal before we started down the ridge of North Peak. It was truly treacherous that day, and the icy conditions necessitated step-cutting and extreme caution, and we did not have crampons with us.

From the Victoria-Collier col we climbed the ridge of Mt. Collier, which proved a most interesting and enjoyable climb on good, solid rock. In one hour we stood at the summit. But we still had a long way to go, and the weather seemed to be closing in. In fact, it had snowed for a few minutes as we were climbing the arête of Collier, and clouds clung to the high peaks not too far away. We continued the traverse towards Popes Peak.

There are two peaks of Popes. The one seen from Chateau Lake Louise is the lower. The

higher peak is to the northwest, hidden behind Mt. Whyte. The traverse from Mt. Collier to the first of these peaks was mainly on rock, which at times was so rough that it scratched our fingers. From this peak we merely crossed a snow-field and climbed one more rock ridge to reach Popes Peak at five o'clock, just twelve hours after we had left the hut in Abbot Pass.

After a long rest and another meal, we descended on a rock rib, snow gully and scree gully to the Plain of Six Glaciers Chalet, where our friends met us.

This complete traverse had been done in 1936 by Miss G. Engelhard and Mr. E. Cromwell.[1] Miles and I, weary after our long day, thought this was probably the second traverse of Mt. Victoria, Mt. Collier and Popes Peak.

BAFFIN ISLAND

By Brian Rotheky

Dr. Phil Gribbon of Kingston and I made a two man expedition to the Cumberland Peninsula of eastern Baffin Island, in July 1960.

Access to this area was gained by flying to the D.E.W. Line base of Cape Dyer and base camp was established at the head of the Bagnall Fjord, after 17 miles of overland packing.

Six peaks which we climbed were named and also six glaciers, and the names have been submitted to the Government for approval. The tentative name for one striking glacier is "Herman Buhl" glacier.

The region is part of a vast unexplored range and the country is magnificent, enhanced by the continuous daylight. The peaks averaged 5,000 feet, rising from sea level; snow level was around 2,000 feet; the glaciers calve bergs into the fjord.

A British Cambridge expedition is currently applying for permission to go into the same area and perhaps a new trend in arctic mountaineering may have been started by the use of the D.E.W. Line.

(We hope to have a complete account of this expedition for the next Journal,—Editor).

NEW ASCENTS AND VARIOUS EXPEDITIONS

Coast Range

MT. TOBA (ca. 9,000 feet) July 18, 1960. R. Hutchinson, J. Hutton, W. Himmelsbach, J. Woodfield, first ascent.

MT. COMPTON (ca. 9,250 feet) July 19, 1960, same party.

"ARCHBISHOP" (ca. 9,850 feet) July 21, 1960, same party.

Purcell Range

EAST POST. Ascent of south face. L. Kor, W. Sanders.

HOWSER PEAK. Ascent of north face, July 1960. E. Bjornstad, E. Cooper.

PIGEON SPIRE. Ascent of east face, Aug. 16, 1960. E. Cooper, L. Kor.

BUGABOO SPIRE. First ascent of east face—over several weeks in 1959 and 1960, ending in one full day's climb with a bivouac just below the summit. E. Cooper, A. Gran.

BUGABOO SPIRE. First ascent via north face. L. Kor, C. Suhl.

FARNHAM TOWER (11,002 feet). Second ascent by new route (southeast face). Frank Stark and Vitus Germann, 1956.

1 J. M. Thorington: A Climber's Guide to the Rocky Mountains of Canada, 90.

GRANITE PEAK (10,200 feet). Second ascent August 6, 1960, by northeast ridge (new route). Arthur Maki, Robert West.

MT. KARNAK (11,050 feet). Second ascent August 18, 1960, by northeast face (new route). Arthur Maki, Peggy West.

"FIRST LIEUTENANT" (10,550 feet, south of Lake of the Hanging Glaciers). First ascent August 5, 1960, by northwestridge. Douglas Anger, Arthur Maki and Peggy West.

"SECOND LIEUTENANT" (10,600 feet). First ascent August 5, 1960. Douglas Anger, Arthur Maki.

"MACBETH NÉVÉ". Seven miles east of Duncan Lake. First crossing August 11, 1960, by Arthur Maki and Robert West.

"MT. MACBETH" (10,000 feet; S. peak of Macbeth Névé). First ascent August 11, 1960. Arthur Maki, Robert West.

"MT. MACDUFF" (9,800 feet; N.E. of Macbeth Névé). First ascent August n, 1960. Arthur Maki, Robert West.

UNNAMED, 3 miles S.W. of Eyebrow Peak (9,800 feet). First ascent August 5, 1960. Arthur Maki, Robert West.

UNNAMED, N.E. of Mt. Maye (10,000 feet). First ascent August 17, 1960 by Douglas Anger and Robert West.

"RED LINE PEAK" (10,300 feet; S. of head of Red Line Creek, the E. fork of Macdonald Creek). Second ascent July 24, 1960, by north snow slopes and east arête. Arthur Maki, Claudia Maki, and Robert West.

Cariboo Range

"CHILKST PEAKS" (ca. 9,000 feet)—south of head of Canoe River, first ascent and traverse, Aug. 7, 1960, Frances Chamberlin, R. Neave, Gertrude Smith.

APEX (ca. 10,000 feet)—Two parties climbed Apex—A. Faberge and C. Smith at the end of June and F. Chamberlin, R. Neave and G. Smith on August 10, 1960. First ascent and second ascent.

DAVID (ca. 10,400 feet)—First ascent end of June 1960, J. Fairley, R. McFarlane.

LITTLE MATTERHORN (9,350 feet)—Second ascent end June 1960. K. Baker, D. Holden.

Rockies

MT. STALIN (ca. 9,500 feet)—First ascent August 1960, Capt. Richard Jones, Major John Biginell, Sgt. Roy Lemon, Cpls. P. Flassett, Harry Rogers, B. Holmes.

MT. FUSILIER (ca. 9,250 feet)—First ascent August 1960, same party.

LONG MOUNTAIN (ca. 8,500 feet)—First ascent August 1960,same party.

WHITE SPUR (ca. 8,500 feet)—First ascent August 1960, same party.

DEVEREUX (ca. 8,500 feet)—First ascent August 1960, same party.

WEST TETSA (ca. 8,500 feet)—First ascent August 1960, same party.

MERCERS (ca. 8,500 feet)—First ascent August 1960, same party.

MERCHANT TAYLORS (ca. 8,500 feet)—First ascent August 1960, same party.

COSTIGAN'S BOIL (ca. 8,700 feet)—First ascent end August 1960. P. Duffy, J. K. Gray, H. Kahl and D. Kahl. New routes on Roche a Perdrix, Roche Ronde, Morro and "C 2½" in the Colin Range are described by Eric Hopkins.

Unnamed peaks north of Beaver Lake (ca. 9,600 feet)—First ascents of three peaks led by Toni Meisner were made in 1958, 1959 and 1960.

MEMBERS ABROAD

SNOW UNDER THE EQUATOR

By Lothar Kolbig

At the 1959 Club Camp in the Bugaboos my good friend Ralph Forster gave me such an interesting description of his trip to the Ruwenzoris in Africa that it impressed me as a very intriguing and fascinating trip. I began corresponding' with the Uganda Mountain Club about arrangements for porters and provisions. Just then the Sierra Club of California changed its plans from a Caucasus expedition to the Ruwenzoris and we decided to join this group.

All 14 of us assembled at the Imperial Hotel in Kampala on July 16 and the next few days were occupied with the purchase of our food and packaging it into 45 lb. loads. An overnight train ride brought us to Kasese. Meanwhile, an advance party had purchased the food, blankets and sweaters for the 76 porters at Fort Portal and also had made arrangements with Massale, the tribal chief, to recruit for us the required number of native porters.

We camped at the Ibanda village roadhead and by daybreak the porters started to arrive. After selecting a headman, one of the few who could speak English, it took considerable time to take all the names of the porters, but after having distributed the sweaters and blankets, the long column began to move along the narrow trail. For several miles it led through dense bamboo bush and elephant grass but, disappointingly, we did not see any elephants. Now the trail began to go up and down several hundred feet along the shoulder of the Mubuku valley so many times that we wondered if we were ever to reach the steep hogback ridge at the end of which the Myabitaba Hut is located. After crossing a swift stream we began the long and arduous ascent of the ridge. Upon reaching the hut we found the porters already spread out under their rock shelters, chatting loudly in Swahili.

Early the next morning, after paying off some porters who refused to continue, we began to move and soon descended 800 ft. into the gorge of the Mubuku river, crossing it by a very unstable suspension bridge. Towards noon we were getting into the tropical bogs which are so vividly described in the 1955 Mountain World. It soon became a case of leapfrogging from one solid grass tuft to the next and the long bamboo poles the porters had provided for us helped us to negotiate these almost interminable stretches. The loaded porters, being barefooted, mushed along, sinking in above their ankles without the slightest inconvenience. Late in the afternoon we arrived at the Nyamuleju Hut, where we spent the night.

Long will the memories remain with us of the boggy tropical landscape through which the trail snaked back and forth during the next day and it was with relief that we finally arrived, late in the afternoon, at the Bujuku Hut (13,000 feet).

A clear frosty morning allowed us to see all the peaks around us. To the east were the Porter Peaks; next, Mount Baker with its ice cap; then Mt. Margherita, 16,760 ft., the highest in the range, with its extensive glaciers. To the west was Mt. Stanley, its ice-fields glistening in the equatorial sun. Sorting food and gear and getting ready for an early start for Mt. Speke occupied us most of this day.

The frozen bog that hangs precariously on the lower steep granite slopes of Mt. Speke provided some poor footing. However, as soon as we reached the glacier we put on our crampons and were glad to find some solid going. During the night the cool air descends into the valleys and

pushes into the plains the fog and mist which are so much a part of the Ruwenzoris. As soon as the sun has warmed up the valleys and the warm air rises, the fog is pulled from the plains again, and the valleys and peaks are shrouded in. This weather pattern repeats itself almost daily. Time and again the mists would swirl around us, giving us only occasional glimpses of our objective. The climb proved to be long and steep, winding around crevasses and near the top we encountered a very exposed pitch. Descending in the afternoon, the boggy slopes, now liquified, became a rather unpleasant experience, and we were glad to warm up and dry out in the shelter of the hut.

Food and gear were assembled the next day and with three porters carrying our loads, we left for the Elena Hut at 15,000 ft. for an ascent of Mt. Margherita. These high altitude huts, strategically located throughout the Ruwenzoris, are the shape of an ‘’A” tent, constructed of aluminum sheeting and just large enough for four people and their gear, with a small galley at one end.

Dawn broke with bad weather signs all around us. However, we decided on an attempt anyway. No sooner had we reached the col above the hut than the storm broke. Not only did it snow all day, but it became exceedingly cold. Groping our way with map and compass and occasional brief glimpses of the terrain, we were able to go on. Traversing between crevasses and cutting steps over a cornice of ice we encountered some very steep pitches. In time we arrived at what we believed to be the summit. On the descent we barely recognized our snow covered tracks of the morning. We would halt at intervals to admire the unusual icicle formations that are so typical of the tropical high country. Arriving at the hut in the early afternoon we retired to our sleeping bags because of the cold, emerging only for supper.

A beautiful warm, clear morning greeted us and all the peaks were glistening in the sun. To the west we could see the Congo foothills and plains. Slowly, and with great reluctance we descended through a forest of giant groundsels, to the Bujuku base hut.

The next day four of us departed with six porters for the road-head, which we reached in two days.

Before returning to Kampala we paid a visit to Queen Elizabeth Park to film elephants, hippos and other game and then went on to see the pygmies in the Ituri Forest at the Congo border. Congo refugees were seen at many places.

A short flight over the great Rift Valley brought us to Nairobi, where we took the bus to the Marangu hotel on the slopes of Kilimanjaro. With six porters we hiked to the Bismark Hut and upon leaving the hut the next day we entered a beautiful tropical giant heather forest. The Peters Hut was reached early in the afternoon. The third day took us through the moorlands to the 15,000-ft. plateau that separates Mt. Mawenzi and Kilimanjaro and we arrived at the Kibo Hut early in the afternoon.

It was bitterly cold as we left the hut shortly after midnight. Our headman was now leading the long, wearisome trudge up the lava ash scree slope. Just as we felt ready to give up in despair, we arrived at Oilman’s Point, where all feelings of fatigue were forgotten, for just then the sun rose on the horizon, illuminating the sheer ice walls in the crater and the ice terraces that tumble down the slopes, with a dramatic orange glow. Seldom have we experienced a sunrise of such spectacular and beautiful magnitude. This, in my opinion, appears to be the climbers’ reward: not the fact that at 19,340-ft. we are standing on the highest point in Africa! It took five hours up from the Kibo Hut and just one and a half hours to run down the scree slope. Two days later we were back at the hotel.

Before returning to Nairobi and the long flight home, we paid a visit to the Ngorongoro Crater Park, one of the greatest game parks in the world. Here we filmed elephants, giraffes, rhinos, drove through herds of zebras, wildebeest, gazelles, and chased lions by jeep. Along the road to

Nairobi we saw the stately Masai people and watched the giraffes browse next to the road.

On the long flight home we reflected on the many contrasts we had seen: nature's experiment in creating the many species of game, the unspoiled and primitive natives of the Karamoja district, the many modern skyscrapers in Nairobi and the snow under the Equator.

AMA DABLAM

Just as the Journal was going to press, it was reported in London that ACC member Walter Romanes was one of four members of Sir Edmund Hillary's expedition who reached the top of Ama Dablam. The reports said the climb was made without formal permission from the Nepalese government and caused a minor diplomatic crisis. A fine of £37.10 was imposed, plus the normal £150 climbing fee.

Mr. Romanes, who now lives in New Zealand, climbed Mt. Fairweather with the B.C. Centennial Expedition in 1958. Then he went to the Antarctic as a mountaineer with a New Zealand survey party.

SCIENTIFIC SECTION

RECENT GLACIER FLUCTUATIONS IN THE SELKIRK RANGE, B.C.

By Robt. K. Gerlib

Three glaciers, the Illecillewaet, Asulkan, and Bonney, in the vicinity of Glacier, B.C., were visited by myself and F. W. Peitzche during the summer of 1959 from a base at Glacier Park campsite. One day only was allowed for travel to and from and for the study of each glacier. Time was insufficient for detailed work but limited data were obtained permitting approximations of the dates of maximum stands of each glacier.

Botanical methods of measuring the period of glacier advances are obtained from critically located trees growing along the trim-line of a glacier. The trimline is a sharp boundary between mature or undisturbed forest, and the young forest or barren moraine in areas uncovered by retreating ice. It marks the position of a maximum stand.

Trees at the trimline tilted by the final advance of the glacier at some time in the recent past usually appear scarred or bowed (Lawrence, 1950). The date of ice push can be determined from the annual growth rings or the eccentric pattern of the growth rings shown in a cross-section of the tree. Such trees are very reliable date indicators. Because of lack of time, however, we did not find any along the glaciers studied.

Tree ring patterns obtained from trees which border the trimline, but which were not actually touched by the ice, may also be used to estimate the date of maximum advance (Mathews, 1949). The approach of the ice may be indicated by a marked reduction in the thickness of the growth rings; the retreat of the ice from the trim-line is indicated by a gradual return of the growth rings to normal thickness or at least by a slight increase in their thickness. This latter method was employed in this study and a cross-correlation made with as many trees as possible.

During the field work it was our common practice to traverse the trimline and moraines in search of suitable trees. These were not readily found, but from as many as possible cores were obtained. These were taken by boring to the center, or preferably to the axis of growth, near the base of each selected tree. Cores were obtained with a Swedish increment borer loaned through the courtesy of the B.C. Forest Service. Because the time and extent of ice advance varied somewhat from place to place along any one glacier, cores were taken at intervals along the trimline.

The procedure followed later was simply to count the growth rings and measure their thickness from the base of the bark at the outer end of the core. During the life of the tree growth rings are normally added at the rate of two layers per year. At the beginning of the growth seasons a porous light coloured layer is developed that grades outward into a dense and dark coloured layer. This couplet forms one annual ring.

The cross dating or the matching of growth rings by year, from one tree to another, is a vital key for deriving the proposed calendar dates for the glacier fluctuations. The ideal situation is to establish the annual character of a growth ring and its true calendar date. In this study, the quality of cross dating is based purely on eye and judgement. Characteristic patterns and sequences of narrow, normal, or wide rings were recognized by sight and scaled off in numbers per millimeter, and plotted on cumulative graphs. All cross sections or cores collected in the field did not necessarily correlate, perhaps because of missing growth rings, and some were discarded.

From the Illecillewaet Glacier twelve cores were obtained of which four were satisfactory

for cross-correlation. The following graph was plotted from the data obtained from each core (figure 1).

The graph has been interpreted as follows. The trees (1), an alpine fir 407 years old, and (2), an alpine fir 255 years old, yield results that may be significant. Both trees show a diminution in rate of growth, as indicated by a flattening of the cumulative curves, between 1705 and 1735 in one and between 1685 and 1715 in the other. Prior to and after these pairs of dates the steeper gradient of the graph indicates relatively faster growth rates. Tree (1), because of its location (see unpublished B.Sc. thesis, Dept. of Geol., Univ. of B.C.) and its high altitude, had a normal growth rate throughout its entire life somewhat less than that of tree (2), located in a more favourable environment. The latter tree is located at a lower altitude near the terminus of the left lateral moraine. The temporary reduction in growth rates of the two trees is attributed to an advanced stand of Illecillewaet Glacier between 1685 and 1735; the mean date, 1710 is assumed to be the time at which it reached its greatest extent.

Core samples from trees (3), an alpine fir 182 years old, and (4) an Engelmann spruce 218 years old, plus tree (2), yield similar results that may be significant. All three show a sharp reduction in rate of growth between 1808-40, 1800-15, and 1828-35 respectively. This reduction may, similarly, mark a second advance of the glacier between 1800-25, followed by a gradual

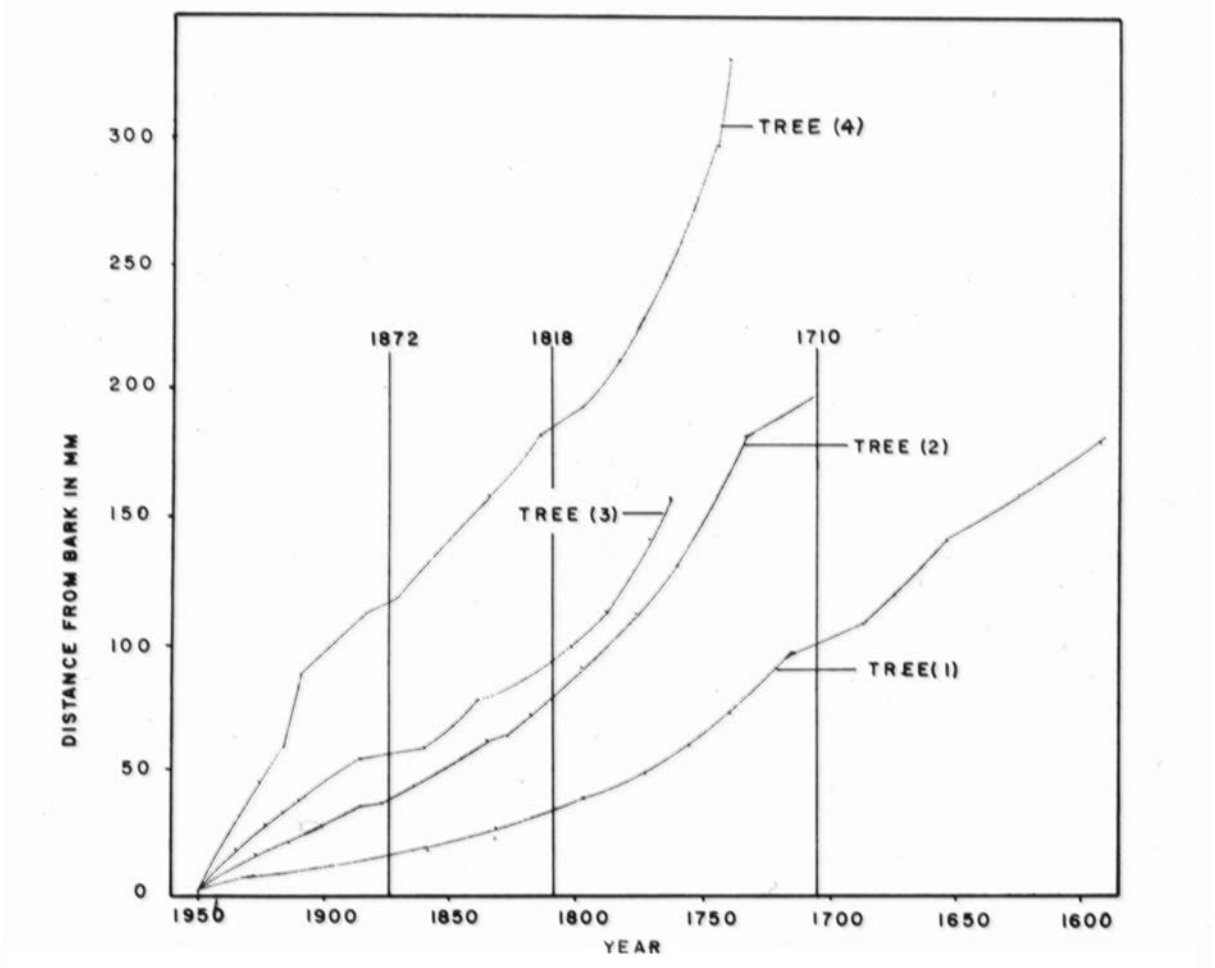


Fig. 1. Growth Rings Of Trees Along The Outer Limits Of The Illecillewaet Glacier.

Vertical bars mark inferred times of maximum stands of the glacier.

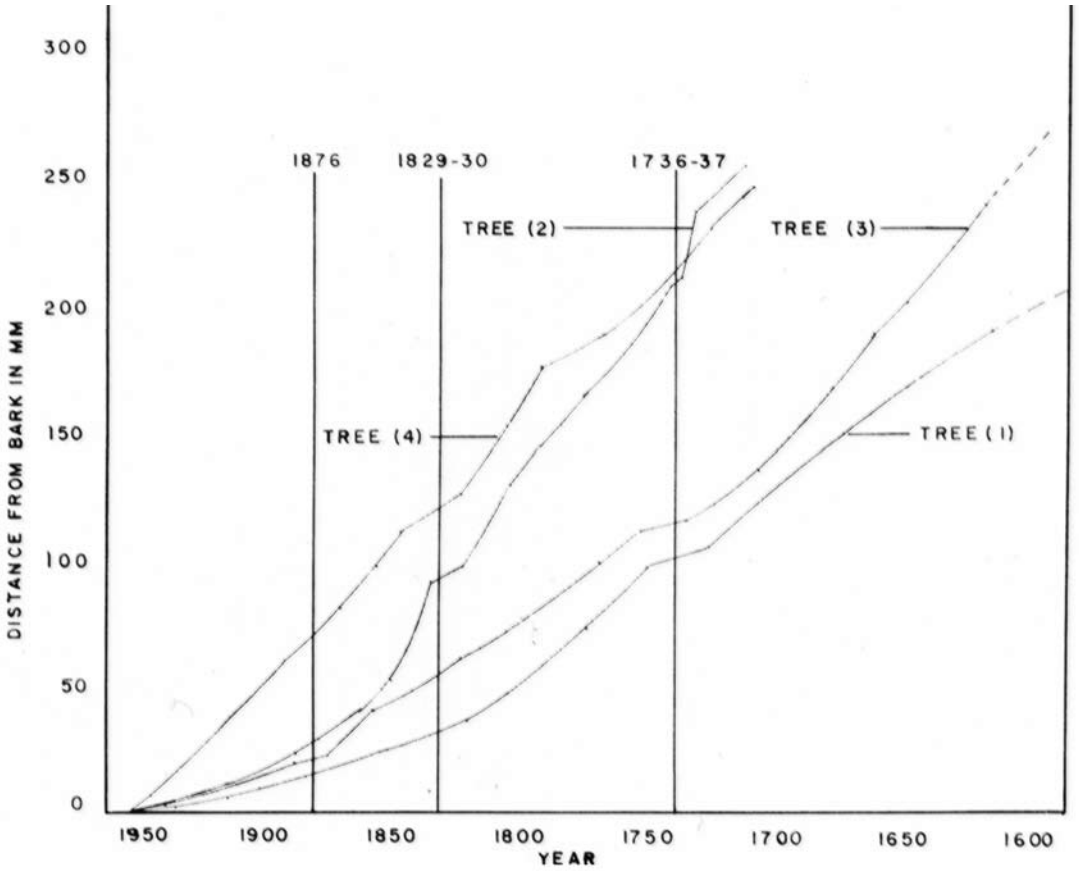


Fig. 2. Growth Rings Of Trees Along The Outer Limits Of The Asulkan Glacier.

Vertical bars mark inferred times of maximum stands of the glacier.

return to normal rate of growth, associated with ice retreat, after 1815-1840. The mean date, 1818, is proposed as the time of the second maximum stand.

These trees again show diminution of growth rate between 1860-84, 1870-84, and 1875-83 for (3), (4), and (2) respectively. Once again, each tree returned to its normal growth rate after the 1883-84 interval. These changes in rate of growth have likewise been attributed to the gradual advance of the Illecillewaet Glacier during the period 1860-75 followed by a recession of the ice still continued today. The mean date of the third climax is proposed as 1872, which is, however, approximately fifteen years previous to the advance of 1887 observed by George Vaux Jr. and William S. Vaux (1908).

A similar graph was plotted for the Asulkan Glacier. The first botanical evidence of ice advance was found in trees (1), an alpine fir 156 years old, (2), an alpine fir 162 years old, (3), a western hemlock 300 years old, and (4) an Englemann spruce 282 years old (figure 2).

Cores obtained from these trees show a gradual diminution in growth between 1800-17, 1807-20, 1790-1804, and 1785-1805 respectively, followed by a gradual increase in size of growth rings in successive years. The mean date, 1802-3, is proposed for the maximum stand of the ice.

Trees (1), (2), and (3) again show a gradual diminution in rate of growth between 1895-1910, 1898-1920, and 1899-1905 respectively, followed by a gradual return to normal growth rate. From these data a mean date of the second maximum stand is proposed as 1912-13. In 1911 the Vaux brothers recorded an advance of 50 feet 6 inches which is only one or two years prior to that proposed in this study.

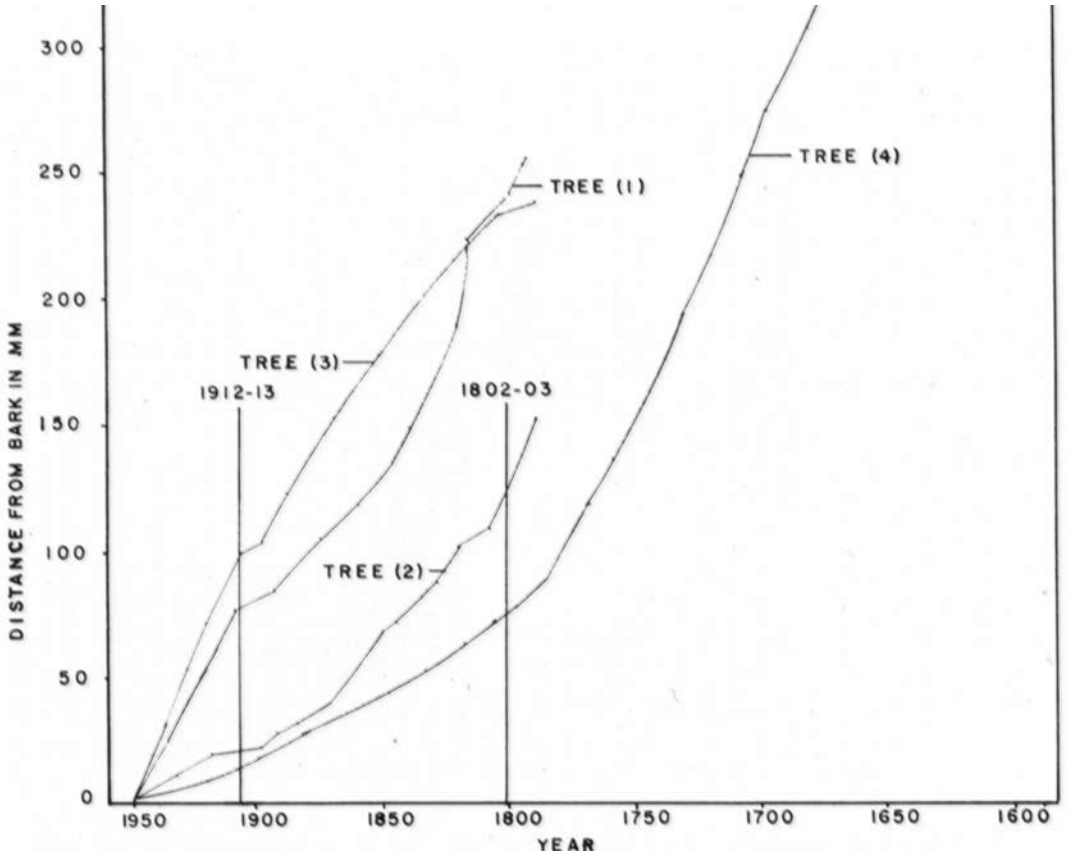


Fig. 3. Growth Rings Of Trees Along The Outer Limits Of The Bonney Glacier.

Vertical bars mark inferred times of maximum stands of the glacier.

The first botanical evidence of advance of the Bonney Glacier was recorded in trees (1), an Engelmann spruce 526 years old, (2) an Engelmann spruce 238 years old, and (3) an alpine fir 368 years old. All three trees show a gradual decrease in rate of growth in the periods 1725-48, 1735-40, and 1730-48 respectively (figure 3). This decrease in rate of growth is attributed to proximity of the ice in the period 1725-48. The mean date, 1736-37, is assumed to mark the maximum stand.

A second advanced stage is not too clearly indicated in trees (1), (2), (3) and in (4) an alpine fir 240 years old. A slight reduction in rate of growth may be observed in the periods 1817-1830, 1848-1858, and 1820-45 respectively in trees (2), (3), and (4), followed by a gradual increase in the rate of growth. The mean date, approximately 1829-30, is taken to be the time of the climax.

A third advance is not evident in any of the core samples obtained except for tree (3) which shows a marked diminution in growth rate between 1870 and 1882. This alone is not sufficient evidence to suggest a third advanced stage during this interval; many other factors are involved in the growth of a tree. However this evidence in combination with the advanced position of the ice in 1901-02 shown in A. O. Wheeler's photograph from "Napoleon" (1905, vol. II), permits the suggestion of a third possible advance, culminating about 1876.

In summary, our knowledge thus far obtained about the recent history of the three glaciers visited in the Selkirk Range is as follows: In the Illecillewaet Glacier, three maximum stands have been recognized — 1710, 1818, and 1872; in the Asulkan, only two have been recognized — 1802-03 and 1912-13; and in the Bonney three are indicated — 1736-37, 1829-30, and 1876

ACKNOWLEDGEMENT

The writer is indebted to Dr. J. O. Wheeler of the Geological Survey of Canada, who originally suggested the problem, for his constant interest and assistance, to Mr. F. W. Peitzche who assisted in the field work, and to the British Columbia Forest Service for the loan of the Swedish increment borer.

Particular thanks is due to Dr. W. H, Mathews of the University of British Columbia in the execution and presentation of this study.

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GLACIOLOGICAL RESEARCH ON ATHABASKA GLACIER IN 1960

By S. Patterson

A party from the University of British Columbia continued the glaciological work on Athabaska Glacier which had been started the previous summer. The field season extended from the beginning of July until the middle of August. Mr. John Fairley was in charge of the organization of the party, which numbered five. Work was concentrated on deep drilling and measurement of surface movement.

Deep Drilling. The deep drilling program proved much more successful than in 1959. This was largely the result of improvements in the design of the electrical "hot-point" drilling element. Four holes were drilled to depths of 1057, 686, 635, and 380 feet. All but the last reached the bottom of the ice. The holes were lined with aluminum pipe and the direction and angle of inclination of the pipe were measured at 50 foot intervals in three of the holes. This is accomplished by an instrument which is lowered down inside the pipe. The inclination of a freshly drilled hole is normally small. The measurements will be repeated next year, and by this time the pipe will have been bent by differential movement of ice at different depths. The amount of this differential movement at various depths will be determined by the measurements.

This work was carried out by Dr. J. Savage, assisted by Mr. A. Parke and Mr. R. Davis.

A mechanical drilling rig, normally used for drilling water wells, was also tried on the glacier, under the auspices of the Alberta Research Council. It proved very successful hut, because the rig was mounted on a truck, its operation was limited to the immediate vicinity of the snowmobile track on the glacier. Three holes of depths 819, 770, and 250 feet were drilled to the bottom of the ice. Periodic measurements of ice temperatures at various depths are being made in the 819 foot hole, using thermocouples.

Surface Movement. About ninety percent of the stakes used for measuring surface movement of the glacier during the previous season were still standing. Their positions were redetermined from survey stations on each side of the glacier. The annual movement can thus be compared with the summer values. Two stakes which had been placed in the relatively flat area above the lowest ice-fall were found, still standing, about halfway down the ice-fall. It thus appears that ice takes about two years to pass through the first ice-fall. The 1959 observations showed a progressive slowing down of the glacier as the season advanced. To check this, the positions of some of the stakes were determined again at intervals during the present summer. The movement survey was also extended to the upper reaches of the glacier. To study variations in velocity throughout the year in more detail, some observations will be made during the winter. As a start, the positions of some thirty of the markers were determined at the beginning of November.

Glacier movement really consists of two parts — differential movement within the ice plus slipping of the glacier over its bed. The latter can only be measured by drilling to the bottom of the ice, but it is much easier to measure the slipping of the glacier past its side walls. This was done at two locations near the first ice-fall. The velocity was about 35 feet per year.

This work was carried out by Mr. S. Patterson and Mr. J. Fairley.

In addition to the above projects, a pit, 13 feet deep, was dug on the Columbia Icefield near the crest between the Athabaska and Saskatchewan Glaciers, to obtain an estimate of the annual snow accumulation by studying the different layers in the firn.

Editor's Note :

In the meantime studies were being continued at the University of B.C. on the relationship between daily flow of meltwater from the glacier and the weather conditions at the nearest meteorological station. Jasper, Alberta. A statistical comparison made with the aid of the high speed electronic computer at the university has been made on all available records of flow and it is now possible to point to some, but not all, of the factors that determine the daily discharge. This work was carried out by Miss Brenda Morrison and Dr. W. Mathews.

GLACIOLOGICAL WORK IN CANADA, 1960

By W. H. Mathews

Glaciological studies in Canada have been greatly expanded during the past year, and it is no longer appropriate to note all the details in this journal. Two new publications now cover the particulars : "Report on glaciological research in Canada in 1960" by G. Hattersley-Smith in the Canadian Geophysical Bulletin, and ''Glaciological Notes" issued quarterly by the IGY world data center, c/o American Geographical Society at New York. Moreover the new bulletin of the British Glaciological society, "Ice", and the journal "Arctic" also include some information on current activities in Canada. The following notes on Canadian research are, however, pertinent.

WESTERN CANADA

SALMON GLACIER, B.C. No new field work has been conducted at this glacier, but two reports dealing with the 1956-8 studies have recently appeared:

Haumann, D., 1960, "Photogrammetric and glaciological studies of Salmon Glacier"; Arctic, v.13, p. 75-110.

Russell, R. D., Jacobs, J. A., and Grant, F. S., 1960, "Gravity measurements on the Salmon Glacier and adjoining snow field, British Columbia, Canada": Bull. Geol. Soc. Amer., v.71, p. 1223-1230.

LEDUC GLACIER, B.C. Development of the Granduc mine and the associated studies of Leduc Glacier (C.A.J., 1959, p. 72), which covers part of the orebody, were suspended in the spring of 1958, but geological work has been continued in the vicinity during the summers of 1959 and 1960. The geologist in charge, Dr. G. W. H. Norman, reports (pers. comm.) some striking changes in water levels in the mine workings which may shed some light on the movement of water within the adjacent glacier. Before operations ceased, a tunnel had been driven from the bottom of the shaft, 620 feet below the collar and about 525 feet below the glacier surface, out under the ice. From the end of this working a raise, about 20 feet high, penetrated 'frozen moraine'. Perhaps because of the thawing of this moraine, the mine workings now seem capable of draining into the glacier. On June I2th, 1959, water stood in the shaft 525 feet below the collar; on August 4th and September 5th of that year the water stood 598 feet below the collar, very close to the level at which moraine was met in the raise. On May I2th, 1960, however, water had flooded to a level 254 feet below the collar of the shaft. Precise temperatures of the mine workings and mine water are not known, but the working under the glacier was considered to be the coldest part of the mine, and the water, if significantly above the melting point, may be capable of thawing a passage under the glacier from time to time.

GLACIER PARK, B.C. Studies of moraines and tree rings were continued by Dr. J. O. Wheeler, Geological Survey of Canada. A report on this subject by his former assistant, Mr. Gerlib, appears elsewhere in this number of the Journal.

ATHABASKA GLACIER, Alberta. A report on current studies on this glacier has been prepared for the journal by Mr. Patterson and appears on another page. From the work of 1959 on this glacier there has now been prepared a detailed topographic map with ten foot contour interval made by two federal government agencies. A map of the thickness of the ice has resulted from an interpretation of the 1959 gravity survey by a University of Alberta student, Mr. Kanasewich.

SASKATCHEWAN GLACIER, ALBERTA. A report on work conducted here by a California Institute of Technology group in the early 1950's has appeared in print under the title:

Meier, M. F., 1960, "Mode of flow of Saskatchewan Glacier, Alberta, Canada"; U.S. Geol. Surv., Prof. Paper 351, 70 p.

Other studies in Western Canada have been made by Dr. Souther of the Geological Survey of Canada, by members of the Water Resources Division of the Department of Mines and Technical Surveys, and by others. Dr. R. West, who has revisited the Commander Glacier in the Purcell Range (elsewhere in this Journal) notes an advance of 800 feet since his previous visit, in 1954. This represents the first record of a recent glacier advance in British Columbia, although the growth of many glaciers in adjacent Washington state has been observed for several years.

ARCTIC ISLANDS. Axel Heiberg Island (Jacobsen-McGill Arctic Research Expedition). Work on this expedition, now in its second year, included the photogrammetric survey of 3 glaciers, studies of accumulation, ablation, and velocity on one of these glaciers plus seismic and gravity measurements to determine ice depth. In addition investigations were made of local meteorology, botany, geomorphology and bedrock geology. Some 30 men participated in the work.

DEVON ISLAND (Arctic Institute of North America expedition)—An advance party of this expedition established a base camp and undertook preliminary work for a study of glaciology, meteorology, and other subjects on this island in 1961-63.

MEIGHEN ISLAND (Department of Mines and Technical Surveys)—Studies on the icecap of this island, undertaken as part of the Polar Continental Shelf Project, has been under the general direction of Dr. Fred Roots and the field supervision of Mr. K. C. Arnold. Work has included meteorological observations, measurement of ablation, movement, and temperature of the glacier, plus topographic mapping and gravity and seismic surveys to determine the depth of the ice.

ELLESMERE ISlAND. Some additional studies were made of accumulation, ablation, and meteorology on Gilman Glacier in late May and early June by Dr. Hattersley-Smith and Mr. Lotz of the Defence Research Board of Canada (see earlier accounts in past issues of the journal).

A study of the ice shelf on northern Ellesmere Island was continued by a combined party representing the U.S. Air Force, the Arctic Institute of North America, and Dartmouth College. Investigations included meteorology, ablation, snow properties, and topography.

OFFICE AND LABORATORY STUDIES

INVENTORY OF CANADIAN GLACIERS (Geographic Branch of the Department of Mines and Technical Surveys).

PHOTOGRAMMETRIC STUDIES (Photogrammetric section, National Research Council, Ottawa). This included the plotting of data from Axel Heiberg Island and the publication of map and report on Salmon Glacier, B.C. (see above).

PROPERTIES OF ICE (Snow and Ice section, Division of Building Research, National Research Council, Ottawa).

DISCHARGE OF A GLACIAL STREAM (Dept. of Geology, University of B.C.) A statistical investigation by Miss Brenda Morrison and the writer of the relationships between weather records for Jasper, Alberta, and the mean daily flow of Sunwapta River at the terminus of Athabaska Glacier.

THE AVALANCHE DEFENCE ON THE TRANS-CANADA HIGHWAY AT ROGERS PASS

By Peter Schaerer[1]

The Trans-Canada Highway is to be constructed over Rogers Pass in Glacier National Park, B.C. About twenty-four miles of the highway which includes the Pass is threatened by avalanches. In 1953 an avalanche survey was organized to obtain the information required for the design and construction of the highway defence works and for the future avalanche warning service. Avalanches reaching the proposed highway route were surveyed and recorded. For each avalanche site a defence was chosen according to the size and frequency of the avalanche. Snowsheds will be used for protection against the large and frequent avalanches. Earth mounds and dams will be constructed at the sites of smaller avalanches. No protection was planned for those avalanche sites that threaten the highway only once in every three to five years.

The Selkirk Range is one of the more formidable obstacles to ground transportation between British Columbia and the rest of Canada. Within the Selkirk Range is beautiful Glacier National Park, still largely a virgin wilderness. In the Park, near the town of Glacier, is Rogers Pass. The discovery of this Pass in 1881 by Major A. B. Rogers during his survey for the Canadian Pacific Railway Company established for this company the route over which the first railway link between Eastern Canada and the West Coast was completed in 1885.

The Pass never was hospitable to the railway during its construction or later use. The tracks crossed numerous paths of snow avalanches, which required the construction of sheds with a total length of 5 miles. But even the sheds could not protect the railway line completely and eventually the railway decided to build an alternative line.

In 1916, the construction of the 5-mile-long Connaught tunnel through Mt. MacDonald was completed and the railway line through the Pass abandoned. For about 40 years the Pass was left to nature and the old railway line fell into decay. In 1956 the decision was made to use the Pass as the route through the Selkirks for the first Trans-Canada Highway (Figs. 1 and 2).

Snowfall At Rogers Pass

Glacier is one of the highest snowfall areas in Canada. The average total snowfall for the winter measured over a twenty-year period at the west end of Rogers Pass is 342 inches. The maximum total snowfall measured during the winter of 1953-54 was 680 inches. Snowfall begins usually at the end of October and ends at the end of April. There are no yearly recurring periods of maximum snowfall intensity. Snowfalls have been recorded on every day in one month and periods of two weeks' duration have occurred without snowfall. During winters of light snowfall two storms may occur yielding 12 inches of snow in a 24-hour period. For winters of heavy snowfall, eight to ten such storms may occur. Only occasionally is there a snowfall which contributes more than 18 inches of snow in a 24-hour period.

Storms with a high rate of snowfall are usually of short duration. In the records that have been studied, no storm was recorded which yielded 12 inches of snow in a 24-hour period for more than 3 consecutive days. The maximum snowfall for a 5-day period was just under 70 inches.

It is possible that once in 25 to 30 years, a winter with very heavy snowfall could occur when the above-mentioned snowfall amounts are exceeded. On both 22 and 26 January of

1 Reprinted from Technical Paper No. 1ll, National Research Council of Canada, Division of Building Research, by kind permission of the Directors of the Western Snow Conference.

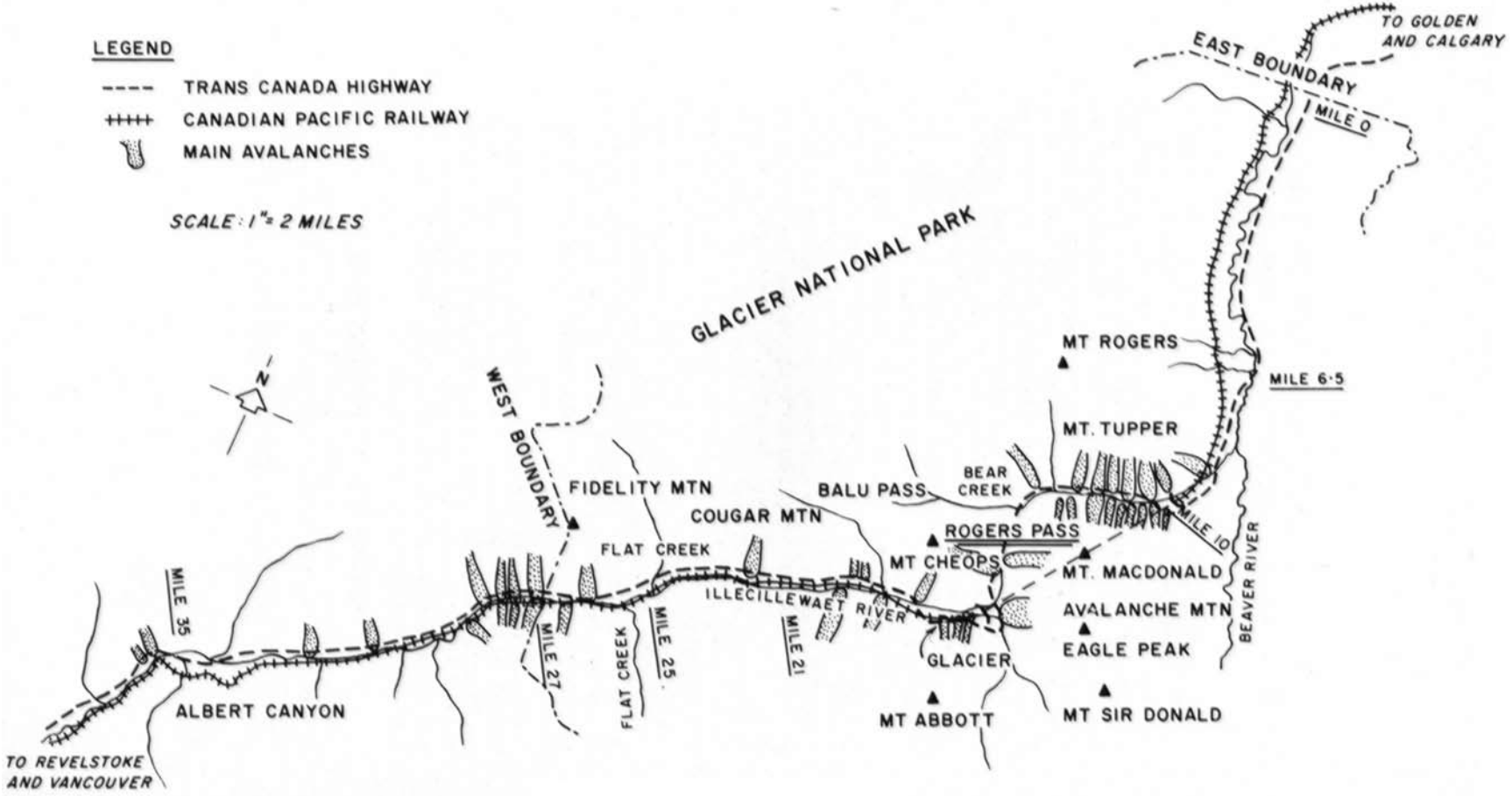

LEGEND
TRANS CANADA HIGHWAY
CANADIAN PACIFIC RAILWAY
MAIN AVALANCHES
SCALE: 1" = 2 MILES
N
GLACIER NATIONAL PARK
EAST BOUNDARY
TO GOLDEN AND CALGARY
MILE 0
MT ROGERS
MILE 6·5
MT. TUPPER
BEAR CREEK
BALU PASS
WEST BOUNDARY
FIDELITY MTN
COUGAR MTN
ROGERS PASS
MILE 10
BEAVER RIVER
FLAT CREEK
MT CHEOPS
MT. MACDONALD
ILLECILLEWAET RIVER
AVALANCHE MTN
MILE 35
MILE 27
FLAT CREEK
MILE 25
MILE 21
GLACIER
EAGLE PEAK
ALBERT CANYON
MT ABBOTT
MT SIR DONALD
TO REVELSTOKE AND VANCOUVER

Figure 2.
The Summit Of Rogers Pass.
Photo Bruno Engler

With the abandoned railway grade on the right side and the cleared right-of-way of the highway on the left. In the background, Mt. Rogers is on the left; Mt. Tupper is on the right.

Figure 3.
East Ridge Of Mt. Tupper With Avalanche Paths.
Photo Bruno Engler

The highway is located at the bottom of the photograph.

Figure 4.
Dams And Excavated Channels For The Avalanches At Mt. Tupper.
Photo Division Of Building Research, NRC.

Figure 5.
Earth Mounds At The Bottom Of An Avalanche Path.
Photo Bruno Engler

(More mounds are to be built on the right side.)

1935, 35 inches of snow in a 24-hour period were recorded but this extreme rate has not been observed since.

The temperature during a snowstorm normally ranges between 24°F to 32°F. There is usually no drop in temperature immediately after a snowfall. Most of the snowfalls are accompanied by southerly and westerly winds with variable speed.

The Avalanche Survey

The Department of Public Works of Canada is responsible for the design and construction of the Trans-Canada highway through Glacier National Park. In 1953, the Department of Public Works began to make observations on the avalanche activity in the Rogers Pass area. Since 1957, the National Research Council of Canada through its Division of Building Research has assisted with these observations.

After the initial studies on the Rogers Pass route and the first reconnaissance work for the highway, a closer survey of the avalanches was organized. During the three winters between 1953 and 1956 occasional trips were made over the Pass, and the location and size of the avalanches that had occurred were recorded. Since 1956 observations on the avalanches, snow conditions, and weather have been made in the winter by a crew located at Glacier. It was the responsibility of this crew to:

(1) Survey and record the time of occurrence and the location of all the avalanches near the proposed highway route.

(2) Recommend the most economical defence for each avalanche and to locate and assist in the design of the defence structures.

(3) Collect experiences in forecasting the avalanches which would be of value for the future avalanche warning-system.

The avalanches that occurred were surveyed on frequent trips along the proposed highway route and the location of each avalanche reaching the highway line was plotted on location plans. The accumulation area, the slide path, and the terminus of some important avalanches were traced on to photographs. In an average winter about 120 avalanches come close to the future highway, and have to be surveyed and recorded.

The Avalanches In The Rogers Pass Area

The section of the proposed highway threatened by avalanches is 24 miles long. The most active avalanches are concentrated in two sections:

(1) Below Mt. Tupper between mile 10 and 13 (from the eastern boundary of the Park) (Fig. 3).

(2) On a one and a half mile section just outside the western boundary of the Park.

Avalanches reach the highway at both sections during and after every significant snowfall and particularly after snowfalls of more than 10 inches accompanied by wind. Between these two sections and west of the second, the avalanches are more scattered and reach the highway under bad conditions only. Dangerous avalanches can occur at these sites after snowfalls of more than 24 inches total and during the snowmelt period.

There are two avalanche periods each year. In the first period between the beginning of November and the end of February the avalanches are mainly caused by snowfalls and wind, and most of the avalanches are of dry snow. The second avalanche period begins with the month of April and ends about the middle of May. The avalanches during this period are caused by the snow melt and are of wet snow. In the month of March, between the two periods, the avalanche activity is generally low.

Avalanche Defence

It was recognized from the survey that it would be impossible to obtain for the highway 100 per cent protection from avalanches using protective structures. Sheds could be built at those sites where the path is well defined and avalanches threaten traffic on the average more than once every winter. At other sites, earth mounds, benches, and diverting dams could be constructed which would impede and divert the avalanche. Such structures do not offer complete protection normally but will retain most of the avalanches that occur and certainly reduce the amount of snow reaching the highway. There are numerous avalanches for which, because they occur infrequently or the cost of protection measures is unreasonably high, no defence structures could be planned. Under unfavourable conditions these avalanches would deposit snow on the highway. The avalanches were divided into different classes according to the defence most suitable. The classes of avalanche and the defence proposed are as follows:

CLASS 1 AVALANCHES. This class includes the avalanches that occur frequently and reach the highway one or more times each winter. At these sites it is proposed to protect the highway with snowsheds. Eight snowsheds with a total length of 4500 feet have been recommended. The decision as to the type of construction is still to be made. It is expected that one shed with a length of 300 feet will be constructed in the summer 1960 and the other sheds one year later.
Unfortunately, most of the sheds have to be built in the terminal zone of the avalanche, where the avalanche snow will accumulate to a great depth on the shed roof. The maximum design load used was 1000 lb/sq. ft. for the vertical component and a 350 lb/sq. ft. for the horizontal. A lighter type of shed to be built in the path of smaller avalanches was designed for a vertical load of 500 lb/sq. ft. and a horizontal load of 200 lb/sq. ft. To minimize the length of the shed the avalanches will be confined by earth dams. The dams will be 20 to 25 feet high. In two of the avalanche paths it was possible to dig trenches, 45 feet deep and 150 feet wide at the bottom, which form a channel for the avalanches. The earth excavated from the trenches was used for the construction of fill for the highway (Fig. 4). The trenches were completed before the winter 1959-60; observations during this winter have shown that the channels were successful in confining the avalanches to a narrow section of the proposed highway.

CLASS 2 AVALANCHES. This class includes the avalanches that occur frequently but where the mass of the sliding snow is small and most times the avalanche stops before reaching the highway. In the avalanche paths of this Class the highway is protected by less expensive earth structures, such as diverting dams and mounds. The mounds are between 15 and 25 feet high with a distance of 60 to 80 feet between centres. The size and the arrangement of the mounds depends on the local conditions, such as normal size of the avalanches and the inclination of the avalanche path. One group of mounds was built in the summer of 1957 (Fig. 5). Observations during the past three winters have shown that the mounds have a protective capacity of three avalanches per winter. After three avalanches had occurred the space between and above the mounds was filled with avalanche snow and the defence became ineffective This would indicate that mounds are not suitable in places where more than three avalanches per winter are expected.

Another form of earth structures are benches which are built across the avalanche path. It is obvious that the bench will soon fill with snow and that only small and slow avalanches will be stopped by them. The capacity of the bench can be improved if a dam of snow is built on the edge of the bench. This dam, about 10 feet high, can be built by bulldozers using the snow from snow-

falls and avalanches. Benches must be at least 90 feet wide to be effective. In most cases it will be more economical if mounds are built instead of benches. In Rogers Pass benches will be effective in stopping avalanches at a few sites only. The benches now in use are either natural or are the abandoned railway grade, requiring only little improvement.

CLASS 3 AVALANCHES. This class includes avalanches that occur only under severe conditions and not more frequently than once in two years. The avalanches may deposit a large amount of snow on the highway. Because of the low frequency of these avalanches, the high cost for defence structures is not justified.

The amount of snow deposited by these avalanches may, however, create some snow-clearing problems that could delay the opening of the highway after the hazard has decreased. Earth mounds will be constructed where the local conditions make them feasible. It is not expected that the mounds will stop the avalanches completely, but they should retain a great part of the heavier snow sliding at the bottom of the avalanche. The accompanying cloud of light snow will not be affected by the mounds and will probably reach the highway but it should not deposit much snow. In many cases it should be possible to re-open the highway by snowplows. The mounds should be effective for ground avalanches of heavy wet snow carrying rock and timber. This type of avalanches is the most difficult to remove from the highway.

CLASS 4 AVALANCHES. This class includes avalanches that occur under severe conditions only and not more frequently than once in two years. The snow that would reach the highway from these avalanches would usually be airborne and little would be deposited on the highway. No special protection is planned for avalanche paths of this class.

Avalanches from the unprotected sites need not occur on the same day or even in the same period during the winter. Often snow from one only will reach the highway during a 24-hour period. At the unprotected sites it is estimated that 25,000 cubic yards from six avalanches within two days would be the maximum amount of snow that would have to be removed from the highway. This amount may be exceeded under extremely bad conditions that could occur once in 20 to 30 years.

Other Methods Of Avalanche Defence

Many avalanches of Class 3 and Class 4 can be controlled by gunfire. It is not yet known which type of weapon will be used in the future. Successful trials were made with the 4.2-inch mortar, the 75-mm howitzer and the 105-mm howitzer. The I05-mm recoilless gun, being used for the avalanche shooting in the United States, is not suitable for the conditions in Rogers Pass. The angle of elevation required to reach the high elevated targets is too high.

Other methods of avalanche defence, such as supporting structures in the accumulation area, wind baffles, snow fences, and breaking structures of steel cables were studied for the different avalanche paths. All these structures proved to be either too expensive or not effective. Supporting structures built in the accumulation area of the avalanches are considered the best and safest method of defence, but they were found to be more expensive than sheds.

Organization Of The Avalanche Warning

Since the highway will not be protected against all avalanches but will be closed when avalanches are likely to occur in unprotected areas, an effective warning service is essential. The avalanche hazard forecast, the control of traffic and operation of the completed highway through the National Park will be the responsibility of the National Parks Branch of the Department of Northern Affairs and National Resources.

During the survey and construction of the highway, an observatory with a snow test plot was located at the summit of Rogers Pass, altitude 4350 feet. Daily snow and weather observations were taken there. A second observatory was constructed on Mt. Abbott at 6800 feet, the altitude where most of the large avalanches originate. This observatory was visited about once each week and the snow profile studied. Occasionally an observer stayed at the Mt. Abbott observatory during a snow storm and reported snow and weather conditions by radio to the main camp at Glacier.

A test plot and observatory were established also at the summit of Balu Pass, about 3 miles west of the snow plot at the summit of Rogers Pass. The altitude of this site is about 6900 feet. The access to this site was not always safe and so observations were not made as frequently as at the other sites. In the fall of 1959, special wind telemetering equipment developed by the Division of Radio and Electrical Engineering of the National Research Council was installed at the Balu Pass observatory. Information on wind speed and direction is transmitted by radio to the base camp at Glacier. Some difficulties were encountered in the use of this equipment during the first winter of field trials but these have been largely overcome.

During the past four winters, continuing observations have been made at the test plots and observatories and using the methods practiced by the U.S. Forest Service, Swiss Avalanche Service and others, the avalanche hazard was forecasted as if the highway were in operation. The information collected and experience gained during the past four years will be made available to the Department responsible for the avalanche prediction and traffic control of the future highway.

Avalanche Hazard Forecasting

The studies on the conditions contributing to the avalanche hazard showed that the avalanches were caused by the same factors as have been observed elsewhere, for example Switzerland. The studies show the following facts:

(1) A snowfall of more than 10 inches of new snow creates a moderate avalanche hazard and avalanches may occur at areas now protected by snowsheds or other defence structures. A continuous snowfall of 30 inches or more with little or no wind may cause large avalanches in unprotected areas. With strong winds large avalanches occur before this amount of new snow is deposited. The density of the new snow has a major influence. The average density of the new snow is 0.082. New snow with a density lower than 0.07 is more likely to cause avalanching.

(2) The wind has an important influence on the build-up of the avalanche hazard for most of the avalanche paths. The direction of the prevailing wind determines whether certain avalanches will occur. The wind creates local snow accumulations on the lee side of mountain ridges. The "windslab" common in the United States avalanche areas was observed only occasionally.

(3) The temperature has to be observed during and after a snowfall and during the snow melting period. It was found that avalanches occur during the snow melting period on the first or second day with a mean daily temperature of 32°F and above. Before any such avalanche occurs, however, the temperature between the ground and the surface of the snow must have reached 32°F.

(4) The snowfalls are well distributed over the winter and the relatively high temperatures create a stable snow cover on the ground. Not many unstable layers with metamorphosed crystals could be observed. In the winter months an avalanche caused by the fracture of an internal unstable snow-layer is rarely observed. It is only in spring that big avalanches start to slide on internal unstable layers.

IN MEMORIAM

ELFRIDA PIGOU

When word came of the accident on Mt. Waddington in late July, the loss of Elfrida Pigou was mourned by a wide circle; for, in recent years, she had created a legend for herself on the Lower Mainland of B.C. where her mountaineering exploits had won for her both respect and affection in the community where she lived.

Elfrida spent her childhood in the Okanagan, and late in the twenties when the Pigous moved to Vancouver she entered the University of British Columbia on a scholarship. She pursued her studies with quiet brilliance and graduated with the class of '31.

For several years after graduation she stayed at home in North Vancouver following a variety of interests. She was widely read in many fields and enjoyed plays, lectures, opera and ballet. She had a serious interest in music, and the Vancouver Chamber Music group recall that she did not miss one of their concerts in eleven years. During the war she joined the Civil Service

Elfrida Pigou.
By Courtesy C.P. Detloff, Vancouver Province

working in offices in Vancouver and North Vancouver, and eventually she became a valued senior staff member in the North Vancouver office.

After the war she began to show an interest in climbing. Following a holiday in Garibaldi Park with one of George Wallis' summer expeditions and some solitary rambling in the local mountains, she joined the Alpine Club of Canada. From 1949 she was embarked on a climbing career that was to give her a wide knowledge of mountain areas in B.C. and Washington; beautiful and inspiring to her on the one hand — and she brought back a collection of superb photographs; difficult and challenging on the other hand — and she established an unusual record of ascents as a woman climber.

Some indication of the extent of her activity may be found in the issues of the Journal to which she contributed photographs and reports, in 1953, 1954, 1956, 1957 and 1959. From 1951 she is listed as a member of the parties making the first ascents of Mt. Raleigh, Mt. Gilbert, Mt. Cleaver, Mt. Homathko and Mt. Essex, and second ascents of Mt. Good Hope and Mt. Queen Bess in the Coast Range; first ascents of M1, M2 and M3 in the Mummeries; and finding new routes on Snowpatch and Bugaboo Spire in the Purcells. Shuksan and Baker she had climbed many times by various routes, and she had led climbs on the Nooksack Tower of Shuksan. She had twice climbed Rainier, once with a party that made something of a record in the time it took to drive from Vancouver to Paradise, climb to 14,000 feet and return to Vancouver. She had climbed Brazeau at Maligne Lake, Lefroy and Victoria near Lake Louise, Sir Donald in the Selkirks, and she had been high on Robson. She attended the summer camps at Maligne Lake, Lake O'Hara Glacier, and Moat Lake and the camps in the Mummeries and the Bugaboos.

She knew the Border Peaks well and took special satisfaction from her ascent of Mt. Slesse. Because cloud obscured the mountain on one trip, she returned later leading a small party one weekend in May 1957, and, in cloud again, took a wrong turning up a gully which led her to the wreckage of the lost TCA' plane. She had been a faithful member of the Mountain Rescue Group and had been with the rescue party that had searched unsuccessfully for the plane the previous December. The same year she helped to rescue a stranded hiker on Hope Mountain. She was always out with the searchers in emergencies on Mt. Seymour, and for her services the Humane Society honoured her with frequent citations.

She was very active in the program of the Vancouver Section, almost always went on scheduled climbs and took the leadership of difficult climbs. She was at Workbees at the old Seymour Cabin and on the trail to the new cabin site at Lake Lovely Water. She continually helped at Rock Schools. For one year she was Chairman of the Section Cabin Committee, and she worked tirelessly as a member of the Photographic Committee and the Climbing Committee. Frequently she was asked to show slides at the meetings when the Section heard accounts of Summer Camps or of first ascents made on summer expeditions. We looked forward to seeing very spectacular pictures from her collection in the Annual Photographic Exhibition, when she always won cups and mention for her beautiful entries.

On the mountain she seemed tireless. Barely one hundred pounds in weight, she carried great packs into inaccessible areas of the Coast Range. She seemed to float up the mountain ahead of a party, kicking steps and breaking trail for the friends plodding behind. Her pack held what was needed for any emergency, and the little thermos of tea was always forthcoming.

What did the mountain mean to her? Here are her own words as she began her account of the ascent of Mt. Good Hope in the Coast Range: "We grumbled at the weather, but it was perfect for our two best climbs, and though throat lozenges were the most popular item in our first aid

kit, is that all bad? Some spent a night without sleeping bags or even spoons, but we had food and several tents; glaciers and goats threw rocks at us, but missed, and while there were few flowers, those there were warmed a background of ice and rocky peaks. We came, and went, and those two words frame a picture no one could forget." Of reaching the peak she writes: "Up on the notch we were at last on the roof, and as we plodded up the last crisp slopes, our heads were turned in fact by the superb view. Northeast beyond the purplish-red of the other peak, the blue lake lay among dry-belt hills. All the rest of the horizon was ice and snow ribbed with rock. Neal had taken hearings on Good Hope from Dalgleish, Monmouth and one of the peaks of Gilbert. Now we saw these, and Raleigh, Grenville and Queen Bess. The Toba and Homathko Icefields stretched for miles, among peaks named and nameless."

An old friend has written: "Her mountain climbing gave her so much — a challenge, a joy of accomplishment, companionship with people who shared those interests, an outlet for her artistic sense in her photography . . ."

A fellow worker described her as a "rare" person.

We who shared experiences in the mountains with her, and especially the members of the Vancouver Section, are the richer for our close association with her, her quiet strength, her quality of purpose. On the mountain we sensed her joy in realizing the remarkable goals that beckoned to her on the heights.

M.F

JOAN STIRLING

Joan Stirling, who was one of the party which was so tragically overcome by disaster below Mount Waddington, was known to her friends in Canada for her great zeal and enthusiasm for climbing mountains. Although she had been in Vancouver for about only eighteen months she had managed to accomplish a great many climbs in the coast area. She never missed a week-end trip arranged by the Section and if there was no outing on the schedule, then she, Elfrida and John would go off on a trip of their own. Weather or distance was no deterrent; she was always there, as no opportunity of getting to the mountains could be missed.

A few of the many climbs which she made in the Coast and Cascade Ranges were Slesse, Edge, Shark's Fin, Cascade Pass, East and West Lions, Sky Pilot, Blanshard and Osprey.

Joan was born at Auchterhouse and went to Dundee High School. From Queen's College she obtained her M.A. with honours in French and German. After completing her studies at Tubingen University, Germany and in Paris, she went to Judson's Secretarial College in London and studied shorthand and typing in French and German. While in London she became greatly interested in climbing and every Friday night she and her climbing friends would travel to North Wales for a week-end climb. In spite of the distance from London and the time spent in getting to North Wales, many severe climbs were made on Tryfan, Dinas Bach and the surrounding parts of Snowdonia. All this resulted in making Joan a rock climber of outstanding quality and high calibre. During the early part of 1957 she learned to ski at Glenshee.

Later in 1957 she made her first trip to Canada and went to Calgary to live. Here she joined the Alpine Club of Canada and went out on several trips with the Calgary Section. While at the Mummery camp during the summer she made many climbs including Gilgat and a second ascent on Karakal. Those who were on Roger Neave's school will remember her quiet competency. Her father's illness later in 1958 made it necessary for her to return to Scotland.

However, in January 1959 she was back again in Canada and this time she came to Vancouver, where she lived with her sister and family. From then on, we of the Vancouver Section were fortunate to know her. A great interest in photography which had started in Calgary, together with her competent and efficient manner made her a valuable member of the Photographic Committee. Among her own photographs she had many lovely prize-winning colour slides. Nothing beautiful missed her vision. The exquisite rock specimens which she found on the mountains prompted her to take a geology course: at the University of B.C. She became a keen "rockhound" and developed a new hobby of making jewellery.

Those of us who climbed with Joan will remember her quiet determination and her ability to enjoy the mountains. She took nothing from the mountains that she wasn't able to share with others.

G.L.S.

JOHN OWEN

John Owen, a native of British Columbia, was born in May, 1936. Early in his life, while at Shawnigan Lake School, Vancouver Island, a glimpse of his tirelessness in the mountains could be foretold from his success as a cross country runner. And while at school he had more than the schoolboy's customary interest in mountains. John became one of the leading climbers in British Columbia in a remarkably short space of time. In searching through the 1958 Canadian Alpine Journal (Volume XLI) I find his name is not mentioned once, although in the year before, with Dick Culbert, he was climbing using hardware in direct aid and leading first ascents of some most difficult pinnacles in the Squamish Valley. In the following issue of the Canadian Alpine Journal (Volume XLII) John's name appears in connection with two climbs of significance in 1958. Mount Waddington, the first Canadian ascent, and third ascent of the main peak; and Mount Howson, a first ascent of this fine peak that had claimed the life of Rex Gibson the previous year; he also is mentioned in ascents in the Mummery group at the Alpine Club summer camp.

In 1959 John spent most of the summer climbing. He was on the first ascent of Mount Raleigh, made several ascents in the Bugaboos at the Alpine Club summer camp, and climbed extensively in the Coast Range and Cascades. He was one of the keen supporters of the Alpine Club's project to build a cabin in the Tantalus Range and gave a great deal of his time to trail clearing.

It is extremely difficult to express the impact of John's enthusiasm for the mountains on those who knew him. It showed in so many ways: his early fascination with equipment, his interest in mountain people, his growing skill and strength on the mountain. He lived for nothing else, and if he was not climbing, he would be making plans to climb, or repairing his equipment. With each season's climbing his stature increased: he became a good reconteur, he began to take excellent photographs—first, no doubt, for the record, but his pictures soon were much more than record shots. He realized much that was fine in himself through his mountain experience.

By 1960, when John decided to lead the party that hoped to put the first lady on Mount Waddington, experience had tempered some of the fire in John's make-up, without diminishing his determination. Great things were expected of him, and had he survived the attempt he would no doubt have gone on to become one of Canada's outstanding climbers. It was a great surprise to learn of the incredible freak that swept John and his party into a crevasse before they had reached 9,000 feet on the glacial approaches to Mount Waddington. Although John had started his climbing with the Vancouver section of the Alpine Club, and was a staunch member of that Club, he climbed

John Owen

with members of the British Columbia Mountaineering Club too, and was well known by all the serious climbers in the Vancouver area. His untimely death was a great shock to those who knew him. He is survived by his parents, a sister and a brother.

R.H.

DERRICK BODDY, also a member of the party lost on Mt. Waddington, although not actually a member of the A.C.C., was a climbing companion of Elfrida Pigou and John Owen and had attended several Vancouver Section monthly meetings and had been on Section outings, and he had climbed with the Edmonton Section. He is survived by relatives in England.

R. T. ZILLMER

Raymond T. Zillmer, a prominent civic worker, an enthusiastic outdoorsman and a conservationist of note, passed away in December, 1960 at the age of 73. Born in Milwaukee, Mr. Zillmer attended the University of Wisconsin and Harvard Law School. He received his A.B., LIB. and Ph.D. at the University of Wisconsin, where in 1911-13 he taught political science.

He began the practice of law in 1914 in Milwaukee and was identified with the firm, Zillmer and Redford. He was one-time president of the Milwaukee County Bar Association and a member of the Board of Directors of the Milwaukee County Bar Association Foundation, apart from affiliation with other organizations.

He was also active in Izaak Walton League work and served as president of the Milwaukee League and as director of the Wisconsin League.

Always interested in hiking he threw himself with enthusiasm into the movement to secure funds from the state for acquiring land in Wisconsin's Kettle Moraine area. This placed him in constant and intimate touch with the Wisconsin Conservation Commission.

From his interest in the Kettle Moraine Park he developed the idea of a National Ice Age Park covering the terminal moraines that extend for 500 miles through Wisconsin and he organized the Ice Age Park and Trail Foundation of Wisconsin, Inc., of which he was president.

Sunday hiking with his friends in the hilly country of the Kettle Moraine was the rule during fall, winter and early spring. He took numerous canoe trips in the lake wilderness of the Quetico and horse-back trips in the Canadian Rockies. In spring and summer it was his garden.

Besides being an active member of the Alpine Club of Canada from 1931, he was a member of the American Alpine Club and the Sierra Club. Members of these clubs will remember him particularly for his many mountain explorations. In all, he made thirteen back-pack trips, twelve in the mountains of Alberta and British Columbia and one in California. Two of these he made alone and the rest with a single companion, except for the California trip with a group of the Sierra Club.

In his first adventurous trip, he and Lorin Tiefenthaler followed Mackenzie's 1792 overland route from the Fraser River, south of Prince George, traversing the Coast Range to Bella Coola at the sea. Five of these were exploratory trips into previously untraversed country, namely, the Cariboo Mountains of British Columbia. There had been controversy as to the exact source of the streams that have their beginnings in this range; maps and photographs he brought back clarified this. One of the peaks in the Cariboos is named Mt. Zillmer in acknowledgment of his explorations in the range.

A record of certain of these exploring and climbing experiences was made in Canadian Alpine and American Alpine Journals.

Mr. Zillmer made two first ascents in the Rockies and one second ascent.

He is survived by his wife, Helen, whom he met while at the University of Wisconsin, a son, daughter and two grandchildren.

In commenting editorially on Mr. Zillmer the Milwaukee Journal stated "... the people of Milwaukee and of Wisconsin and the conservation movement nationally are deeply indebted to Mr. Zillmer. His vision, his boundless energy and his dogged determination in behalf of worthy causes to which he was devoted became legend . . . No community and no state ever has enough of men like Raymond T. Zillmer. And the loss of even one, inevitable as it may be, is cause for deep regret." Ray Zillmer's many friends and acquaintances will heartily agree with this sentiment.

L.T.

H. E. POPE

Born in Clark City, Quebec (near Sept lies) in 1924, Ted Pope was educated at The Grove, Lakefield. He joined the RCNVR in March, 1943, served in the North Atlantic and in Newfoundland, and on his discharge in the autumn of 1945 he returned to McGill, where in May, 1948 he took a B.A. in sociology and English. After working for three years with a Montreal advertising agency, he spent a year and a half in the Laurentians doing experimental work on the Fuller geodesic dome; then late in 1952 he joined the C.B.C. as a radio talks producer.

His interest in film and in drama naturally drew him towards the rapidly developing field of television, and in the spring of 1955 he became a television producer. He won radio and television awards in international competition; and he produced a number of noteworthy radio and TV plays before being killed in a sports car race at Harewood Acres on August 13, 1960.

An active member of the ACC since 1957, Ted was first introduced to rock climbing in 1942. He belonged to the McGill Outing Club, and in 1948 was a member of the McGill skiing team, being a first class skier in downhill, slalom and jumping. Most of his climbing was done with Chico Covo and another friend, Frank Rose. After the war the three of them climbed together as often as possible, always making some special outing at Labour Day: in the Laurentians (Val David), in the White Mountains (Mount Washington), and in the Adirondacks.

In the spring of 1954 he was one of a party of eight, led by Peter Bennett, who attempted to traverse the eight main icefields of the Rockies from Jasper to Banff. Only thirty miles south of Jasper they were stopped by heavy snow and dangerous avalanche conditions and were forced to withdraw from their main objectives, but assuaged their disappointment by skiing and testing new equipment in the Tonquin Valley. Unknown to the other members of the party, Ted had made this trip matter of poetry. After his death six poems were found among his papers, belonging to a cycle called “Ice 1954”, which at one time consisted of at least eighteen poems: these celebrated not only the Columbia Icefields trip but the exhilaration and wonder of his experience of climbing over nearly twenty years.

Imaginative and sensitive, wiry and fearless, modest and strong-minded, Ted is vividly remembered by the many people who, with more or less intimacy, fell within the aura of his vigorous gaiety and the compelling integrity of his reticence. His death is much to be deplored.

G.W.

E. JEAN BOSTOCK

Miss Jean Bostock who died in September, 1960 at her home at Monte Creek, was born at Belmont, Esquimalt in July, 1894.

During the first World War she worked for a time as V.A.D. in Ottawa and later served with the WAACs in England, until she entered the University of London, where she obtained her B.Sc. (Hort.). She and her friend, Miss Doris Hole, were the first women to obtain this degree, and it was a great delight to her when in 1938 Doris came to Canada and they were able to attend the ACC camp together at Columbia Icefields.

Jean graduated to active membership on Mt. President in 1927. She loved the mountains but was not always free to go to camp. However, she attended the Rogers Pass and Mt. Assiniboine camps in 1929 and 1935.

Her knowledge of horticulture was a never-ending source of pleasure and she spent many happy hours identifying specimens of alpine flowers. During recent years while she and her sister were carrying on the family ranch at Monte Creek, her familiarity with plant life was invaluable;

she waged a ceaseless battle against weeds —especially Diffuse Knapweed, which she recognized as a great menace to the dry belt range lands of British Columbia.

She was very interested in the Fairbridge Farm Schools and in 1933 was in charge of a party of 40 children who were sent out from London to Western Australia on the S.S. "Jervis Bay", and she afterwards worked towards establishing a school on Vancouver Island.

She was also a member of the Vancouver Natural History Society.

Perhaps her character was best revealed in her cheerfulness and enthusiasm and in her perseverance and determination to uphold what she considered right; and she will long be remembered by many for her thoughtfulness for others.

It was fitting that without any long illness her brave spirit should pass on to the next great adventure in the country that she loved.

A.E.B.

ELLA MAY WALKER

Mrs. O. J. Walker, musician, painter, sculptress and authoress, will long be remembered by her friends for the versatility of her talents and her zest for life.

Born in Minnesota, she came to Canada as a child and grew up in Dundurn and Saskatoon, where she graduated from the University and later taught music. In 1918 she married another Saskatchewan graduate, Osman J. Walker, who eventually became head of the department of chemistry at Alberta and president of the Chemical Institute of Canada. After seeing her husband through his postgraduate work at McGill, and combining the study of music at the Conservatoire with the care of her first baby, she came with the family to Edmonton in 1923 and resided there the rest of her life. A second son, Wilfrid, was born in 1927.

Besides music, Mrs. Walker also studied painting, and she produced many works of art in oils, pastel and the silk-screen technique. Her work was frequently exhibited across Canada, and she had a one-man show in Philadelphia. At the time of her death she was President of the Alberta Society of Artists (Edmonton Section). Sculpture was a somewhat later interest, but taken up with her usual enthusiasm. For several years she taught an evening class in sculpture at the University.

In 1947 there appeared her first and only novel, Fortress North, which is really a history of the early days of Edmonton, made a little more palatable for general readers by an overlay of fiction. The book was illustrated by reproductions of several of Mrs. Walker's historical paintings. The first edition of 3,000 copies was sold out, so it must be accounted a success.

In 1944 she became an active member of the Club and her interest in the mountains and the outdoors continued for most of her life. The Walker cottage on Lake Edith, in Jasper Park, was the mecca for many an Alpine Club party from the Disaster Point hut on the Athabaska river. For many years the Edmonton Section of the Alpine Club hiked on Sundays along the river valley, usually ending up at the Section hut, and finished the evening with Alpine songs accompanied by Mrs. Walker on the piano-accordion. Those who were present at the Assiniboine Camp in 1952 will remember Mrs. Walker and her accordion at the campfire singsongs, and she also visited the camps at Peyto Lake, Lake O'Hara and Hooker Icefields.

Her husband died in 1958, a year after his retirement from the University. Mrs. Walker knew that her own end was not far off, but she remained active and cheerful, delighted to see her friends, interested in the Art Club, in theatre, in historical landmarks, in the Women's Press Club, and continuing her painting until the last. We who knew her well, miss her sadly.

E.S.K.

MRS. E. G. WEST

Eleanor Tustin West was born in England in 1883 and as a member of the Women's Swiss Alpine Club did most of her climbing in Europe prior to 1914. During World War I she worked among and for war victims with the Society of Friends, F.W.V.R.C. in France, Belgium and Russia, under the aegis of the Red Cross in each country. At the end of the war she married Edward Gundry West in France and later they came to British Columbia to live.

Mrs. West became a life member of the Alpine Club of Canada, but in 1924 her heart began to fail and from that time on she was no longer able to do any serious climbing. However, they lived on Vancouver Island and annually were able to visit climbing areas and they also travelled to Alaska and the Yukon, Yosemite, Colorado and Arizona and later to Japan.

In 1929 family affairs forced their return to England, where she died early in 1960. She is survived by her husband, two children and eight grandchildren.

MRS. A. L. YEIGH

Mrs. Frank Yeigh, who passed away in Toronto on April 30th, 1960, joined the Club in 1906 under her maiden name of Annie L. Laird. Her brother, D. H. Laird joined at the same time and was the Club's first Treasurer. Both were friends of Mrs. H. J. Parker, one of the founders of the Club and its first Honorary Secretary.

The two Lairds attended the Club's first Camp, held in July 1906 at Summit Lake in Yoho Pass and they graduated to Active Membership by climbing Mt. Vice President on July I2th.

Miss Laird also attended the succeeding Camp, held in Paradise Valley in 1907. She here met Mr. Frank Yeigh, a writer from Toronto, who obtained his Active Membership by climbing Mt. Aberdeen. They were subsequently married and Mrs. Yeigh moved to Toronto from Winnipeg and did not return to the Rockies to climb, although she took out a Life Membership and for some years she and her husband identified themselves with the activities of the Toronto Section. Mr. Yeigh for some years undertook the publication of a very useful reference entitled "5000 Facts about Canada", the information in which he kept up to date. Mrs. Yeigh's father was the Hon. David Laird, a well known Canadian who was appointed Lieut. Governor of the Northwest Territories in 1876 and is recalled as the Queen's representative when treaties were signed with the Indian tribes of the great plains of Canada.

G. B. CAPES

Members of Vancouver Island have felt keenly the loss by death of one of its senior members, Geoffrey B. Capes.

Mr. Capes came to Canada from England just before the first World War and after serving overseas in the Canadian Army returned to this country and settled at Courtenay, Vancouver Island. In exploring his new environment he was particularly attracted by the wild mountain area lying in the centre of the island. There were few logging roads in those days, and long and arduous back-packing was exacted by those who penetrated this wilderness. Geoffrey Capes made many early ascents including the Golden Hind, Mount Argus and the Red Pillar, and became an authority on the Comox Glacier and Buttle Lake Country. He was a charter member of the Comox Mountaineering and Ski Club.

Until his death Mr. Capes joined many of the weekend and longer camping trips of the Victoria Section. Among places visited on these occasions may be mentioned, the Comox Glacier

country (where his card dated in the early twenties was found in the cairn), Mt. Elkhorn, Mt. Garibaldi Park and Mt. Constance. Beside climbing he loved fishing, and provided many a welcome addition to the camp mess. His unfailing and kindly sense of humour, as well as his keenness whether for climbing or more prosaic camp activities, will be greatly missed by the section.

Geoffrey Capes was saddened last autumn by the death of his wife. He is survived by two daughters one of whom, Katherine, resides in Ottawa and is a member of the Club.

A.W.L.

BOOK REVIEWS

A CLIMBER'S GUIDE TO GLACIER NATIONAL PARK

By J. Gordon Edwards

San Francisco, The Sierra Club, 1960 141 p. photos.

As the foreword points out, guidebook publishers have a responsibility, in that they can give the key to a climb but may thereby encourage some climbers to go where they should not go, because of their lack of experience. This book should not cause any reasonable climber to get into such a predicament, since it constantly advocates caution and repeats again and again that inexperienced climbers should not attempt difficult climbs without experienced companions. It is to be feared that the author's words will fall mostly on deaf ears, but he cannot be accused of not trying.

The climbing in Glacier Park (Montana) is not of a high order and the rock is as bad as that we know so well further north. However, there is much of interest to the real mountaineer; the man who loves the mountains for themselves, no matter how badly they may be constructed. This book will be of great value to those who wish to climb in Glacier Park, in outlining where the climbs are and how to get to them in an area that has been climbed, perhaps, less than it deserves.

The theme of the book might be summed up in a couple of sentences from the foreword. "The mountain will always be there tomorrow. Aim to be able to say the same of yourself".

R.C.H.

AN ECCENTRIC IN THE ALPS

By Ronald W. Clark

The story of W. A. B. Coolidge, the great Victorian mountaineer.
London, Museum Press, 1959. 35/.

This is a readable book about a climber, The Rev. W. A. B. Coolidge, whose many and lengthy writings on alpine history and lore were seldom readable. His climbs, like his books, are now chiefly remarkable for their number, coming as they did after the end of the golden age of mountaineering in the Alps, when all the great peaks of the Alps except the Meije had been climbed.

What then, the prospective reader may ask, was so interesting about Coolidge? For once the title of the book gives the clue: he was indeed an eccentric. He was "the American who climbed with his aunt and his dog", and this was what intrigued the climbing world as much as any of his more genuine eccentricities. He became the irrefutable and dogmatic authority on everything pertaining to the Alps and mountaineering, and on the strength of his vast know ledge he argued with almost everyone in the Alpine Club, and with many more outside it. He would tolerate nobody's opinion but his own, which, to make matters worse, was almost invariably right, as Mr. Clark carefully notes.

Due to an odd string of circumstances Coolidge found himself one of the world's first stateless persons, disowned in turn by the United States, England and Switzerland, where he nevertheless spent the latter part of his stormy life. He boasted freely in his later years that he

had falsified the ballot to get Mummery, his great contemporary, elected to the Alpine Club. He was nearly sued for libel by Whymper—who was not exactly a lamb himself—and had many furious wordy battles including the classic one with Sir Edward Davidson who dared to correct his spelling!

In shedding light on one mystery, the strange aunt-and-dog team, Ronald Clark uncovers what seems to this reviewer to be a yet more extraordinary mystery. Every season Coolidge, his aunt Miss Meta Brevoort, and his dog set out for the Alps accompanied by Coolidge's mother. Mrs. Coolidge was then deposited in some convenient hotel at the foot of the mountains while her sister and her son took off for the High Places to risk their necks for months at a time, sending back occasional letters to her recounting their adventures. Noteworthy as the aunt was, it would have been interesting to learn more about his seemingly incredibly tolerant mother, but she remains only a vague shadow. Was she not continually worried for their safety? Did she never protest at their reckless, undignified antics? What sort of ordeal was it waiting for their next letter or card, or for news of their return? Or did she perhaps revel at second hand, in the excitement of each expedition, and even actively encourage them ? One must assume that Mr. Clark has no more than mentioned her existence, either because he was dazzled by the limelight which has always centred on Miss Brevoort and her motley team and was unconscious that he was unwittingly creating a new mystery, or, more probably, because he could find no information, even in the correspondence, about her feelings.

At a time when many climbers were turning to guideless ascents of new and daring routes, Coolidge remained a stolid and vocal advocate of plenty of guides and the "normal" routes, mainly because he was too short-sighted and lacking in physique either to dispense with guides or to tackle anything really exceptional himself. These deficiencies only make his many big ascents the more outstanding, particularly his first ascent of the highest peak of the Meije, which is still considered a fair rock climb.

Coolidge seemed to revel in making enemies, yet despite all his aggressiveness the dogmatic American may seem to the reader to be a more likeable character than his arch-enemy, the supercilious Sir Edward Davidson, and in the end it is easy to be sorry for him, dying in Grindelwald a lonely, stateless old man.

Mr. Clark has given us a series of good books on the Victorian days of mountaineering, and this one is probably his best so far. It is well illustrated and has a full index. There are none of the irritating footnotes and long appendices which littered Coolidge's writing. The whole story is clear and colourful, and is written with a nice sense of humour.

C.J.P.

MOUNTAINEERING - THE FREEDOM OF THE HILLS

Published 1960 by The Mountaineers, Seattle, Wash.
XII and 430 pp. 134 illustrations. Price $7.50.

This is perhaps the first major textbook on mountaineering to be written for the North American, and particularly the western, climber. It was compiled (not by one author but, according to the prefatory acknowledgements, by several dozen) primarily for use in conjunction with a two-year course in climbing conducted by the Mountaineers. A note in the preface indicates with which chapters the neophite should concern himself, and which contain the specialized information required by more experienced climbers.

The novice is warned however that the art cannot be acquired solely from books: "However helpful a mountaineering textbook may be, without accompanying practice trips and experience climbs ... it can quite easily supply exactly enough information to lead a beginning climber to disaster."

Over a hundred excellent line drawings illustrate the textual information clearly, concisely and with sufficient humor to remind the reader that climbing should be a joyful experience rather than an arduous duty. Attempts to enliven the text with wit are not always so successful.

In addition to the line diagrams there are sixteen full page photographs of mountain scenes, several in Canada. While they are highly attractive, one feels that their omission would have made the book just as useful and less expensive.

In the chapter dealing with the controversial subject of equipment it is refreshing to see the beginner advised to defer the purchase of each item until it is actually needed. Experience is thus conceded to be the best guide to the acquisition of gear. The specific recommendations of the authors will be unlikely to meet with unanimous approval, but are probably as sound advice as the beginner is likely to receive. The question of tricouni nails versus lug soles is treated by means of a table enumerating the merits and demerits of each. The old-fashioned tricouni appears to come out of the discussion slightly ahead.

The reader is then introduced to the problem of approaching his objective, and the next few chapters are devoted to the arts of camping, cooking, wilderness travel, (including two full pages on the technique of bushwhacking) and mountain navigation. In the last-named section it is unfortunate that no mention is made of the uses of the aneroid. Two useful diagrams showing the same scene as portrayed on a topographic map and as observed visually on the ground might have been better placed on adjoining pages to facilitate comparison.

Although those regions most interesting to mountaineers are often apparently the least interesting to cartographers, one may perhaps question the validity of the comment that "Few topographic maps are available for Canada except of the parks and these are of doubtful reliability."

The next ten chapters cover techniques of negotiating truly alpine terrain: rock, snow and ice. The sections on direct-aid climbing will perhaps be of more academic than practical interest to most readers. A careful study of the chapters on belaying is, however, almost mandatory for every climber who expects to don a rope, and especially to those who have hitherto implicitly trusted in the techniques recommended by certain prewar texts.

Ski mountaineering is not mentioned except to note that this important branch of mountain-craft has been omitted because already adequately treated elsewhere, in Brower's "Manual of Ski Mountaineering".

Mountain Safety occupies a section of 76 pages, with chapters on leadership, dangers, first aid and rescue. That on first aid provides not only some new techniques (for Canadian climbers at least) for the treatment of injuries, but also useful advice on the alleviation of such peculiar "mountain miseries" as heat-exhaustion, cramps, blisters, sunburn and mountain sickness.

The chapter on search and rescue techniques points out that, far from outside aid, searches for missing members, crevasse-extractions and the evacuation of injured climbers must in most cases be carried out by the climbing companions of the person involved. Emphasis is therefore placed on methods which do not require the specialized equipment of the mountain rescue team.

The final section, "The Climbing Environment", is aimed at helping the climber appreciate his surroundings and to traverse them in familiarity and safety. Chapters on geology and weather

are included, as well as one of the most complete discussions of the nature, properties and behaviour of snow to be found outside Selig-man's classic "Snow Structure and Ski Fields".

Having compiled these notes from examination of a borrowed copy, this reviewer can perhaps best sum up his impressions by voicing a resolve to acquire a copy of his own, and by advising his readers to do likewise.

I.B.K.

THE RED SNOWS

An account of the British Caucasus Expedition 1958,
by Sir John Hunt and Christopher Brasher.
London, Hutchinson, 1960. 25s. 176 p., illus. (I in color) Map, index.

Five years after they first made application a party of British mountaineers was given permission to climb in the Caucasus area. "The Red Snows" is the story of its visit to this picturesquely and literally named, area of the Caucasus. Some interesting sidelights lift it out of the mundane pattern of most mountaineering books.

The valley of the Adyl-Su, where the party stayed at first, was scattered with mountaineering camps run either by the unions, such as the Locomotive Union and the Chemical Engineers, or by the various states. The hundred or so people in the camp were divided into beginners; intermediates; and a small group of "Masters of Sport". To become a Master of Sport one has now to include a high altitude climb in the Pamirs or Tien-Shan. Climbers returning from a trip lined up, the leader reported and then bouquets of flowers were formally presented.

On every trip a form had to be filled in showing every detail— composition of the party, the route, the amount of food and equipment—and this had to be approved by the camp commandant before the party was allowed to set out. The authors' note that what "at first sight seems a cumbersome and bureaucratic process has much to commend it in a sport which can be so dangerous". They also remark in this same connection that "perhaps, in the West, we sometimes have too much freedom, when the only controlling force is the moral obligation to one's relations and companions".

The British climbers noted that the Russian tents were models of simplicity, with ice-axes lashed in pairs, forming the props at either end. The Russians used a much heavier ice-axe; a combination of axe and hammer and were taught to use the wrist-bands. They had never seen rubber soles on boots and used the old type of iron nails.

The party, many with Himalayan experience in addition to Alpine knowledge, found that the Caucasus range presented different tactical problems. The standards of the climbs were as hard as some of the really difficult Alpine ones, but longer and lacking the amenities of mountain huts. Probably the climbs resembled more closely those in the coast range of B.C. and Alaska where sufficient supplies to allow for bad weather have to be carried in.

Amongst their climbs was the third ascent of the Bezingi Wall route of Shakara by a combined Anglo-Russian party. George Band and Michael Harris climbed a new route of great difficulty on Dykh-Tau.

An appendix on the mountaineering history of the Caucasus adds an historical perspective to the 1958 expedition. There are good photographs; another map showing more of the region would have been welcome as it is an area unfamiliar to most readers.

E.B.W.

ROCKY MOUNTAIN POEMS

By Ralph Gustafson

Klanak Press, Vancouver, B.C., 1960. 36 pages.

This collection of eighteen poems by the well known Canadian poet Ralph Gustafson is probably the first to put the high mountains of Canada into "the geography of Canadian poetry".

To the mountaineer it is evident that these poems express the emotions of a fellow mountaineer. On the long steep climbs he has experienced "the drums in our ears . . . Pounding the world to a hollow". After hours on forested switchbacks he has found that his mind needs "a peak to latch on". He, too, has not always reached his goal, but has found compensations in the memory of "ten thousand flowers, an alpine tumbling of them", the western slanting of mountain mists, and the green ice and fire of the Columbia Icefield.

The recitation of familiar names—Tonquin, Moraine, Deltaform, Yoho—provides a pleasant shock of recognition for the reader. Four lino cuts enhance the fine typography of this small publication.

E.B.W.

THE WHITE SPIDER

By Heinrich Harrer

London, Rupert Hart-Davis, 1959 30/-. 240 p., illus.

Conventional climbers may have a small mental problem to wrestle with before they read this book: do they want to spend time reading about the type of climbing that is entailed in scaling the North Face of the Eiger ? This was the sinister Norwand that the cynical punsters called the Morwand, or murder-face. This was the face where international rivalries and heroics made one wonder at times if the whole business of climbing was worth it. But if you've ever had such thoughts—and who hasn't?—then you really should read this book.

Heinrich Harrer was the ideal man to write it. He knows, from being on the first party to climb it, exactly what sort of problems it poses, and the type of men, mentally and physically, that it takes to climb it. Those who read his "Seven Years in Tibet" will be assured that there is no fault to find with the writing.

What comes out of this combination is a fascinating closeup of all the unusual men who have climbed this frightful wall—and of most of those who failed. He puts into perspective some of the ridiculous rivalries, and newspaper exploitations of stunt climbers; and gives the best analysis so far available of why so many sane and reasonable people tackled this wall of death.

In fact despite any initial reservations, it's a safe bet that you'll find this book completely absorbing. It's no mere list of climbs and falls, but a re-creation of the whole atmosphere of the climbs and the men who tried them. However, absorbing as it is, you'll probably feel, as I did, no urge at all to go and climb it. And even that is probably part of the well-planned scheme of things.

P.L.S.

CLUB PROCEEDINGS

FRYATT CREEK CAMP

By Nora Neilson

The 1960 camp at Fryatt Creek was a memorable camp for a number of reasons :—beautiful weather, lovely trail, delightful alpine lakes, wonderful companions, and I could go on, but let us start with the trail into Fryatt Valley.

Originally, it had been planned to ferry people and supplies across the Athabaska River just above Athabaska Falls by a cable-propelled barge ferry. However, the hot weather of July meant a very high and swift river and made the crossing in this manner a hazard. Thus the barge was abandoned and the trail started three miles further north, just off the Geraldine Lakes trail from the Banff-Jasper Highway. Permission was granted to leave the cars about a mile beyond where the camp trail forked from the Geraldine Lakes trail. Shade was good and the cars were protected from the sun to a considerable degree. From this point to the corral where the horses were kept was a further half-mile. The horses came to the car depot for baggage so there was no problem here.

The trail into camp was one of the most pleasant trails, especially AC camp trails, on which I have been. It was well marked, of gentle grade and dry. True, it was a bit hot and dusty at times, but who is going to complain after slogging into some camps through mud and rain. The bridges were of the lighter, more springy type of AC bridge. The camp road engineer had not been at work on the trail. Trail time varied from five to six hours including a leisurely lunch stop at Fryatt Creek and trail length was about 10 miles. At the end of the trail was the tea tent with the most welcome cup of tea and cookie.

The main or base camp was on the banks of the Fryatt River at 5,400 ft. and lay under the two outliers of Mt. Fryatt on one side and in the shadow of Mt. Christie and Brussels on the other side. The peaks were still a long way off and for this reason and because of the warm weather the climbs were mostly early ones—3 to 4 a.m. rising.

The camp was constructed and managed under the able supervision of Dave Fish and George Wallis and our food and wood needs were as usual well looked after by Bill and Harold Harrison and their wonderful staff of cooks and camp girls and boys.

High camp was about three miles from the base camp, in a beautiful alpine meadow at the base of the falls draining the head of Fryatt Valley. This camp consisted of a number of Logan tents with a cook tent and a small dining tent. From here the big peaks were readily accessible.

The Fryatt Creek Camp had a wide variety of interests to offer. There were the peaks for good climbing, possibly more snow than rock, but still both were there. There were lovely trails to alpine lakes with swimming and sun bathing, flowers, fossils and bird-life There was something for everyone.

The trail up the valley to the majority of the peaks started out over a moraine of large rocks wherein were hidden samples of trilobites revealed only to the alert eye. It then crossed a rather wandering creek from the small falls on the Fryatt side of the valley. Contrary to the usual experience, the creek was higher in the morning than in the afternoon. This was largely due to the fact that the temperature in the upper reaches did not drop to freezing at night. Those who were good at the broad jump retained the driest feet! Just before the creek, in clear yet camouflaged view there was a nest containing four speckled eggs belonging to a rather agitated mother sand-piper.

This, of course, required a photography stop. Beyond the creek was the first of the many alpine lakes. This was a large one and it served for swimming, or rather quick dips for the polar bears in the crowd. Most were content to paddle briefly just ankle deep.

The trail made its way away around the right side of the lake, past unseen sand-piper nests, and through the woods to the meadows on which high camp was located. From here it wound up the cliffs to the right of the falls that drained the majority of the peaks in this area and came out above the falls where the valley widened into a series of alpine lakes. At the top of the falls the trail split, with a choice of continuing on the right or crossing the falls to the left side and thus travelling up one side or the other of the series of lakes. Climbs to the Mt. Fryatt side of the valley and to the peaks at the head of the valley, were from the right branch. Along the trail and beside the lakes it was possible to pause for pictures, especially of Mt. Brussels, or for flowers, or just to enjoy the beauty of the mountains bathed in the warm sunshine. There were a number of side trails from the main trail, each of which led up a small valley to an open meadow above, and usually to a stream or small lake.

The trail to the Mt. Brussels side of camp lead off from the moraine near camp and crossed the swift Fryatt River via a wet three-log bridge. There was no shame in crawling across this one— it was only common-sense! From here the trail led up the steep hill-side and opened into a basin near the base of Brussels. The climbs of Mts. Christie, Brussels and Lowell were via this route. Since the weather was favourable most of the time, activities around camp were fairly quiet—people were either out on a mountain, at rock or snow school, or preparing to go to high camp. Unfortunately, part of the rain was on the annual meeting Sunday. President Harry Green led us in the church service midst a truly Scotch mist. The annual meeting itself, which was reported in the Gazette, was held in the afternoon in the dining tent.

As we think of those who looked after our comforts, we remember the delicious meals topped by a chicken dinner on Sunday, the constant attention given by Campbell Ledingham to our queries on business matters, and the patience and skill extended by Dr. Morley Tuttle and Mrs. Phyl Munday to our medical needs, which fortunately were not particularly serious. Even the blister parade was limited—largely because our feet were dry most of the time. To all, both named and unnamed, who catered to our various needs we give grateful thanks. It is the little things, from the cup of tea to the piece of adhesive tape, each provided at the appropriate time with a smile and a kind word, that make AC camps the wonderful places they are.

CLIMBS FROM FRYATT CREEK CAMP

The following notes on climbs from the Fryatt Creek Camp refer particularly to the routes followed during the 1960 ACC camp, but they are mostly standard routes. The main camp site was at approximately 5,400 feet on the west side of the Fryatt Creek valley almost directly under the southerly of the two outlying peaks to the east of Mt. Fryatt. A high camp was established farther up the valley at the foot of the falls above the large bright green lake visible from a point 10 minutes south of the main camp. The high camp was supplied by ponies and was about 1 hour 15 minutes above main camp.

CLIMBS FROM MAIN CAMP

Mt. Christie (10,180 ft.)

The main creek was bridged just above the place where a tributary drops steeply from below Brussels Peak on the east side of the main valley. The ascent was then made up the true left bank of the tributary creek. Where the ground becomes less steep, the trail (which was barely visible) lead away from the creek slightly and eventually back again through open bush to the small lake at the foot of the steep cliff band below Brussels Peak. (One and one half hours.) From the small lake the scree slopes were followed in a northerly direction under the cliff band to a point directly below the Christie-Brussels Col where there is a weakness in the cliffs. The cliffs were ascended at this point and the easiest route to the ridge followed above. The broad southwest ridge was then followed on broken rock and snow slopes to the summit. (Three and one half hours.) (Five hours from camp. Descent, two and one half to three and one half hours.)

Mt. Christie, Mt. Brussels And Mt. Lowell. *Photo Gaie Taylor*

Brussels Peak (10,370 ft.)

The route taken was the same as the one for Christie to the top of the cliff band. (Three hours.) From there the Christie-Brussels Col was reached at the foot of the northeast ridge of the peak. The route followed to the summit was close to this ridge for most of the way. The only ascent of this peak from camp was made by the two professional guides, Hans Gmoser and Heinz Kahl, who considered the ridge above the Col to be about grade IV with one pitch of mild VI. They used only four pitons and no bolts. Their times are not too accurate since apparently their watches had stopped, but the round trip from main camp was made in about eleven hours with a number of stops. This was a strong pair which probably used less ironmongery and made much faster time than an average party. (See "How Steep is Steep" in this issue.)

Lowell North Peak (10,200 ft.)

The same start was used again up the true left bank of the tributary creek below Brussels. Where the ground begins to level out a traverse was made to the south around the base of Lowell at timber-line on alplands. It was found to be better to traverse low rather than to traverse at a higher elevation. Once the west side of the mountain had been reached, the route followed went almost straight up the mixed snow and rock to a point on the ridge just south of the north summit. The summit was reached from this point. (Seven hours from camp. Descent, four hours.) The gendarme just to the north of the peak was also ascended.

Lowell South Peak (10,300 ft.)

This is the main peak of Lowell and is approximately 100 feet higher than, and a third of a mile south of, the North Peak. The start was the same as that for the North Peak. This route was followed to the point where the direct ascent to the North Peak starts. The traverse around the peak was continued in a southerly direction past a snow slope and onto the face of the southwest ridge descending from the summit. The crest of the ridge was reached at a point about halfway between the summit and the low point to the southwest. (Five hours.) The southwest ridge was then followed to the South Peak. (Two hours.) (Seven hours from camp. Descent, four hours.)

Three Blind Mice (8,500-9,000 ft.)

The Three Blind Mice lie approximately one and one half miles southwest of Lowell and consist of a group of small low peaks, not all visible from camp. The three peaks were usually climbed together on the same day, but some parties climbed only two and some only one peak.

The route started up the valley, past high camp, and up the west side of the falls above high camp. The natural bridge right at the top of the falls was used to cross the creek onto the east (true right bank) side. The ascent continued up across open bush and then scree slopes towards the ridge descending in a northwesterly direction from the central of the three peaks. The route went up the east side of the ridge over snow and rocks to a point about a third of the way up the ridge. The ridge was then followed to the centre summit. (Five hours.) The northeast peak was then ascended, the party returning to the centre peak. (One and one half hours return.) Then the southwest peak was climbed. (Also one and one half hours return.) This last peak offered some short but interesting rock pitches near the summit. The descent was made from the centre peak by the same route as the ascent (Descent from centre peak, three and one half hours.)

Mt. Fryatt (11,026 ft.)

The route taken by all parties followed the valley running up between the two outlying peaks of Fryatt right behind the main camp. The start was made by descending the Fryatt Creek valley some 400 yards and then ascending the steep slopes directly beneath the rock buttress at the

foot of the valley that descended between the two Fryatt outliers. After the buttress was climbed, the valley was followed up over steep slopes and small rock walls to the ridge above the edge of the glacier lying southeast of the peak. To avoid a descent of a few hundred feet, the glacier was reached by contouring the ridge above the glacier for a while. The glacier was then crossed to the prominent col at the foot of the steep portion of the peak's south ridge. (Four hours.) From here various routes were taken to reach the west ridge, from which the summit was reached. Most parties ascended close to the southeast ridge over loose rock and snow to the foot of the steep upper portion of the southwest face. A traverse was then made across to the west ridge. This ridge was then followed almost to the summit with a short traverse back towards the right 100 feet below the summit to a ridge that gave easy access to the final summit. (Three and one half hours.) (Seven and one half hours from camp. Descent, four hours.)

CLIMBS FROM HIGH CAMP

Xerxes (9,700 ft.)

This dark group of steep peaks, seen from the main camp just east of the main valley, was visited by only two parties. One party of two succeeded in traversing the whole ridge from the Olympus-Xerxes Col (hidden behind the west end of Xerxes from camp) to the westerly peak of the Three Blind Mice. Many of the needles and gendarmes on the ridge were not ascended but were passed to the north or to the south. The expedition was a very long one and the party a fast one. The ascent from the Olympus side involved a long descent at one point on the ridge. Undoubtedly

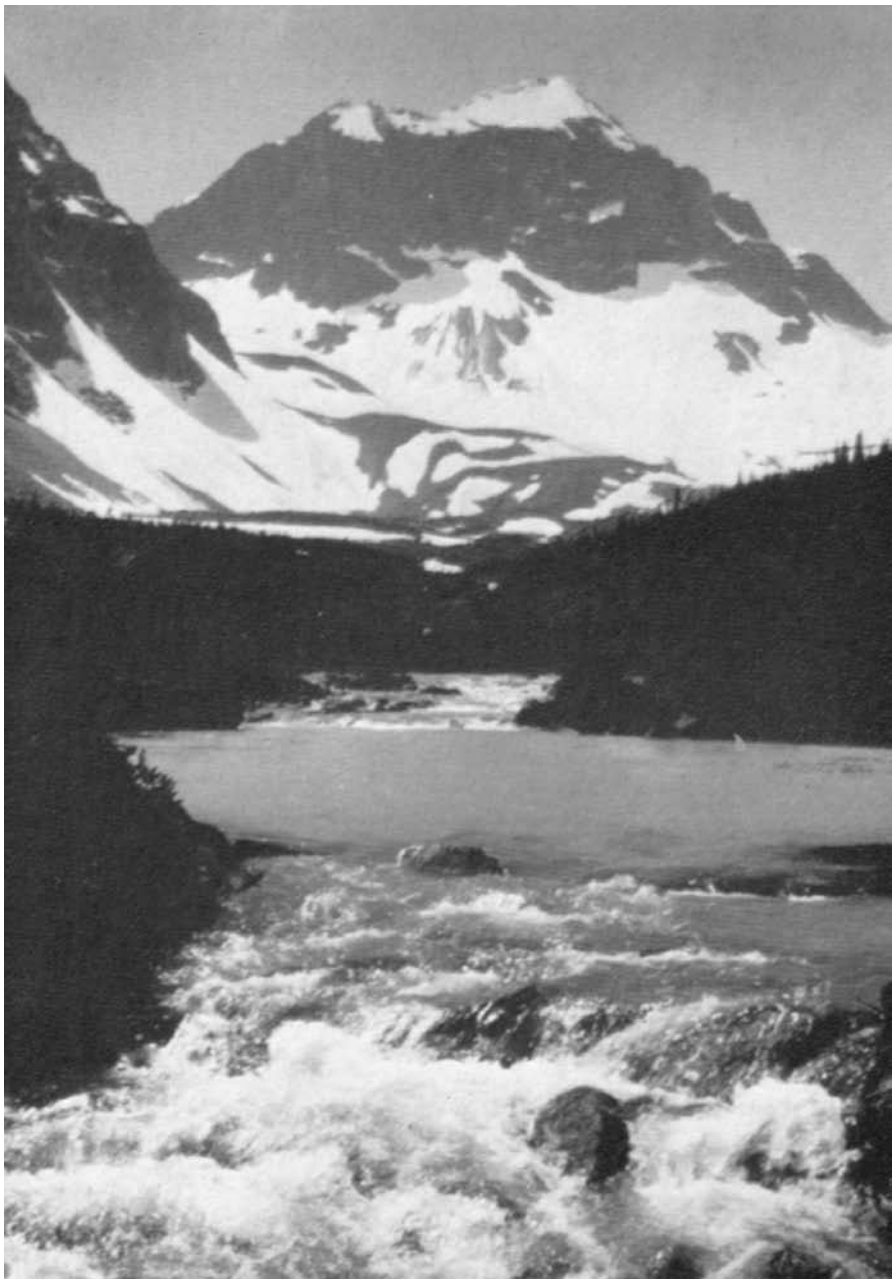
Mt. Xerxes *Photo D. Godfrey*

the traverse including all the gendarmes would require much ironmongery as well as a strong party equipped with bivouac gear.

The only other party to visit this peak made an ascending traverse up across the eastern end of the massif to reach the Three Blind Mice traverse.

Olympus (9,800 ft.)

This pointed peak lies right at the head of the main valley. The start was made up the west side of the falls above the high camp. The upper meadows were then followed towards the end of the main valley. The Fryatt Creek was crossed to the true right bank about a quarter of a mile below the upper lake on a natural bridge further up the valley than the one used for the Three Blind Mice,



Mt. Olympus. *Photo D. God*

and the ascent made over moraine and snow patches to the glacier at the foot of the peak. The Olympus-Xerxes Col lies due south of this point. The route followed went up the glacier toward the col between Olympus and the next peak to the north (Parnassus). A short distance below this col a prominent couloir descends the northwest face of Olympus. This couloir was ascended on fairly steep snow (about 45°) to the summit. (Six hours from high camp.) The descent was normally made down the long easy east ridge on broken rock to the Olympus-Xerxes Col, and thence down to the glacier again. (Descent to main camp, four hours.)

Parnassus (9,500 ft.)

This peak is really a long ridge with the high point at the north end and a second smaller peak at the south end. The massif is not visible from the main camp.

The route followed was the same as that for Olympus until the edge of the glacier was reached. At this point the glacier was ascended in a northwesterly direction along the foot of the Parnassus massif. A snow slope was ascended to reach the ridge running between the main peak of Parnassus and Belanger at the point where it begins to rise steeply to the summit. The ridge was followed from here to the summit. It provided a very enjoyable rock climb on surprisingly firm quartzite. (One and one half hours.) (Six hours from high camp. Descent, four and one half hours to main camp.)

The southerly peak was not ascended but did not appear to present any difficulties from the eastern side.

Belanger (10,200 ft.)

The route again followed the trail up the west side of the falls from high camp. The west (true left) bank of the creek was then followed to the upper lake. From half way round the west side of this little lake a valley was followed running up to the northwest toward the summit of the peak. The meadows above timber line were followed past small lakes to a point on the edge of the moraine due east of the summit. From here the snow slopes were ascended in a westerly direction to the point on the southeast ridge at the foot of the steep part of the mountain. The route followed from here by most parties was up the couloir just to the south of the southeast ridge. From the top of the couloir the last summit rocks were ascended to the right. (Six and one half hours from high camp. Descent to main camp, three and one half hours.) Some parties ascended more or less directly up the southeast ridge, and others descended right down the south couloir to the glacier.

Other notes

Lapensee was not attempted from this camp although it appeared that the normal (and apparently only known) route of ascent from the Divergence Creek valley up the southeast face could be reached by traversing from the Belanger-Parnassus Col at the head of the Fryatt Valley. The expedition would be long and quite difficult.

Although Serenity Mountain was climbed from the 1936 camp it was not climbed from the 1960 one. The route apparently crossed the Olympus-Parnassus Col into the head of Lick Creek and then went over the Divide to Alnus Creek, and thence up the South Alnus glacier. Mt. Oates could probably be climbed using the same approach route.

ROBSON SKI CAMP-APRIL, 1960

By V. Mondolfo

On April 15th 1960 the main contingent of the ski camp participants met at the Robson Ranch. Very thoughtfully everybody was invited to store any unwanted items in the cabins. Quite a few proceeded to lighten their loads because the scarcity of snow presaged quite a long stretch of ski-toting.

The 16th dawned cloudy and at 6 a.m. the group left the Robson Ranch in heavily-loaded automobiles. The end of the road, alas, was only three miles away. So everybody shouldered his skis (a wise guy sadly remarked that he had unfortunately forgotten his gravel wax) and proceeded on the trail.

Kinney Lake provided a welcome relief from ski carrying and we had lunch and tea at the ranger cabin, occupied at the time by Mr. and Mrs. Toni Meisner. Toni was out climbing, but Mrs. Meisner was a most gracious hostess in a cabin more crowded than a New York subway at rush hours.

All the way up the valley of the Thousand Falls we admired the frozen waterfalls in their winter hibernation, but Mt. Robson stubbornly refused to come out of the clouds. At the top of Emperor Falls we finally put the skis where they belong and at Berg Lake we were met by members who had gone in the day before. A delightful and powerful west wind, which permitted us to sail the length of the lake with hardly any effort, was most welcome.

On arrival at the lodge, Robie and Margie Fierz proceeded to inspect the cooking facilities and to prepare the first of a series of excellent ham dinners. Mt. Robson was still in hiding.

During the next few days several parties attempted to ski towards Mt. Whitehorn and the various cols on the north side of Berg Lake. Due to weather conditions no peaks were climbed. The north hill right above the lodge had some very good snow and provided nice runs of various degrees of steepness. The newcomers enjoyed for the time being the detailed descriptions by the old timers of the scenery. Frequently they would be told to look to the right (or left as the case may be) where, when the weather was good, they would have a splendid view of the Robson glacier or such and such a peak. The usual delicious ham dinner was interrupted on Wednesday by a sudden and unexpected event: Mt Robson came out of the clouds. Of course everybody was either out of film, or without shoes, or both and the cabin was the scene of a wild scramble, punctuated by loud exclamations, of frustrated photographers dashing to immortalize the view on film. Certainly it was a heartening spectacle for a film salesman. A record was set for the number of exposures taken per second.

The view was truly magnificent: above the glittering ice falls rose the wide expanse of snow colored by the setting sun, all surrounded by dark and fast moving clouds. An avalanche that thundered down the face naturally caught most photographers unprepared, but kindly was slow enough to give them time to photograph the tail end.

Entertainment night followed and each section presented a comical skit. Unforgettable was the sight of J. J. Fairley, gaily decked out as a budding tree. It seems that he was not too eager to participate, but finally agreed "if he did not have to do anything, except just stand there". And that he did, while Aubin Fairley and Gertrude Smith sang (?) to the tune of "Spring is bursting out all over". The Edmonton section presented a puppet show, cleverly manipulated by Pat Payne, and they also gave their personal version of a bull fight. The Midwest section presented a literary and musical evening with the beatniks, the Swiss a rib-tickling side show of performing fleas and led

the audience in the singing of three songs. The Calgary section closed the memorable event with a "high-brow" television panel discussion.

On Thursday practically everybody started toward Mt. Resplendent with John Dodds leading and Eric Hopkins bringing up a very long tail. The party was soon separated by several miles, due to the different degrees of ambition of the participants. The weather was not improving matters. At times a complete whiteout could be admired, whereas occasionally rocks even more than a few hundred feet away could be seen. The Resplendent col was finally reached by a large group, but since no visible improvement in the weather could be detected, the party turned back.

On Friday the weather had improved and a party that climbed Mt Lynx was actually able to see where it was going. The trip out turned out to be a slightly amended version of the trip in, a longer ski-shouldering walk, since Kinney Lake ice had melted. The sight of the cars at the end of the road was certainly welcome to the weary travellers.

A minor accident took place during camp, not surprising considering the poor visibility that was the rule. Bernie DeVos fell on Mt. Lynx and cracked a fibula. Because of (or despite?) the care of the three doctors present he was able to hobble out and has since made a complete recovery. One complaint only: if the doctors were not going to use the fifteen pounds of plaster that Barney McNabb was given to carry, why did he not carry fifteen pounds of roast instead?

In spite of the weather everybody enjoyed this week spent in good company and away from the daily cares, and many of us have vowed to come back again.

In closing, the hard work of John Dodds, J. J. Fairley and others must be recognized and we express our sincere thanks. Ski camp could not have been held without their leadership.