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R. Donald Lyon

First Canadian Himalayan Expedition

Sangemarmar, est. 22,800 feet, as seen from "Momin's Col", which lies between Batura and Hachindar Chish. The route on Sangemarmar lies just beyond the right skyline, above which Minapin is visible. Base Camp was at the base of Sangemarmar, at the right edge of the photo.

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Members are URGENTLY requested to assist your Editorial Committee by furnishing articles themselves or by informing the committee as to where articles might be obtained, as your Canadian Alpine Journal is the official record of climbing in Canada.

Manuscripts should be typed with double spacing.

Photographs should be finished 5” x 7” with glossy surface and each photo should have pasted on the bottom (not on back) a strip of paper bearing the caption and photographer’s name.

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CANADIAN ALPINE JOURNAL

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VOL. 49

MOUNTAINEERING SECTION**Guide Book To The British Columbia Coastal Ranges**

The Climber's Guide to the Coastal Ranges of British Columbia from the International Boundary to the Nass River was published by the Alpine Club of Canada in 1965.

Authored by Mr. R. C. (Dick) Culbert of the British Columbia Mountaineering Club and the University of British Columbia Varsity Outdoors Club, it was compiled by himself and several associates from their wide climbing experience in the areas, as well as from many other sources of information. It is the first mountaineering guide book to these Coastal Ranges, except for the coverage of a few peaks just north of the International Boundary by American guidebooks to the Northern Cascades.

It is for sale by the Club's Secretary-Treasurer, Mr. W. C. Ledingham, 2974 West 28th Ave., Vancouver 8, B.C., at \$4.50 per copy (orders placed in British Columbia, \$4.73 including provincial 5% sales tax.) Of handy pocket size (312 pages, hard covers), it contains an informative Introduction, the guide section with many sketches and several photo reproductions, a supplement consisting of specially prepared maps, and an index to the mountains, peaks and other climbs described. (See also review on page 219 of this volume.)

Supplies of this Guidebook will be available from the Secretary-Treasurer at the Club House, Banff, from July 1 to August 25, 1966.

A.C.C. Diamond Jubilee 1906-1966

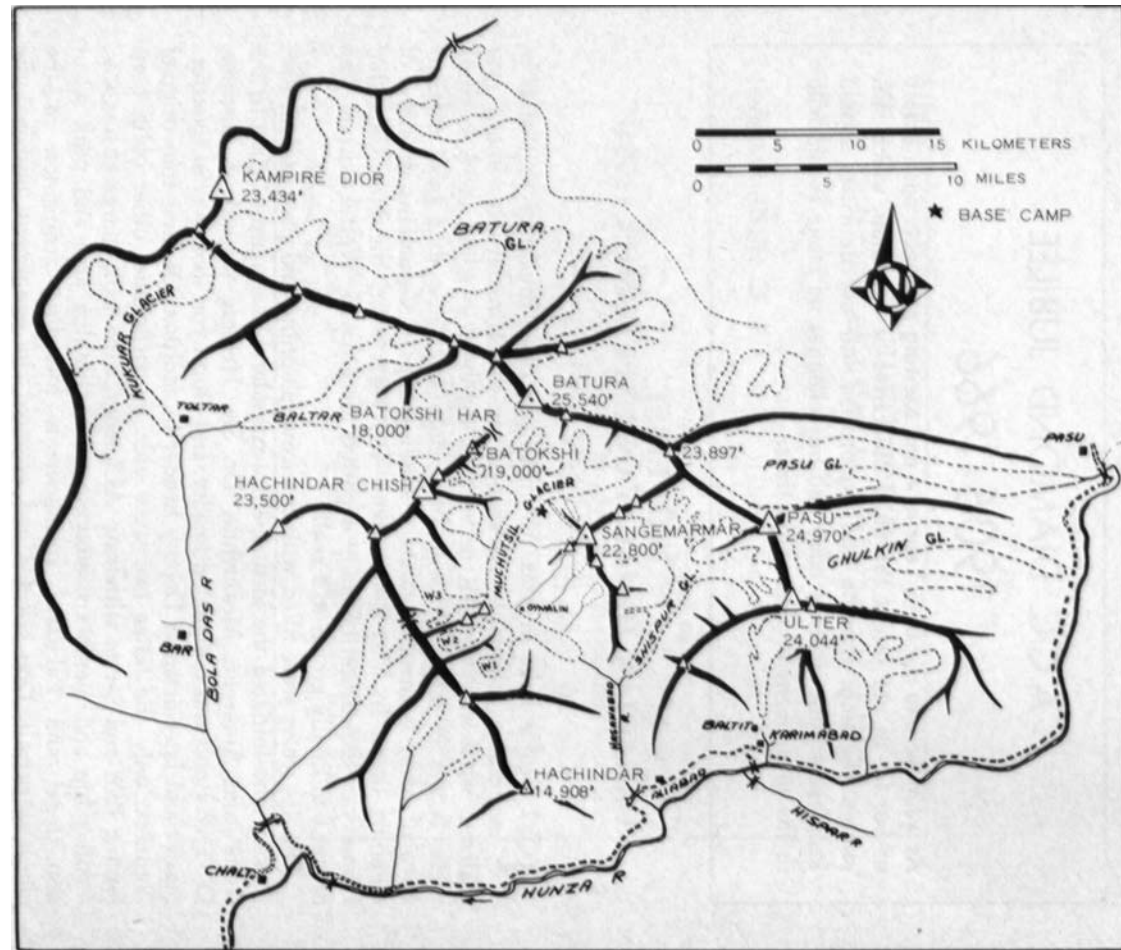
As we move into our 60th Year new and exciting prospects open before us but let us not forget the chief objectives of our Club, which still remain climbing, training and exploration. All our activities should keep these basic goals in mind and any changes we make should help in the attainment of these objectives.

R. C. Hind,
 President

The First Canadian Himalayan Expedition (1964)

R. Donald Lyon

Most people have dreams. Mountaineers often dream of that mass of mountains commonly referred to as the Himalayas—without ever realizing what they are like, or what is involved in going there to climb them. It was in late 1959, with little more awareness than most climbers have of what is involved, that a small group of Canadians dreamed of climbing there. In May 1964,



Map of Sangemarmar Area

about 4 1/2 years later, the First Canadian Himalayan Expedition officially departed for Karachi, West Pakistan. The dream had finally grown to a reality.

The 4 1/2 years were filled with intensive planning and preparation. Karl Ricker, who initiated the idea, spent a considerable amount of time in the Arctic and Antarctic. Meanwhile, Dr. Sev Heiberg worked as Director, Dr. Fred Roots was designated Leader, and Don Lyon took over as Quartermaster and later acted as Deputy Leader in addition. Of these four original planners, only the latter two were able to participate, other obligations forcing Karl and Sev to withdraw. As Leader, Fred took charge of finances, membership and member communications, climbing area and peak selection, legal and Pakistani arrangements including acquisition of the climbing permit. Don selected and acquired the equipment, designed the menu, obtained food for it, and arranged food and equipment packing and shipment. Where possible other members assisted in specific areas and problems, as their habitation permitted.

The search for supplies and equipment, information and advice, and Pakistani permits involved some 2,000 letters being written. By February 1964 the preparations were reaching the final stages. The days of labour preparing and packing food and equipment brought the time spent on the expedition into the neighbourhood of 3,000 hours—the equivalent of one person working 40 hours a week for 1 1/2 years. No wonder it has often been said that it is more work to prepare than to carry out a major expedition! Finances were a very limiting factor. The best possible equipment was essential, but its cost must be kept within the very limited budget. In selecting a peak the distance from roads (and therefore the amount of portering necessary) must be taken into consideration. In Pakistan, arguing over a 22-cent rupee or less was frequent—economy was the by word. Advisers warned us to expect expenses to be in excess of \$3,000 per member. The fact that the actual cost was about \$2,500 each is a mark of our frugality.

Punjab

The complete membership had never met until the expedition was in Pakistan, as half the members were visiting and travelling around the world. The expedition officially commenced on May 2, when Fred Roots, Doug Connor, and Don Lyon departed from Canada. In a brief 20 hours the three travelled 8,500 miles and stepped into what could have been a steamy shower room, but was actually Karachi. Don (Brownie) Poole, having spent a couple of years in Europe, joined the flight in Zurich. John Ricker and Lisle Irwin had travelled across India from New Zealand and were waiting for the group in Karachi. They reported that Hermann Jamek, the expedition cinematographer, had managed to become appointed as an official Pakistan Government photographer, allowing him extra freedom to get the background photographs he wanted of the interior. Chief Medical Officer Dr. Momin Khalifa was in Lahore, West Pakistan, where he had lived before moving to Montreal. He was visiting relatives there and would join us when we arrived in Rawalpindi. Medical Officer Dr. Karl Tomm would fly from Montreal in a few days to complete the contingent.

When requesting a climbing permit, it is very useful to have an established club, national, or personal reputation in Pakistan. As we had none of these, we were subjected to frustrating government formalities. At the time of our departure from Canada, we were still encountering difficulties in gaining the permit to carry out the expedition, so Doug Connor of Montreal had offered to accompany us to Karachi. Doug proved to be invaluable to the expedition. With his knowledge of Pakistan and his influential friends in Karachi, we soon gained our permit directly from the office of the President of Pakistan. From the list of mountains and areas submitted by the expedition, we were permitted to climb in the massif to the southwest of Batura, but not on Batura

itself as it was in a neutralized international boundary zone. As we had noted in our application, we would approach via the principality of Hunza State, and the Hasanabad valley, a tributary of the Hunza valley. Our information on the area consisted of reports from climbers on Rakaposhi, some 30 miles distant, and the vague maps available. We would have to decide which peak would be Hachindar Chish once we were there.

Our equipment had arrived before us from Canada, Britain, Norway, and New Zealand. Our next problem was to clear it through Customs. In all, it took us 11 days to clear Karachi—long enough for several of us to develop cases of “Karachi tummy”.

On May 15 we were pleased to be on the TezGam Express, finally heading for Rawalpindi, the Pakistani capital, 700 miles inland. The trip can be described as cheap—or hot, dusty and crowded, depending on one’s frame of mind. ‘Pindi was reached 26 hours later, where we were met by Major Bill Goodwin. He took us to his brother, Lt. Col. E. R. C. Goodwin, at 303 Peshawar Road. Known to all as Buster, he is a friend to all mountaineers passing through, and his home is commonly the base of operations for all expeditions in the area. Up-to-date information of activities in the mountains is always available there.

Captain Akhtar Hussain of the Pakistan Army was assigned to us as Liaison Officer. It was his duty to accompany us for the remainder of our travels, to act as an interpreter, as a liaison between officials and others we would encounter, as a judge in disputes which could arise, particularly with the porters, and to keep our activities within the sometimes strange and stringent regulations laid down by the government. With member Momin, a Kashmir Pakistani, we were well supplied with interpreters. We were fortunate in having a sympathetic liaison officer, and having a “native” as a member. Between the two of them we usually came out of barter, discussions, and arguments quite well.

With all the members on hand, the cases of equipment were broken open, and the members checked over and tried on their gear. Preparations were made for the 200-mile flight to Gilgit, as we looked forward to the temperate climate of the mountainous region and the decreasing distance to the climbing area.

To The Karakoram

Although the flight from Rawalpindi to Gilgit is scheduled daily, it is rare for the flights to go through regularly. Unless the weather is perfect, the planes will not start out; but we were lucky. The route is described as the most dangerous scheduled air route in the world. It flies over 13,684-foot Babusar Pass, and past the westernmost peak of the Himalayas, Nanga Parbat, rising some 13,000 feet above the airplane. Crossing the Indus, we technically leave the Himalayas and enter the Karakoram Range as we glide down into Gilgit.

In recent years Gilgit has been the only place in Pakistani Kashmir for which foreign visitors could get a permit to visit. To go further into the mountains it has been necessary to be formed as an expedition and be accompanied by a liaison officer. Gilgit itself is classed as a “Frontier Post”, having a military garrison and of course, the airport. The British had a Governor posted there, and the Pakistanis have replaced him with a “Political Agent” with much the same responsibilities.

While in Gilgit we stayed at the Gilgit Scouts’ (army unit) Rest House, the local equivalent of our auto courts. It was located by the Gilgit River, a mile from the airport. The town was another mile farther down the road. Called Chinar Bagh after the local species of maple tree planted around there, it was by far the most beautiful spot in Gilgit, with its trimmed lawns, well-kept flower beds, walks, and the only swimming pool for over 100 miles. The adobe building was the only

whitewashed one in the area, and even the toilet flushed—until the barrel on the roof ran dry!

In Gilgit, only the most important buildings have cement-mortared stone construction. Slightly lesser buildings have mud-mortared stone, while all the rest are built entirely of mud, including the roof. There is a large market in the centre of town, formed of many minute open-fronted shops. Along the same street can be found the post office, boarding school, and garrison. The Hamdard Hotel was the best in town, but deplorable by Canadian standards. Six of us had supper there one evening. We consumed chapatis, curry and tea, and paid a total of \$1.25 for all of us. Beside the streets, open ditches form the water supply system for homes and field irrigation, for this too is a dry region.

From Gilgit a trail leads to Chitral, and jeep roads lead back to Rawalpindi (when it is open), to Skardu, and to Hunza. We knew the Hunza valley road went to Baltit and Karimabad (capital of Hunza), that the 64-mile journey took “several hours”, and that the road had just been washed out in several places due to a rain storm. We were soon to learn much more.

Hunza State

After a delay of several days the road was once more in repair. We loaded our group of nine people and 2 1/2 tons of gear onto five jeeps, and eased out of Gilgit. The road is only 7 feet wide, and had been built in the late 1950s to replace the centuries-old caravan trail to China. Our minds began to grasp the character of the road when the driver of our jeep stopped 4 miles out of Gilgit and threw some coins to a man at the roadside. Despite the language barrier, we gathered he had just purchased prayers for a safe passage. Obviously he knew the road! Very soon the aging jeeps were groaning up the hills of loose dirt, and squealing down the steep ones which often ended in preposterous switchbacks. The road was often supported by piles of rock, with each row of rocks sticking out a little further than the row below. The river boiled menacingly 1,000 feet below. Once we told ourselves that we could only die once, and relaxed a little, we could enjoy the highlights of the trip—magnificent views of peaks which until now we had only heard of—Rakaposhi “Goddess of the Snows”, Minapin (Diran), Trivor, and Momhil Sar. The journey took 7 hours, cost 45 cents per mile for each jeep, and gave us a number of grey hairs.

We stopped 6 miles short of Karimabad at the settlement of Aliabad, happy to have arrived safely. Here at last we were in the centre of truly great mountains, in a State reached only by a few, and free to climb and visit in the countryside. The Hasanabad valley in which we were interested had its mouth just 2 miles back down the road. The Aliabad Rest House was not much even by local standards, but it was roomy and cheap.

The main inhabited area of Hunza lies on a benchland raised about 300 feet above the Hunza River — high enough to rule out irrigation from the river. Since land here was valuable, the road remained narrow, and was squeezed in among the terraced fields of grain. Scattered along the road and among the fields are groves of apricot trees, the fruit of which is dried for winter consumption. Among the trees can usually be found box-like adobe houses, with large square holes in their roofs for light, air, and smoke. The people are very friendly except when you try to photograph the women. The men you cannot get out of the pictures. Should you want an apricot, likely as not the tree owner will hold the branch for you. Unlike most parts of Pakistan, items we bought were purchased at the normal rate, not an inflated one.

Shortly after arriving in Hunza we were visited by the brother of the Mir, and were invited to lunch with His Highness the Mir of Hunza. With powers equal to a feudal baron of early Europe, he holds daily court sessions, and with his brother as Secretary (similar to a Secretary of State), runs

the internal affairs of the Principality. Hunza's external affairs are controlled by the Government of Pakistan. The Mir arranged for porters to be available to us, approved the wage scale and the equipment provided, and generally assisted the venture wherever possible.



Jamek

A Brief Stop on the Hunza Road

Five jeeps each carry four people and 800 pounds of gear. The rider on top jumps off and thrusts rocks under wheels to stop the jeep at dangerous switchbacks

To The Mountains

On the first day in Hunza, John, Lisle, and Brownie began a general reconnaissance of the Hasanabad system, with Fred accompanying them for the first day. When they returned, there were still a number of uncertainties. The maps available to us were seriously in error for this valley and its surrounding peaks, showing the valleys shorter than they were, and low ridges where there were high peaks.

Starting up the Hasanabad valley from the Hunza Road one climbs gradually for 5 miles, at which point there is a major division in the valley. A branch to the right carries the Shishpur Glacier to the junction. The left (west) branch continues to be barren for almost another 3 miles, the Muchutsil* Glacier having receded to this point. The Muchutsil extends in a northwesterly direction for 8 miles, then turns 90° to the northeast, gradually curving to almost due east at its head, some 12 miles beyond the corner. On either side of the valley, there is often a dry benchland about 100-200 feet above the glacier. Like most slightly arable land in the area, these benchlands

are settled by herders. These people are of limited use for information, for their knowledge of the area is limited to the areas suitable for grazing, or hunting ibex. Thrusting up between the glaciers is a large mountain later called Sangemarmar by the expedition. To the west of the Muchutsil are three basins with tributary glaciers referred to as West 1, 2, and 3 by us, each with approximately 18,000-foot peaks above them. On the 'outside' of the Muchutsil corner stands a very large sharp peak which it was later decided would be Hachindar Chish. At its base is a very lush benchland meadow complete with large deciduous trees, which we referred to as Evergreen Glades. It was perhaps the most inviting place in the valley.



Lyon

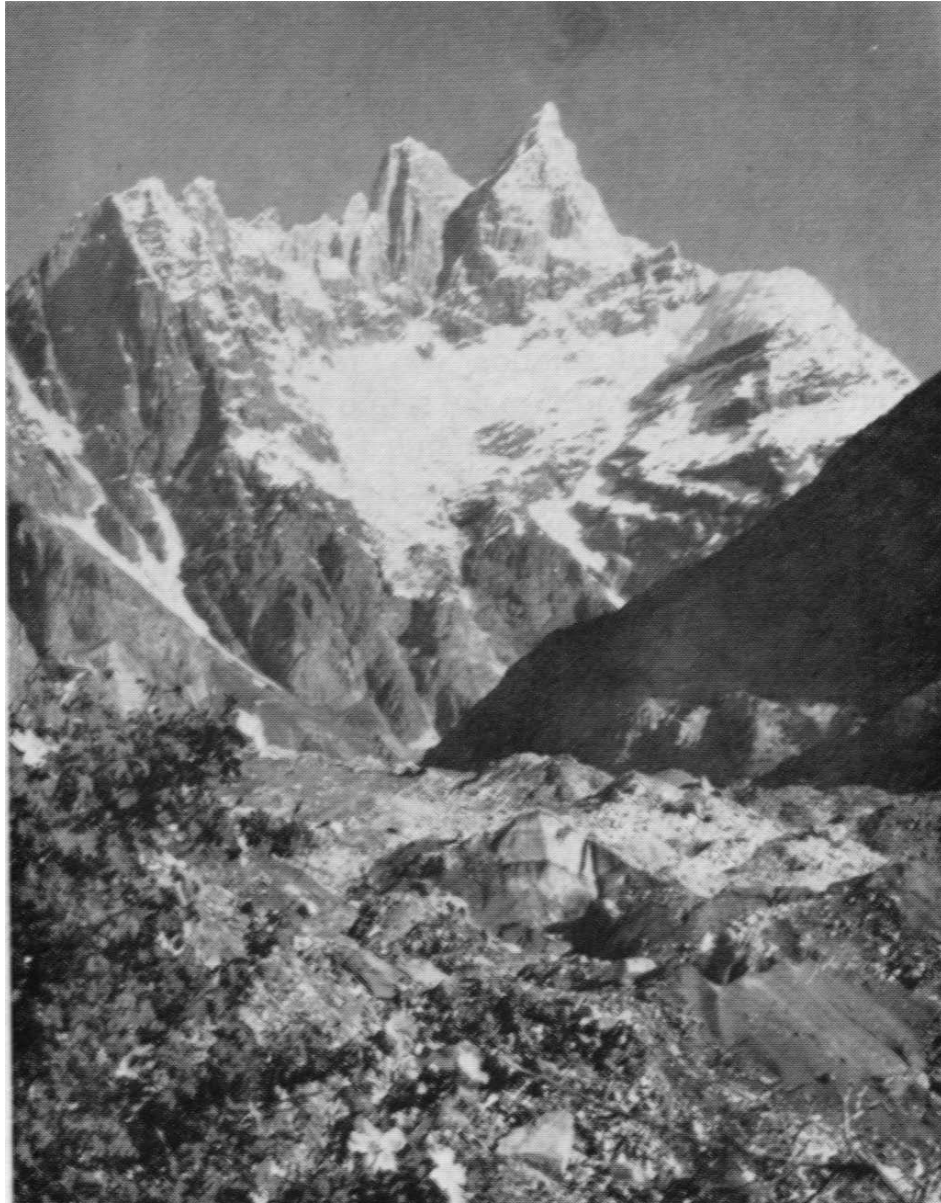
Fifty Valley Porters, Here Climbing Muchutsil Glacier And Moraine

assist the members in transporting nearly 1.5 tons of supplies to base camp. Sangemarmar rises on the right; Batura is hidden in the clouds.

Further reconnaissance was decided upon, with parties to go up both branches as far as appeared advantageous. Eventually, Fred, Lisle, and Don, exploring the Muchutsil, reached what appeared to be a desirable Base Camp site with promising climbing around it. The decision to use the Muchutsil was finalized when John and Brownie returned from their reconnaissance up the Shishpur. The call for porters went out and on June 3 some 1 1/2 tons of supplies began to slowly make its way up into the mountains.

Climbing well established trails, the expedition forded the stream at the Muchutsil snout

and followed the eastern benchland for several miles. Small crude stone huts were located along the benchland. At one small settlement, several men were herding about 800 sheep and goats. We were invited in for chapatis and Hunza-style tea and found the herders very friendly. Gyalin at 11,000 feet was the last inhabited settlement. A short distance beyond it the trail was permanently washed out, and the route dropped down to the glacier for the remaining 5 miles to the Base Camp site, which was about 4 miles beyond the glacier corner.



Ricker

Hachindar Chish, Est. 23,500 Feet

as first seen from near the snout of the Muchutsil (Muchiohul) Glacier. The glacier turns right in front of Hachindar Chish, rounding "Oxide Corner" of Sangemarmar; Base Camp lies five miles beyond the corner

Native porters in the Karakoram-Himalaya region are thought of as professional carriers, but generally they are not. The indigenous groups are invariably peasant farmers, who will pick up extra rupees whenever an expedition appears. Since we were the first group into Hunza in over

2 years, they were not what we would describe as 'in condition'. Although we estimated it would take 2 full days to reach Base Camp, it took 3 1/2. It would have taken longer but for a distinct difference of opinions, which resulted eventually in a little more speed from the porters. As they were being paid by the day, we could not entirely blame them for their attitude. The fifty valley porters and the members trudged up the glacier and moraine in several inches of new snow and reached the 12,000-foot Base Camp site on June 6. The site was an alluvial plain, about 2,500 feet long and up to 300 feet wide, providing an almost ideal location. As the season progressed, it developed the unfortunate tendency to partly flood in mid-afternoon. Cattle which grazed nearby constituted the other 'natural hazard'. When not trying to enter our stone-walled kitchen area, they satisfied themselves with drinking our soapy clothes-washing water. This we considered only a minor annoyance until they began making off with the soaking clothes, too!

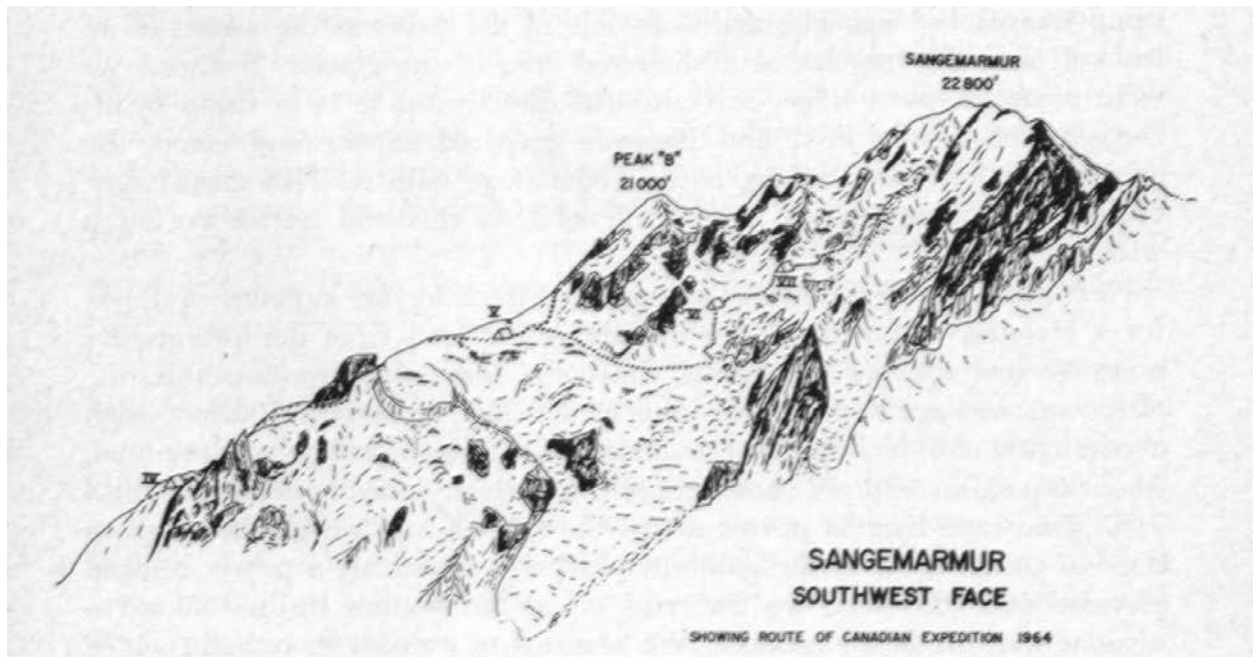
Forming the long northeast side of the Base Camp plains is an elevated moraine and further elevated glacier, a groaning fence threatening momentary collapse. Across this Muchutsil Glacier was an array of mountains. Batura rises to the north, a focal point for all eyes. Just to the west of it is a pass of 18,000 feet, which we referred to as Momin's Col. We later named it Batokshi Har, and the domed peak immediately west of the col, Batokshi. The name is derived from that used for the meadow below the peak, by the herders who hunt ibex there. Beyond Batokshi the ridge becomes very saw-toothed, culminating in Hachindar Chish, an awe-inspiring peak described by geologist Fred with the statement that "The upper part of the mountain [is] an almost monolithic mass of diorite, with nearly vertical sides and deeply serrated, heavily corniced ridges. . ." Appearing just to the left of Hachindar Chish is Evergreen Glades. From the Glades a 'grade 3' herders' trail leads into the West 3 basin. Forming the southeast side of the Base Camp plain was Sangemarmar, which rises at an ever increasing angle to its summit, almost directly above camp.

After organizing Base, reconnaissances were made to West 3 basin, a shoulder of Batura, and the head of the Muchutsil Glacier, which ends in a headwall. When all the information was gathered, it was decided that although Hachindar Chish would make a fine but extremely difficult climb, we were not prepared for such an extended technical assault as it would require. The next best mountain (barring Batura, which was unfortunately forbidden) was Sangemarmar, estimated at about 22,800 feet, or about 700 feet lower than Hachindar Chish. The best approach would be from Gymalin.

Sangemarmar

On June 12 the group started up Sangemarmar, going nearly to Gymalin, then heading almost straight up the scrub-forested hillside. A semi-permanent camp was established at 13,450 feet, near the top of the alpine meadows. A few days later we found oxen grazing nearby. As further supplies and climbing equipment were carried up from Base, a reconnaissance was made up a spur to about 17,300 feet, which proved to be a false lead, but an excellent vantage point. Base Camp appeared almost under our feet, a couple of dots almost 5,000 feet below. As the group began to descend again, Don cracked off a 10-inch-thick slab of snow, which broke across 20 feet below him and extended across the slope to the vertical ascent tracks. The descent was delayed two hours, then completed without incident.

The alternate route choice above the 13,450-foot campsite was up and across the gully which fed water to Gymalin, and thence up the adjacent ridge. Although the nights were quite cool, most of the climbing during the day was done in shirtsleeves. The altitude plus the high sun angle created a great warming effect on both climbers and snow. Another camp was established at 15,800 feet, which proved to be a very entertaining location.



Roots

A Sketch of Sangemarmur

by Roots, from a photo by him taken near the mouth of the Hasanbad valley, of which the Muchutsil is a branch. Site marked "V" was Advanced Base. Summit attempt was abandoned after a night in a crevasse at 20,650 feet.

As it was on a minor ridge near several avalanche bowls, the warmer hours of the day could be passed watching for avalanches to rumble and swish past.

From the 15,800-foot campsite, the route led up and across a large bowl and under a massive block of rock which obstructed the ridge. A steep but easily passable slope flanked it, so that a short traverse, three rope lengths up, and a steep snow ridge brought the route to the top of the block. A hanging glacier terminated level with the top of the block. An hour beyond, it provided a broad flat area with an excellent view of the top half of Sangemarmur. Here at 17,500 feet an Advanced Base Camp was established.

The view from Advanced Base was nothing short of superb. Rakaposhi now appeared clear of the West 1, 2, and 3 group of peaks on the west side of the Muchutsil. Stretching to the left of it was a sea of peaks. The first prominent one was Haramosh, some 45 miles away, then Minapin, connected to Rakaposhi, followed by Malubiting with its long flat high ridge running towards the summit. Then came Sangemarmur, and on the other side of it, Hachindar Chish thrust into the sky, surrounded by its protective ribs of sawtoothed ridges. Beyond it were even more mountains, unnamed and in many cases virtually unseen by man. Far below were the valleys, the herders' settlement of Gymalin beside the Muchutsil Glacier, and the Hunza valley with its fields, canals, and villages, 10,000 feet beneath us.

John, Lisle, and Karl were the first to select a route to attack, on the west ridge of what was referred to as 'Peak B' of Sangemarmur. The Advanced Base snow slopes changed to steep exposed ice; the slopes continued precipitously to Base Camp far below, and to a peak somewhere above. While working on the route they were forced to return to Advanced Base for the night. The second day they were still unable to locate a possible campsite on the slope, even after further step cutting. That night it snowed, and they were unable to continue their work on the route for 2 days. When they were finally able to renew the attack, it was necessary to make the steps again.

They continued their daily trip undaunted, always extending it, until June 29. When John and Karl returned late that evening, they had overcome the steep ice slopes only to find steep verglas-covered rock above. It looked hopeless, and the route was abandoned.

Meanwhile the others had been eyeing a more direct summit route up the face of the mountain, beginning in a massive avalanche bowl, and then swinging onto a broad ridge (which continued to the summit) between 20,000 and 21,000 feet. On the 29th a great avalanche swept most of the bowl from near the summit, funnelling through a narrow gap, and continuing several thousand feet further down the mountain. Since the avalanches invariably occurred during the afternoon, the other 18 hours of the day were quite safe for travel.

The following day, Fred, Brownie, and Don traversed the hanging glacier, then proceeded up the slopes towards the summit. Lisle portered extra gear the first day, returning to Advanced Base that evening. The four spent the afternoon on a small rock outcrop, around which the minor sluffs were able to pass. Supper on the rock was followed by 2 hours climbing to a campsite on the edge of an avalanche runnel. In the morning camp was packed up. The main obstacle of the day was the ascent of an ice wall and the traverse of a shattered area of the glacier. By noon we were protected by a ridge, so continued directly up to it to camp by its bergschrund. While Fred and Brownie prepared supper and camp, the crevasse lip fell away, taking parts of the stove with it. This meant slow cooking on an improvised stove made of food tins and an ice-axe strap wick.

Next morning we set out on an extended push for the summit, equipped for a bivouac, and with all the readily edible food from our rations. By noon we had reached the funnel. Since the snow was now unstable, the afternoon was spent protected from avalanches beneath a 100-foot high overhanging cliff, feeling that the danger of cliff deterioration was minimal. About 6 p.m. an 'express' shot through the funnel, delaying departure until 7:30. Two rope lengths put us across the funnel, and we climbed a steep slope of rotten snow in the gathering darkness. Reaching a poorly bridged crevasse at 20,650 feet, we traversed along the bottom lip and found a bivouac spot inside the crevasse. We planned to wait for moonlight, which was expected about midnight.

Instead of moonlight we received a snowstorm. With the added snow on already risky slopes, the attempt to reach the summit was abandoned, and the trio started down at 4:30 a.m., reaching Advanced Base about 6 p.m. that evening.

With the several inches of new snow on the upper slopes, it would be several days before the mountain stabilized itself. Supplies at Advanced Base were not plentiful, and by the time replenishments were brought up from the valley, there would be insufficient time and supplies left for another attempt. Therefore it was decided to abandon the climb completely, and spend the final 10 days nearer Base Camp.

The Beginning Of The End

Our final days and rations were used making shorter trips out of Base. We supplemented our dwindling rations with a duck which had collapsed near Batokshi Har, and with quantities of rhubarb found growing near Base, until it brought on the expected results of such a diet. John and Lisle made day trips checking the geology of the valley, and a 4-day trip to study the Shishpur geology. Most people enjoyed the restful atmosphere of Evergreen Glades for a day. Don and High-Altitude Porter Johar Ali climbed up to 18,000-foot Batokshi Har. Fred and Brownie followed suit 2 days later, continuing to Batokshi, some 800 feet higher. It was agreed that Hachindar Chish, having now been seen on most sides, offered no reasonable route from any direction. Pasu Mountain could be seen from the col, and also the high sharp ridge attaching Sangemarmar to the

Batura massif. It was the same ridge which separated the heads of the Muchutsil from the Shishpur. A potential route up Batura was also noted, rising from Batokshi Har.

On July 13 twenty porters arrived at Base to help the expedition return to Aliabad. For the members with their 80-pound packs the trip took 1 1/2 days. The valley porters with their 50-pound loads took a full 2 days. During the next two nights it rained heavily. We could already guess how this would affect the Hunza Road, but nobody objected to extending his stay in Hunza—especially after receiving an invitation to stay at the palace for a day, enjoying the Mir's hospitality. While we were there, the Crown Prince gave us a conducted tour of the 700-year-old Hunza Fortress. It stands today as Marco Polo sketched it, and despite its construction of mud, it has been besieged but never conquered!

Momin and Hermann had already left to arrange Momin's wedding in Lahore. His bride had been selected while he was on the expedition, and he was needed for the wedding preparations. Fred and Akhtar remained in Hunza with the gear, to accompany it on the jeeps. John, Lisle, and Karl walked to Gilgit, and Don and Brownie, down with stomach disorders, followed 2 days later. After the road was finally repaired, Fred and Akhtar arrived at Gilgit with the gear. Now however, the clouds descended, and the airplanes were unable to reach Gilgit.

Four restless days were idled away in Gilgit, never knowing when the sound of an airplane would trigger a wild dash for the airport. We used the time to make acquaintance with the Austrian expedition which had just completed the first ascent of Momhil Sar, and which at the time was the only successful expedition of the season. Finally, of course, the ceiling did lift, and we found ourselves back in Rawalpindi and the 110° heat of the plains. Buster greeted us like old friends, and we spent a few days with him. Akhtar had returned to the army quarters, and the expedition was over. Now came the big task—we must face reality and return to our old routines, the cities, and the jobs.

Food And Equipment.

R. Donald Lyon

The expedition endeavored to utilize Canadian products wherever possible. This was limited by the number of suitable items available, and by the cost on a few occasions. A repair kit was provided by Woodward Stores, and Duplan fluorescent red cloth was used for trail flagging. Weather reports developed expressly for the expedition and broadcast by Radio Pakistan were picked up on a Zenith Transoceanic receiver at Base Camp, and along with other communications were relayed from there with a Spilsbury & Tindall 30-watt transceiver to the S & T portable transceivers at the various camps. As far as Base Camp, a Coleman kerosene-burning pressure lamp, and a camp cooler (for film storage) were used. Manila rope from Canadian Western Cordage was used for hand-lines, porter needs for carrying, bundling and lashing, and general purposes. Trapper Nelson type packs were provided for the High Altitude Porters (HAPs), although they preferred the two Yoho Packs which were available for general packing, and for emergency toboggan use. Skreen glacier cream was used for sun protection. Special coated-nylon overmitts were made for the expedition by Miner Rubber.

American equipment included tents, down pants and booties, two packs, nylon ropes, and a few incidentals. The sleeping bags, wind suits, and remaining packs were from New Zealand, while all the other equipment was of European origin. Emergency oxygen apparatus was the British Everest type, by Normalair, while most of the woollens used on the expedition were donated by

two Norwegian firms, A. S. Stephansen, and Samnanger Fabrikker.

Choosing the most appropriate boots was a difficult decision. The expedition selected Everest-style reindeer-fur models as the safest. However, they are not designed for use in wet snow conditions, which extend to approximately 20,000 feet in the Karakoram. One of the best all-round boots continues to be the army Korean boot, or the commercial equivalent, at \$9 to \$20. Constructed of insulated rubber, they do not leak, freeze, require overboots for any reason, or shed fur. Since only one pair is needed, crampon adjustments are eliminated. Sweating inside the boots is minimal in the cold, and not a problem in warm conditions. The porters used them with skepticism, but otherwise with success. They are ideal for such peaks as McKinley.

The food packaging and most of the packing was carried out by the Varsity Outdoor Club of U.B.C. Their 900 hours of labor constituted the only club support received by the expedition. For shipment from Canada to the mountains, the gear was crated in surplus tea chests costing 10 cents each. Oversize items were packed in specially constructed 1/4 inch plywood cases. All containers were closed with Robertson screws to make them tamper-proof. The cases were painted with white Bapco paint for distinction and heat reflection, and banded with steel for durability. Most contents were also bagged in plastic. Since even the empty tea chests weighed 12 lb. each, and usually exceeded the 50-lb. porter load when full, many porter loads to Base Camp were made up in potato sacks. At Base, all equipment and supplies were covered with 6-mil CIL Milrol sheeting.

Except where serious specific climbing problems are anticipated the technical equipment is probably less critical than would be imagined. Climbing ropes are generally 9 mm. Rock pitons can be kept to a minimum, but ice pitons and screws, along with 3-foot snow stakes, and sacks for hand-line anchors, should be in some supply. A quantity of carabiners is also advisable. Spare ice axes and crampons should be available.

Since the Karakoram are much nearer the equator than the Canadian mountains, we must realize that summer daylight lasts only 12 to 14 hours, in contrast with the St. Elias and McKinley Ranges, for example, which offer up to 24 hours of light in their main climbing season. Headlamps are therefore useful, and anticipating some cold conditions, a number of alkaline batteries, which maintain most of their life expectancy when used in the cold, are advisable supplies.

Considerable effort was made to develop a diet which would be appealing to Canadians, varied yet balanced, and sufficient in quantity. A basic "Low Altitude" ration was designed for use during periods of heavy work, up to the level where altitude could be expected to affect appetites—about 17,000 feet. This was developed into four menus, averaging 4555 calories per man per day (man-day, or m/d). From this, four "Town" rations, averaging 3551 calories per m/d were designed for organizational and light work periods, mainly in the hot town climates. They featured juice drinks, freeze-dried fruit, and reduced carbohydrates. The third or "High Altitude" ration featured an increase in the easily digested carbohydrates, but a decrease in the less digestible and often troublesome fats, including the nuts, resulting in a diet averaging 3597 calories. Fortunately (or unfortunately, as it may be), most members were unaffected by the altitudes reached, and therefore were left hungry by the lighter "High Altitude" rations, which were eaten mainly at the Advanced Base at 17,500 feet.

The "failure" of the diet was the cheese, which under such conditions, even experts find difficult to preserve short of pasteurizing and canning. The most popular item was the canned nut-loaf pudding.

The 5-oz. daily cocoa ration was a special mix consisting of 5 tbsp. cocoa, 4 tbsp. sugar, and 8 tbsp. powdered instant whole milk (available from Kraft, U.S.A.). This produced 609 calories in

10 fl. oz. of hot chocolate. A better-tasting 4 1/2-oz. ration producing 546 calories per 10-oz. cup is 2 tbsp. cocoa, 4 tbsp. sugar, and 8 tbsp. powdered instant whole milk.

Although proven sufficient on Mts. McKinley and Logan, 1/4 oz. salt per m/d was insufficient, and should be increased to 1/3 oz. per m/d for the lower latitudes.

The butter, meat, beans, strawberries, raspberries, and nut-loaf were canned, and with the exception of the nut-loaf and butter, would have been more desirable if vacuum or inert-gas packaged in plastic. The pudding should have a rigid container; the butter should be canned to cope with frequent meltings and possible leakage, resulting in its loss, and damage to other commodities. The special butter quantities were canned expressly for the expedition.

The coffee was seldom desired, and the raisins and currants, intended for use in porridge, were eaten for lunch without exception.

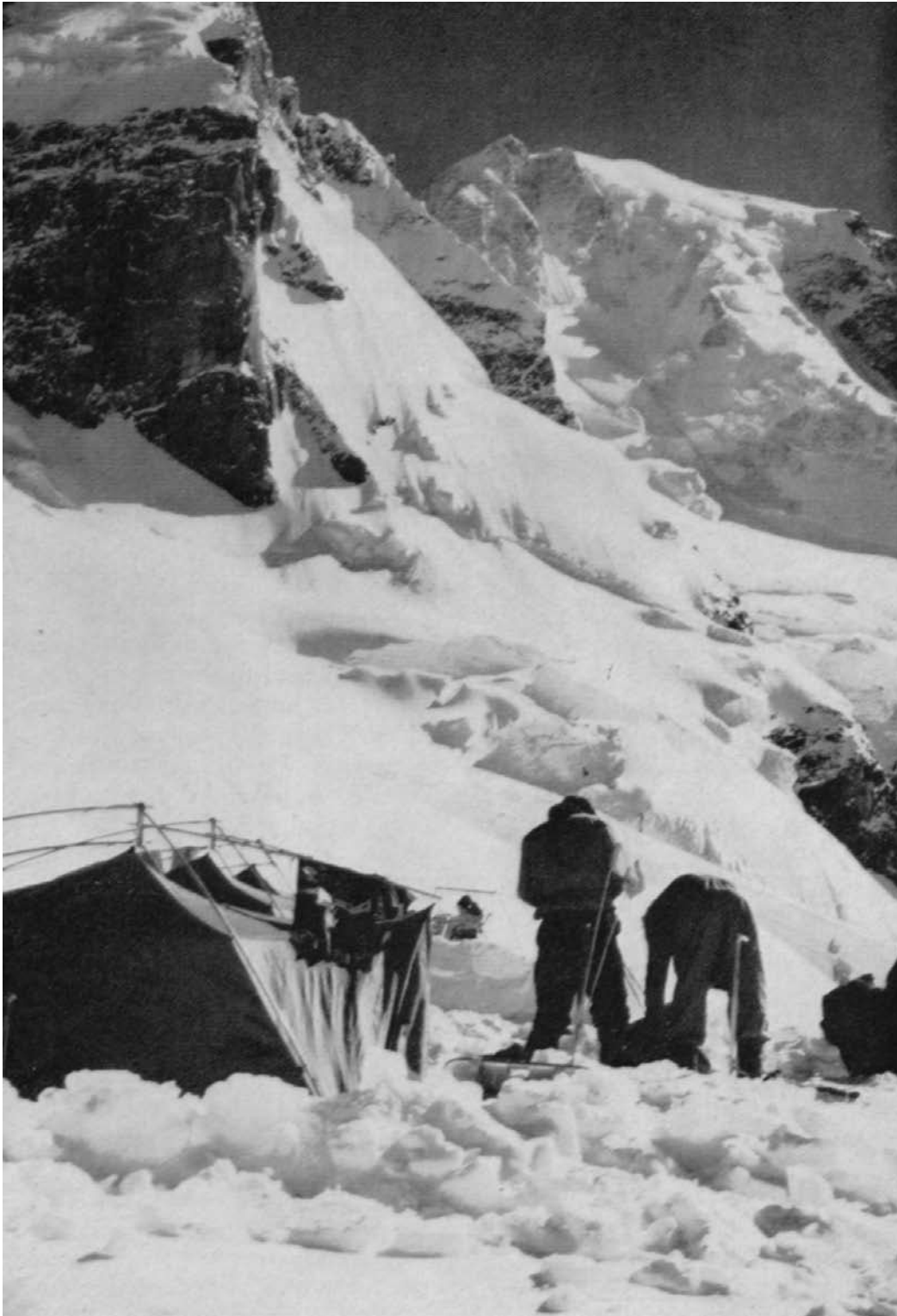
Lederle "Stress-caps", supplementary-vitamin capsules for pregnant women, helped balance the diets for the healthy males of the expedition!

Despite rough treatment and lengthy storage in adverse conditions, the food survived surprisingly well. Excepting the canned goods, all food was specially packed in Modern-Pak plastic bags, and closed with a sealing iron. In most cases the special packaging was necessary to acquire the required ration quantities; the sealing helped preserve the food, and keep it vermin-proof. All the food was prepared in 4 m/d quantities to create a complete 4 m/d menu in one master-bag. The master-bags were then color coded (and marked for Town, etc., use) as to the menu contained. Also included with the food in the master-bags was a supply of toilet paper; matches too would have been included but for the danger from fire, or unexpected loss or wetting.

Food Item	Cal-oric Value	Wt. Oz.	Consumption Zone I				Total lbs.-oz.
			Town ABCD	Low Alt ABCD	Hi Alt ABCD		
Oatmeal, instant	333	2	X	X	X		16-12
Oatmeal & wheat germ	208	2	X	X	X		16-12
Wheat cereal	200	2	X	X	X		16-12
Wheat germ/bran cereal	150	2	X	X	X		16-12
Milk, instant whole powdered	279	2	X X X X	X X X X	X X X X		67- 0
Cocoa, special mix	609	5		X X X X	X X X X		117- 8
Coffee, instant: use in am	—	1/7	X X X X				
use in am & pm	—	1/4		X X			3- 1
Raisins, for porridge	38	1/2	X X	X X	X X		8- 6
Currants, for porridge	35	1/2	X X	X X	X X		8- 6
Sugar	328	3	X X X X				
	382	3 1/2		X X X X			
	492	4 1/2			X X X X		122-12
Nuts, assorted	340	2	X X X X				
	510	3		X X X X			59- 0
Rye-crisp bread	93	1	X X X X				10- 0
"Laerum" bread: plain	360	2 3/4		X	X		16- 2 1/2
with cheese	240	1 3/4		X	X		10- 4 1/2
with whey	240	1 3/4		X	X		10- 4 1/2
Mt. Logan bread	275	2 3/4		X	X		16- 2 1/2

Cheese, varied types	165	11/2			X X X X	
	220	2	X X X X	X X X X		61-12
Candy, hard; individual packages	231	21/4		X X X X	X X X X	48-10
Fudge, dark and light	233	2	X	X	X	16-12
Chocolate bars, varied	290	2	X X	X X	X X	33- 8
Toffee	250	2	X	X	X	16-12
Fruit, dry: apricot	149	2	X	X	X	16-12
figs	170	2	X	X	X	16-12
assorted mix	150	2	X	X	X	16-12
dates, pitted	180	2	X	X	X	16-12
Juice, varied crystal powders	56	3/4	X X X X	X X X X		17- 4
Butter, specially canned quant.	208	1	X X X X			
	416	2		X X X X	X X X X	43- 8
Bouillon cubes (1/4) , soup powd. (1/4)	43	3/4		X X X X	X X X X	23-14
Beef, freeze-dried cooked cubed	457	3	X X	X X	X X	50- 4
Chicken, as above	331	3	X X	X X	X X	50- 4
Rice: veg. & rice mix, instant	204	2			X	
	408	4	X	X		28- 4
Spanish rice mix, instant	216	2			X	
	432	4	X	X		28- 4
Potato, instant powdered	151	11/2			X	
	303	3	X	X		21- 4
Spaghetti (noodles)	216	2			X	
	432	4	X	X		28- 4
Soup greens, dried	10	1/4	X	X	X	2- 1 1/2
Soup, tomato, as a sauce	40	1/4	X	X	X	2- 1 1/2
Soup, tomato & mushroom as sauce	40	1/2	X	X	X	4 3
Beans, freeze-dried	62	1 1/2	X	X	X	4- 3
Peas, freeze-dried	25	3/4	X	X	X	6 4 1/2
Puddings, instant, assorted	60	2	X			5- 0
Apple sauce, instant mix	100	1	X			2- 8
Raspberries, freeze-dried	111	2	X			5- 0
Strawberries, freeze-dried	151	2	X			5- 0
Date-nut & Fruit-nut loaf pudding	200	2		X X		13- 0
Cookies, assorted types	250	2		X X		13- 0
Salt	—	1/4	X X X X	X X X X	X X X X	8- 6
Tea, bagged: use in pm	—	1/7	X X X X	X X		
use at noon, in pm	—	1/4				4-15 3/4
TOTALS: Food Supply & Weight			160 m/d	208 m/d	168 m/d	1020-11 1/4
CALORIC VALUE, Average			3351 1/4	4555 1/2	3597 1/2	

Dietary supplements included multiple-vitamin capsules, salt tablets and iron tablets.



Khalifa

Advanced Base Camp

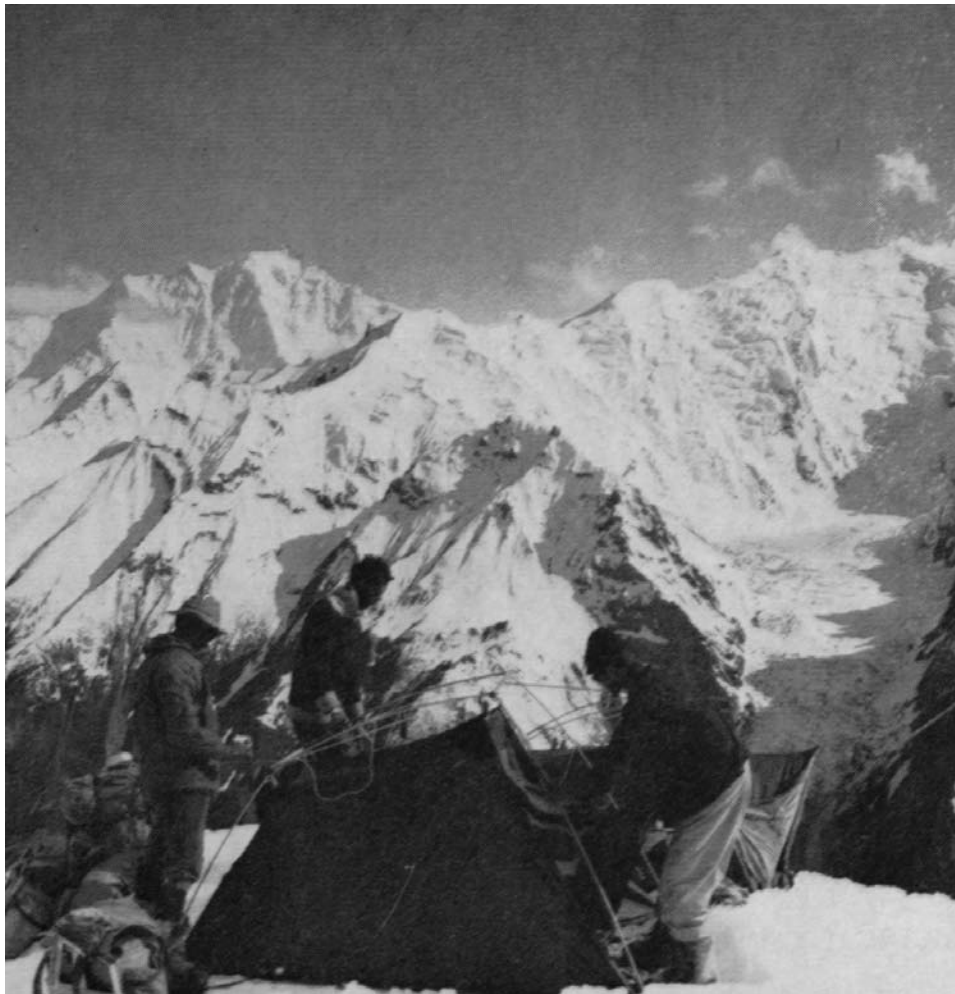
(Camp 5 on Sketch) at 17,500 feet and the summit of Sangemarmar. The route lay up the central bowl to the top ice cliff, thence up the minor ridge to the summit. Ascent terminated just above ice cliff.

Climatology Of The Western Karakoram.

Donald M.E. Poole

One of the more important reasons for choosing the Western Karakoram as an area in which to attempt a high mountain was the climate. This northwest corner of the mountain chain is sheltered from the monsoons by the Panjal Range of hills to the south. The storms that do carry over from the monsoons arrive usually after mid-July, are quite irregular, and usually short in duration.

The Hunza Valley seldom receives the effects of monsoon weather as it is further sheltered by the particularly high mountain ridge to the south which includes the mountains Rakaposhi and Minapin. During the expedition it was noted that often while Rakaposhi was enclosed in storm clouds, the Batura Mustagh north of the Hunza River was relatively clear of cloud.



Jamek

Members Establish A Camp At 15,000 Feet On Sangemarmar

The unexplored peak and glacier on the right are across the Muchutsil Glacier. Rakaposhi is prominent in the background, 20 miles away.

The Hunza and Gilgit valleys are often considered to be a desert area because of their very low rainfall (about 3.5 inches annually at Leh, 11,503 feet, the nearest meteorological station). With

this arid climate the Hunza road is possible. Any significant rainfall results in many "washouts" of this road. Also the mud huts with mud roofs are feasible because seldom is there over four to five days of continuous rain, which would cause serious leakage. Extensive irrigation using glacial runoff keeps the valleys fertile.

The precipitation on the peaks and high valleys is considerably more than lower down. This explains the extensive glaciation at the higher levels and the moderate vegetative growth at the 10,000 to 14,000-foot levels.

The temperature in the Hunza Valley (elevation about 8,000 feet) is moderate the year round. In summer the days are usually quite warm (although seldom over 90°F) and the nights are cool (approximated 40-50 °F). During winter the temperature is seldom below freezing and when snow does fall it usually remains only a few days. June is the month of greatest temperature increase with the resulting high runoff and occasional flooding.

During the 70 days the expedition spent in the mountain area the weather was extremely good. Precipitation occurred on 11 of the days; but on only 3 of these did the storm last most or all of the day. Over half the time (39 days) the days were mostly sunny, warm, and calm; and the nights clear and cool.

The lowest recorded temperature was 5°F at Advance Base Camp at 17,500 feet; and the lowest temperature experienced was likely not less than 0°F. Towards late June the days became extremely hot when there was no wind; particularly in the afternoons between 1 and 4 p.m. The snow was very soft and extensive avalanching occurred. Being on a southern exposure caused much of this. The cool nights solidified the snow making a crust which could be walked on until about 10:00 a.m. (At one point the maximum-minimum thermometer was left in a pack in the midday sun and recorded a temperature well over 140°F, the end of the scale.)

Winds were generally light with the maximum recorded velocity being 20 m.p.h., with gusts to 35. This was fortunate as most of the camps were in exposed locations and high winds would have caused some difficulties.

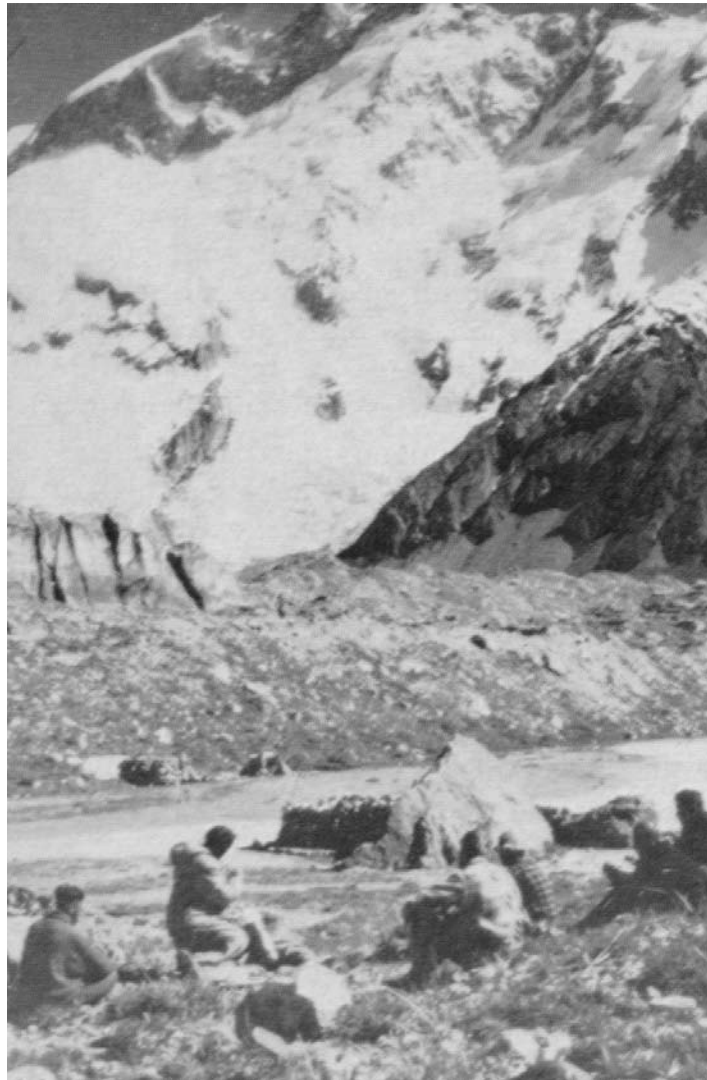
The occurrence of cloud during the expedition was surprisingly predictable, particularly in May. Clear mornings were often followed by a buildup of cumulus clouds around the high peaks starting about noon. Hachindar Chish almost always was the precursor to cloud formation extending elsewhere. By mid afternoon the sky would be partly overcast; but this cover would usually dissipate as the sun set. The cloud level was almost always about 20,000 feet, encasing the summits of most of the peaks. During June and July this cloudiness was less frequent, although it was not uncommon to see small cumulus clouds around the tops of Hachindar Chish and Batura.

Each evening at about 8:30 Radio Pakistan broadcast weather forecasts to the various mountaineering expeditions within its boundaries; including the Austrian expeditions to Momhil Sar and Minapin, the Norwegian expedition to Tirich Mir, the Irish expedition to Rakaposhi, two German expeditions to peaks in the Eastern Karakoram, and ourselves. These forecasts were helpful but of limited accuracy.

Being surrounded by high mountains on all sides, and sheltered from the monsoons off the Indian Ocean, the Batura Mustagh has better weather conditions than many, if not all, other mountain areas in the Himalaya and Karakoram.

Medical Considerations.*Karl M. Tomm*

For any group of people entering a relatively isolated area under hazardous conditions for an extended period of time, the good health of each individual is important for continuing effectiveness. And in an expedition to the Himalayas one is not only concerned with the medical problems of climbing at high altitude but also with the health hazards that may be encountered in an unfamiliar subtropical environment. Thus adequate preparation before departure is very important. A complete medical examination including chest x-ray and routine laboratory tests should be done well in advance to rule out major problems and allow time for adequate treatment of such minor ailments as warts, athletes' foot, chronic tonsillitis, sinusitis and dental caries.



Roots

Dr. Khalifa Demonstrates The Oxygen Equipment At Base Camp.

Batura, 25,540 feet, stands in the rear; "Momin's Col" is at the left edge of the photo

A basic knowledge of the communicable diseases prevalent in the area being entered should be obtained. Despite rapidly improving health conditions in Pakistan, malaria, smallpox, cholera, typhoid fever, and dysentery are still endemic. The local doctor at Hunza reported some tuberculosis and a high incidence of infected wounds and ascariasis (round worms). Immunization against smallpox, cholera, typhoid and tetanus are essential. Shots against yellow fever and typhus should also be taken since they may be encountered en route. A useful schedule for anti-malarial therapy is one tablet paludrine (100 mg) daily while in a malarious area and then one tablet primaquine daily for two weeks after leaving.

All medical supplies for our expedition including medications, dressings and instruments were willingly donated by 26 different companies. The quantity taken was far in excess of what was actually required and eventually most of these supplies were given to the local people and doctor at Hunza.

On arrival in unfamiliar tropical or subtropical countries one should limit physical activities until accustomed to the heat and take precautions to avoid eating foods that may be contaminated, especially fresh salads and ice cream.

As with most newcomers to the Asian subcontinent virtually all members experienced some gastrointestinal upset. Some authorities feel that the universal minor upsets are due to chemical irritation of the bowel by the unaccustomed food and water. Three members had rather severe upsets with abdominal pain, diarrhea and spiking fever. Although diagnostic facilities were not available these episodes were probably bacillary dysentery. They subsided promptly with antibiotic and symptomatic therapy. One member developed abdominal discomfort again after the expedition and on investigation was found to have amoebic dysentery. The only other ailments we encountered in the tropical region were acute tonsillitis, sunburn and insect bites (mosquito and tick).

Once in the Karakoram Mountains medical problems were of quite a different nature. The major hazards of climbing at high altitude are mountain sickness, radiation, dehydration, frostbite, and injury.

Mountain sickness is a condition resulting from the effects of hypoxia (oxygen deficiency) on body tissues and occurs when the rate of ascent to altitude exceeds the rate of adaptation. Symptoms may include headache, malaise, shortness of breath, anorexia, irritability, insomnia, nausea and vomiting. Treatment is to descend to lower altitude or to administer oxygen, the former being much simpler and more practical. Why some apparently healthy people acclimatize slowly or not at all has not yet been explained.

Although most of our members admitted some slight symptoms during the ascent only two members were seriously affected. They were forced to return to and remain at altitudes below 14,000 feet for relief of symptoms. An interesting observation is that these members were the only two who were regular smokers, even though they developed a distaste for cigarettes above 16,000 feet. Carbon monoxide absorbed from cigarette smoke renders the hemoglobin of the blood stream ineffective as an oxygen carrier. Aviation experts claim that a heavy smoker could saturate up to 10% of his hemoglobin with carbon monoxide which would, in terms of oxygen available to the tissues, place him at an equivalent altitude several thousand feet higher than he actually was.

A rather peculiar phenomenon arose on ascending above 14,000 feet. Various members complained of a disturbed taste sensation. One thought he had burned his tongue but could not remember when. Two others felt that the rancid cheese was to blame. Three others claimed that the lip creams were irritating their tongues, however, they were not using the same products and

had been using them for about two weeks prior to the ascent. The taste disturbance was generally felt to be most pronounced at 17,000 feet and waned mysteriously over a period of 7 to 10 days. A medical officer for an early Mount Everest Expedition, reported that at an altitude of 19,000 feet one member could not taste onions and another could not taste peppermint. When they descended to 16,500 feet the taste was restored. Researchers in the Alps tested taste thresholds for bitter, sour, sweet and salty and found them lower than normal at 11,500 feet, but raised when above 17,000 feet. In retrospect, it seems probable that the disturbance noted in our expedition, though confusing, was related to hypoxia.

Unless prepared for, solar radiation may become a problem at high altitude. Sunlight is poorly filtered in the upper atmosphere and is reflected by the snow and ice. Hence ultraviolet light is intense and may cause severe burns on exposed skin (sunburn) and the conjunctiva of the eyes (snowblindness) unless protective creams and goggles are employed.

At high altitude there is increased loss of body fluids with increased pulmonary ventilation and general body perspiration. Whereas the average body requirement is 1 1/2 liters of fluid per day, above 20,000 feet it is considered to be 5 to 6 liters. With water not readily available, dehydration can become an insidious hazard, so a deliberate effort to replenish fluids must be made.

Frostbite is much more likely to occur at high altitude than at sea level and thus greater precautions should be taken to stay dry and warm. Low temperatures were never really severe in our experience in the Karakorum and there was only one case of severe cold discomfort after both gloved hands had become wet. Friction blisters on the feet were plentiful and one became infected, requiring surgical drainage. Fortunately there were no serious accidents and no major injuries occurred.

Deterioration of group relations at high altitude or in isolation has often been documented. Although no serious overt rifts developed during our expedition, some members were visibly annoyed to realize differing, and at times conflicting, motives. Such a development was not surprising when so many of the members had only met each other for the first time in Pakistan immediately prior to the climb. There is no doubt, however, that the whole experience was rewarding to all participants and created many enduring friendships.

Planning Expeditions.

R. Donald Lyon

Perhaps the greatest problem which faced the First Canadian Himalayan Expedition was the acquisition of pertinent information and advice. With no prior Canadian Himalayan-Karakoram expedition to consult assistance was sought around the world, from such people as the late Wilfred Noyce, Dr. Michael Ward, Dr. Charles Houston, Nick Clinch, Walter Romanes, Eric Shipton, and Barry Bishop. Often however, little knowledge of the particular regions in question was available, nor was a Canadian diet on record. Equipment records from assorted expeditions were of considerable assistance, as were photographs which some individuals and books were able to provide.

A recognized name for the venture, and appropriate letterhead can make a surprising difference in gaining support, assistance, and information, and should be one of the earliest steps of the group. It is advisable to develop headquarters where a minimum of two members reside. These people should lead the organizing, although as many members as possible should share the work and decisions of the preparations. In gaining information and advice on all aspects of an alpine

expedition away from North America, the Swiss Foundation for Alpine Research in Zurich is very helpful. They will often assist in ordering supplies and equipment (of Swiss origin) on behalf of the expedition, upon request. Most embassies (High Commissions among Commonwealth countries) can be of considerable assistance. The formal application for permission to climb is forwarded through them, and the permission is in turn received through them. They can be of considerable assistance in gaining customs clearance for the expedition gear, in entering and leaving the country of the climb.



Lyon

Minapin (Diran), Elev. 23,550 Feet

as seen from Advanced Base Camp on Sangamarmar. The ridge at right connects Minapin to Rakaposhi. Above the center of this ridge can be seen stump-like Haramosh

The complete aims, obligations, and philosophy of the venture should be made known to all involved in the trip. Based on this, a simple agreement should be drawn up regarding authority of the leader, obligations of the members, settlement of expedition obligations, and rights to use of photos and story or any other gains which may be derived through the trip.

We tend to think that North Americans are much better off than Europeans, but in terms of expedition support, this is not the case. Aside from a few donations and a number of discounts from 10% to wholesale or cost price, very little support has been available in Canada or to Canadians,

even from most of their mountaineering clubs. The approximately \$3,000 per member cost of a Himalayan type trip must therefore be borne largely by the individuals participating. Being closer to the Himalayas, and connected by land, Europeans can run less expensive expeditions. Most of the European expeditions receive extensive business and alpine club support. For example, an Austrian expedition equivalent to the Canadian expedition and also climbing in Hunza received approximately \$20,000 from an Austrian alpine club, plus the free use of a panel jeep-type vehicle, which permitted them to drive to the Pakistan interior at low cost, and also avoid the lengthy customs clearance by accompanying their equipment. They also received a number of lesser donations and loans.

In seeking support for an expedition, it should be kept in mind that the assisting organizations or firms will generally want something in return— be it only a few photos of the trip. It should be decided whether the considerations sought will be worth the probable obligations to the donor: even appropriate photos taken on the trip can be difficult and time-consuming to obtain. Often reports must be made upon return (in addition to the photos), when the members' attention has moved on to other things.

Through published and unpublished knowledge and information gained through the venture, the First Canadian Himalayan Expedition looks forward to being of assistance to other mountaineers planning expeditions, and will offer whatever information and advice which may be available.

Notes And References.

R. Donald Lyon

The Hunza valley is the main western pass-route through the mountains from the Indian sub-continent to the Sinkiang interior of China. For centuries it has been a route for caravans trading in tea and silk, for adventurers such as Marco Polo in the 13th Century and the Citroën-Haardt Trans-Asiatic (motor) Expedition of 1931-32, and for conquerors such as Alexander the Great in the 4th Century. The Hunzakuts are unlike any of their neighbors, and are believed descended from Alexander the Great's Hungarian Army warriors and their Persian wives! Until 1891, their income consisted largely of tolls collected from caravans using their valley as a trade route.

As the people of Hunza are unlike their many neighbors, so is their language, Burushaski. Dr. H. Berger of the University of Heidelberg South-Asian Institute reports several interesting aspects of the language and the local toponomy. Villages and streams have definite names, but high mountains and glaciers do not. It is probable that names given for these features are sometimes fabricated for visitors. Thus the peak immediately behind the Hunza Palace is referred to by Marcel Kurz as "Boiohagur Duanasir", by the British (probably from the Shipton surveys) as "Atabad Boiohagur", and by the Mir of Hunza as "Ulter". Some features and town names are derived from now extinct sources — older than Burushaski. This is apparently the case for most meadows and sites in the Hasanabad valley system, whose names have no present meaning. In the Hasanabad valley, the glacier of the west branch (where the First Canadian Himalayan Expedition climbed) is referred to as the Muchiohul on the U.S. Ordnance map. This is apparently incorrect, and is better spelled "Muchuchil", as in the 1960-1961 Mountain World map. Dr. Berger however states that "Muchutsil" (muchu — of unknown meaning + -tsil — "water") is probably best. Hachindar is a recognized local name, Hachindar Hill being a 14,908 foot survey station at the mouth of the Hasanabad valley; "Kish" should be "chish", Bur. for mountain. Sang-e-marmar is Urdu for stone-of-marble, suggested by the expedition.

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Baffin Island 1965

P. D. Baird

I have to admit frankly to being a propagandist for mountaineering in our arctic and particularly on the great island of Baffin—the first part of Canada I ever saw and still the best loved. But then I was brought up in the nearly treeless north of Scotland in a high enough latitude (58° N) for there to be only a slight darkening of a June midnight. In the arctic tundra there are no dismal stumbling marches through dark woods or fights with slide alder—the birds are seen as well as heard—all the flowers and beasts are familiar friends; there is not the clutter of species that only a real botanist can identify and enjoy.

In Baffin we have our friendly patches of green life, but always the sight of great sweeping glaciers and hard clean pinnacled rock ridges, vast slabby north faces streaked with lichen markings and the sounds of rushing water all of the short summer.

Baffin Island mountains rise 6,000 to 7,000 feet from sea level but it is difficult to adjust oneself to the scale of things and expeditions tend to take double the estimated time. But does this matter when there is no night? Only if one's muscles give out! If you think they will, then you should carry bivouac equipment with you on the climbs, sleeping perhaps in the warm daytime and climbing "at night". This brings us to one of the differences between our A.C.C. camps of 1963 and 1965—the former was in August—the latter in July. In August appreciable and increasing midnight darkness is oncoming, the melt streams are high, but snow conditions are good. In July there is no night, the glacier torrents are less formidable, but wet, soft snow is present on the upper glaciers and snow-domed summits, and lightweight skis or bear-paw snowshoes would be useful adjuncts to the climbing gear. We were lacking these unfortunately at this camp.

In 1965 we had picked July for our expedition, and fifteen of us assembled at Montreal Airport on July 5. Some of us were other than mountaineers. I had invited the well known Canadian landscape artist, A. Y. Jackson, to accompany us, his niece Geneva Petrie went with him, and she and Una Wardleworth looked after our comforts with great success, turning out delicacies on the primus stove and camp oven. Dr. Jim MacDougall of the Montreal General Hospital came as our medical man and with a sandblast technique also created many views of great artistic merit. Mary Blade also did some fine detailed sketches of plants. So we had a lot of artistic skill.

I was determined this time to reach the summit of Pangnirtung Pass and had sent in through the winter and spring, stores of food and lumber. But the question was how to get there in July when the lakes were still frozen but weakly so. This can only be done by the use of the recent technique of big-wheel, short-landing aircraft. We had picked out a flat beach area on the shore of Glacier Lake from air photos and this luckily proved adequate with 200 yards of fairly smooth runway. But the aircraft company we had hoped to use let us down, and we had to get Weldy Phipps with his Otter all the way down from Resolute. We couldn't have had a better pilot however and he did the job of putting us in perfectly. I got in under a low ceiling with Mike MacCallum on the evening of July 7, 45 hours after leaving Montreal, and all the rest of the party and our equipment were in by the next evening.

So we set up camp. The disappointment here was that the plastic igloo designed by Phil Delesalle had not been cached with the rest of our stores; it was at Pangnirtung, 40 miles distant and neither the Otter nor the Canso which evacuated us was able to load it. So it was a purely tented camp after all—three large ones and a scatter of personal variously colored two-man tents situated on a sandy flat with the most magnificent views down the pass and west to the shapely

tower of Asgard when we could see the view, for soon after our arrival damp foggy weather set in for a few days. Later however the weather improved greatly and was very good for the latter part, so much so that we returned well sunburned.

Another minor tragedy was an error in the food supply. The first day a party (Spitzer, Paul, and MacCallum) set off to row around the lakeshore along the tenuous and often ice-blocked lane of open water to collect our lumber which had been cached by Eskimos in the wrong place. I suggested they take some chocolate bars for lunch, but a search of our food cache failed to reveal any. Later we found that as well as no chocolate we had no milk or sweet biscuits either, but instead 600 lb. of unneeded white sugar! The wrong pile of food must have been loaded for us by mistake. We just had to get used to porridge, coffee and tea without milk. At least it saved the cooks the trouble of mixing it, and despite its lack, they made all kinds of cakes and cookies.

For a couple of days we could cross the lake on the ice, with some leaping fun getting on and off it, but thereafter we considered it unsafe, and on July 22 the line on which we determined our break-up sweepstake was clear of ice altogether. There was still a little heavier snowdrift ice around when we left, but the lakes were then virtually clear (July 30) whereas on the same date in 1963 they had been nearly solid. 1965 was the more normal year, corresponding closely to 1953, when I spent the summer in and around the same locality. But then Turner Glacier divided the two lakes, Glacier Lake flowing northeast in a turbulent stream which I had difficulty in crossing in mid-July. Today with Turner's retreat, Glacier Lake flows through narrows into Summit Lake and thence south and the former exit is dry. It was this situation which the Cambridge University party (see A.J. Vol 67, p. 97) met unexpectedly in 1961; we saw the remains of the fixed rope they had used to help raft across the narrows.

On July 10 I visited our old campsite of 1953, where the Cambridge party had camped also, and retrieved all sorts of things, some useful (such as a spout for pouring from 10-gal. drums), others less so (such as 10lb. of nut pemmican, which I was keen to try, but from which our doctor, with mutterings about botulism, dissuaded us).

Later we visited the site on several occasions by boat including A. Y. Jackson in one party. The grave of Walter Battle, our companion in 1953 who was accidentally drowned nearby, was found in good condition.

Despite the not too favourable weather, climbing began on the evening of July 9. Mt. Battle, 4,400 feet, was selected as a training excursion and three parties went up taking 7 to 10 hours to make the round trip. Later two of our ladies made the ascent with Fritz Steinhardt and some route-finding difficulties caused them to take 17 hours! I note from my diary that the first ascent I made in 1953 took 2 hours 20 minutes up; 1 hour down. Oh dear, I was younger then!

Slow going was to some extent our bugbear throughout the camp. This was due to several factors—horrid soft wet snow on the glaciers and summits early on, parties a little too large, climbing technique too belayful. But perhaps chiefly it was the knowledge that there was no chance of benightment, no urge therefore to speed on as in mountains in lower latitudes. So you can be leisurely, doze in sunny corners, photograph blithely, and only have to have your muscles in good shape and be able to go sleepless.

MacCallum, Paul and Rosenbaum set off to climb Tête Blanche, 7,070 feet, our highest Baffin peak, by the rather fierce east ridge. They only reached a peak on the ridge, which since it was July 14 we named Bastille. This ridge is undoubtedly one of the finest expeditions from base and must be completed some time.

Our party included two professional astronomers as well as two mathematics professors.

They set out to calculate the chance of seeing the midnight sun from a local peak and decided that the 6,400-foot mountain east of Highway Glacier and only 6 miles from camp would provide this, if one went soon enough. So on the night of July 13-14, Morton, Spitzer, MacDougall, Blade and Frantz set off. But the weather and sore feet upset the project, and only the last two made the lower shoulder of the mountain in thick cloud.

Next, Morton, Spitzer and I climbed the easy 6,000-footer behind camp which is the first peak of the “Valkyrie” range—a normal day’s excursion from base and a fine viewpoint, even better than the lower Mt. Battle opposite.

On July 16 six of our climbers left for Mt. Asgard and the account of their trip is given by Don Morton in a separate section (page 34).

While this group was on Asgard, Blade, Steinhardt and I ascended the ridge of Friga south of Turner Glacier. Time again precluded us from getting to our projected ridge peak; from our final point I watched Asgard hopefully with binoculars hoping to see the party atop but they were actually much too late.

On July 18 the Blades and Steinhardts set off for a trip down Owl Valley, the northeastward section of the pass. This valley was full of life: lemmings, owls, fish, etc. in 1953, but 1965 was a low biological year and though they enjoyed the comparative greenery of this valley, the wildlife was disappointing. Leaving their wives in a camp below the sensational cliffs of Ozymandias, Blade and Steinhardt pushed on to within 6 miles of tidewater before returning.

Meanwhile the Asgard group prepared for further conquests and six of us set out southward by boat on July 20. We had a lot of ice breaking and ice dodging to do but worked our way in 3 hours down to the point of Branstock Glacier’s moraine on Summit Lake. Morton and Spitzer headed on down for a camp at the base of Thor, their next objective. MacCallum and Paul camped almost immediately. Rosenbaum and I tackled the peak above, Mt. Gram, starting up at 1:45 p.m. It proved a pleasant moderately difficult rock climb, at one point of which I made a sudden 10-foot descent into a snowbank, and at 8 p.m. we reached the first summit of the peak. But the higher square-top was separated from us by a gulf 70 feet down and a sheer 150 feet up beyond. We decided to call it quits and descended the easy east ridge and thence to the Branstock Glacier, reaching our boat after midnight. By now the ice had moved—we had a strong following wind and managed with some difficulty to manoeuvre our way back to camp in a little over two hours.

July 22 was our warmest day. It had been down to 34° with a touch of snow early on July 12 but today the temperature rose to nearly 70° and NO mosquitoes. Rosenbaum and Frantz went off and climbed Valkyrie 2 (Svanhvit), some of the rest of us boated over for a glorious sun drenched picnic at the old 1953 base camp site. At night the Owl Valley party arrived home.

Next day Morton returned having climbed Thor and seen Spitzer off on his walk to Pagnirtung, whence he had to leave earlier than the rest of us. The next day, a damp one, MacCallum and Paul also returned. (The account of these climbs is given separately.)

Now time was running out on us. One great peak had challenged me and others for over 12 years. The Cambridge group had tried it and had to quit, and there it stood dominating the Turner Glacier with a Matterhorn-shaped peak. From air photos it looked as if the unseen west ridge would be the easiest route so we decided to camp up near there and try it.

After lunch on July 25 Morton, MacCallum, Paul and I set off and in 6 hours had reached a campsite on snow at about 4,300 feet. From here we had a 500-foot scramble to the ridge and then what—1,200 feet of ascent and three quarters of a mile. Little did we know that it was going to take us 15 hours to the summit and then 13 to retrace our steps.

It is still a mystery to me why we took so long. The ridge was of continuous moderate difficulty with several pitches of grade 4 and certainly one of grade 5. We were four on a rope which gave me, as number four, plenty of chance to photograph the leader and others in action, only to find that most of my pictures were numbers 21 to 36 on a 20-exposure roll.

To our left the ridge tended to overhang for 2,000 feet, to our right the angle was better and most problems were turned that way. But there was one chasm which had a 20-foot vertical further side with only one thin crack; five pitons with foot slings got us up this, with Mike doing a fine lead. It had been misty as we climbed and we waited a while for the final tower to clear so we would see its problems. Just then the sun was setting behind the Penny Ice Cap and a wonderful orange glow appeared on the rising mists to the north. In two more hours we were on top and the cloud had vanished; all around we saw this wonderful Baffin world—peak and face, snow cap and valley. It was a cool midnight while we were atop “Loki” as we wish to name this peak—the younger climbers allowed me the privilege of first foot on the giant overhanging block which formed the summit.

Soon, as we headed back, the sun hit us and our slow return was warm and glorious. Six rappels we had, three of them of 150 feet. At the chasm Mike MacCallum, now very sleepy but springing always to a hard lead, got up the far side from which we had bashed most of the holds on our descent. I got a good pull on the rope here. So on in the warmth, with rocks falling as we left the ridge and made our way down to the glacier. Into camp at last after 29 hours and, though my efforts were shot, Bob Paul still had energy after supper to climb the 100 feet to water and fill our pots for breakfast. This we ate at midnight, and then walked a brisk 4 hours down Turner Glacier to a second breakfast at base.

While we were away, Blade and Frantz had had a good climb on the fourth of the Valkyrie range, and of course there had been that 17-hour trip on Mount Battle, with Bill Frantz waiting to bring them back by boat.

Now we had a day to recover, the first on which we might expect our relief aircraft. But it did not appear till 4 p.m. on July 29 and then after circling us for half an hour, landed on the wrong lake. Bill and I had a 50-minute row to reach it and persuade the pilot that our Glacier Lake gave a long enough take-off for at least half the party. (In fact there are 1 1/2 miles of good water but he, like the rest of us earlier, had failed to grasp the scale of this country.) So we left in two groups—the first to spend a few hours in Pangnirtung and the remaining five of us to cache our surplus supplies and wait for the Canso to return.

When it did at 5 a.m. on July 30 we quickly boarded and took off, and picking up the remainder, transferred rapidly to Nordair's plane at Frobisher and were in Montreal in a little over 10 hours.

En cache we have left some food, fuel and cooking equipment—two tents and four ropes for future groups of climbers in this wonderful climbing area. During the coming winter I hope our “Igloo” will be emplaced and the Club will then have a fine base for some of the most exciting and novel climbing that Canada can provide.

It is of value here to insert a brief note on the activities of the last mountaineering party which camped at Summit Lake—the Cambridge University group of 1961. This consisted of R. E. Langford, (leader), G. Bonham-Carter, T. A. J. Goodfellow, A. R. Crofts, C. W. Barlow and J.W. Dale.

They travelled by air to Broughton Island thence by Eskimo boat to the head of the North Pangnirtung fiord arriving there with over a ton of food and equipment on July 19. During the

next 6 weeks they traversed the pass to (South) Pangnirtung fiord, entailing a colossal amount of backpacking. In view of this, and that certain scientific work was done en route, it is surprising that they managed what they did in the way of mountain ascents.

In the north part of the pass they ascended Mt. Fleming and Midgard; at Summit Lake Mt. Battle, and the two peaks next east which they called Turl and Siki. By now they were well into August and after constructing a raft to cross the unexpected connection between Summit and Glacier Lakes (which had not existed in 1953) they tackled the really tough peaks to the west under conditions of oncoming cold and much fresh snow and ice. Even so they achieved the south summit of Mt. Friga and the col between Asgard's twin summit, but were unable to complete the ascent of Asgard or of Mt. Loki which they attempted by the ridge which we ascended this year.

Following a list of our party and ascents two detailed accounts of special climbs are given.

1965 Expedition Members:

Pat Baird	A.C.C.....	Montreal
Ellis Blade	A.C.C.....	New York
Mary Blade	A.C.C.....	New York
Bill Frantz	A.C.C.....	New York
A. Y. Jackson, R.C.A.		Ottawa
Mike MacCallum		Montreal, now Vancouver
Jim MacDougall, M.D.		Montreal General Hospital
Don Morton	A.C.C.....	Princeton
Bob Paul		Montreal, now Vancouver
Dee Petrie		Montreal
Stan Rosenbaum	A.C.C.....	Ottawa
Fritz Steinhardt		New York
Marya Steinhardt		New York
Lyman Spitzer		Princeton
Una Wardleworth		Montreal

Ascents:

Mt. Battle (4,420 ft.)	July 9/10	MacCallum, Paul, Rosenbaum, E. Blade, F. Steinhardt, Frantz
Midnat S. peak (1st)	July 13/14	E. Blade, Frantz
Bastille Peak (1st)	July 14	MacCallum, Paul, Rosenbaum
Mt. Alvit (1st)	July 15	Baird, Morton, Spitzer
Shoulder Friga Ridge (1st)	July 17	E. Blade, Baird, F. Steinhardt
Mt. Asgard N. top (3rd)	July 17/18	MacCallum, Morton, Frantz, Spitzer. (Paul and Rosenbaum to col)
Mt Gram (E. top) (1st)	July 20	Baird, Rosenbaum
Mt. Sigmund & Signe (1st)	July 20/21	MacCallum, Paul
Mt. Thor (1st)	July 21/22	Morton, Spitzer
Mt. Svanhvit (1st)	July 22	Frantz, Rosenbaum
Mt. Loki (1st)	July 26/27	MacCallum, Morton, Paul, Baird
Mt. Battle	July 26/27	F. Steinhardt, M. Steinhardt, Petrie

Names are still to be approved by the Canadian Board on Geographical names. We are however continuing the tradition of Norse mythology in the area where the presence of *Gotterdämmerung* is always felt.

Mt. Asgard And Mt. Thor.

Donald C. Morton

The incredible ice-capped tower of Mt. Asgard dominated our view to the west from Base Camp. Although I had climbed the north peak in 1963, after a 23-mile pack up the Weasel Valley, I could not leave Baffin without another ascent of that fabulous peak, and perhaps an attempt on the south-west tower. Several other members of the expedition were equally enthusiastic about a trip to Asgard and soon we had a party of six consisting of Lyman Spitzer, Mike MacCallum, Bob Paul, Stan Rosenbaum, Bill Frantz, and myself.

It was no more than 5 miles to the campsite below the peak so that we dallied until after lunch on July 16 before shouldering our packs and setting out across the moraine and up the Turner Glacier. It was a beautiful sunny day and we made good progress over the ice until we reached the snow-covered parts about half way along the base of Mt. Friga. Soon after roping we were trapped in a maze of crevasses and Stan, who was leading at the time, often opened up bottomless holes in the snow. I took the lead as we rounded the corner of Friga and started up the left side of King's Parade Glacier. Here there were few crevasses to worry about, but progress was still slow because the soft snow swallowed us to the knees on almost every step. We had plenty of opportunity to contemplate the tremendous walls of Friga and Asgard rising more than 3,000 feet above us.

It was 9:15 p.m. and nearly 7 hours from Base Camp when we finally reached the rocky knoll, at an altitude of 3,900 feet, in the middle of the Friga-Asgard Col, where we had planned to pitch our tents.

The weather continued fine the next day and we set out across the glacier for the lower slabs of Asgard about 9:30 a.m. The certainty of light all night does encourage leisurely starts in the morning. We made good time over the slabs and along the ridge that leads to the col between the two towers, but then we were slowed by a stretch of soft snow which had been almost absent two years before on August 7. We roped up at the beginning of the snow field with Bob in the lead. Perhaps an earlier start would have helped here because the sun had now been on this snow for more than 4 hours.

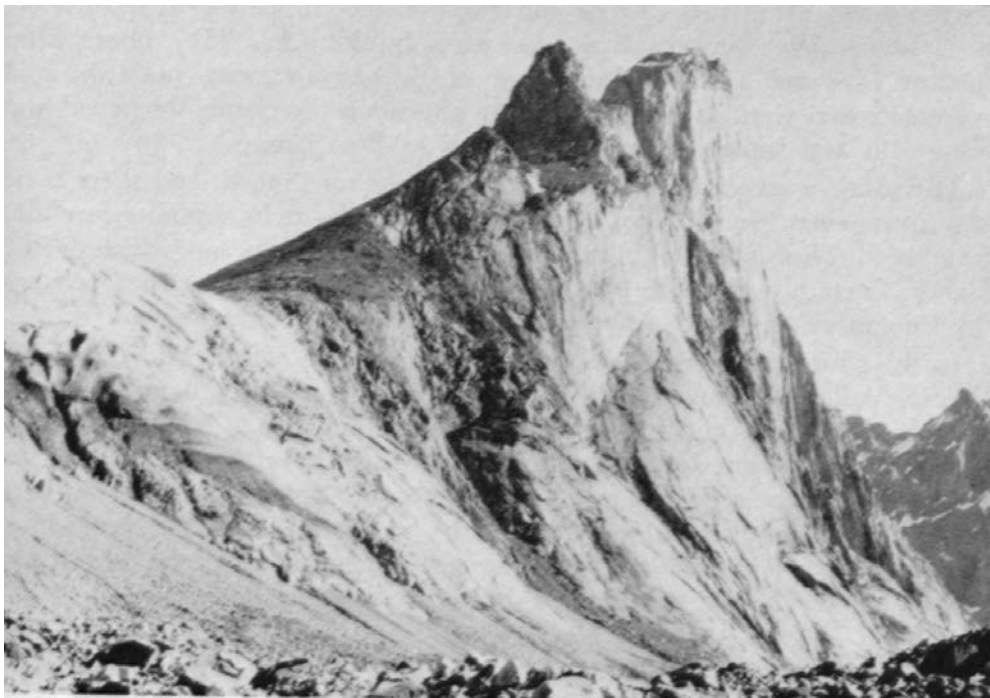
When Bob reached the rocks again he found them very slippery and the route up to the base of the chimney somewhat delicate. He drove a piton there and brought up the rest of us. I then led out along the ramp to the left and up more loose, wet slabs towards the col. It is easy to imagine that Mt. Asgard was once surrounded by such soft rock which was gradually eroded away by glaciers leaving the more solid towers and a little of the poorer rock between them to form the col. It was 6 p.m. before all of us were on the col, 5 hours after Bob reached the rocks below. This part of the mountain definitely was in worse condition than two years ago and we had two more in the party this time, but some of the delay to here must be attributed to inefficient rope handling on our part.

It became clear that at this rate of climbing we could not get all six men up the final 550 feet to the north-east summit. Bob and Stan graciously offered to wait at the col. The rest of us set out



Don Morton

**From Base Camp Across Glacier To Peaks Above Summit Lake, And Down Weasel Valley
To Mts. Thor And Tirokwa**



Don Morton

Mt. Thor And Forkbeard Glacier From North.

Ascent up left slope behind foreground pinnacle and up left slabs of summit tower.

roped together with Mike leading. We followed the original Swiss route up the face, using a piton for aid once or twice to save time, and reached the summit just at midnight, to complete the third ascent of Mt Asgard. Alas, the sun had now disappeared behind the Penny Ice Cap, but there was still quite enough light to add our names to the register. We tramped along the hard snow to the far end for a view of Base Camp. Unfortunately we were well behind schedule and no one at camp was awake to look for us. In half an hour we started down using two 75-foot and two 150-foot rappels to reach the col in 3 hours. We were back at our tents by 11 a.m., 25 1/2 hours after starting. We ate a tremendous meal of Beardmore meat, potatoes, and vegetables and went to bed. During the afternoon the clouds thickened and some rain and snow fell, so we returned to Base Camp.

The south-west tower of Asgard still remains unclimbed, and there is no easy route even from the col. We have studied the twin summits carefully from both Thor and Loki, and no one is prepared to say which is the higher. Certainly the rock is higher on the unclimbed tower, but perhaps the ice cap on the north-eastern one gives it a slight advantage.

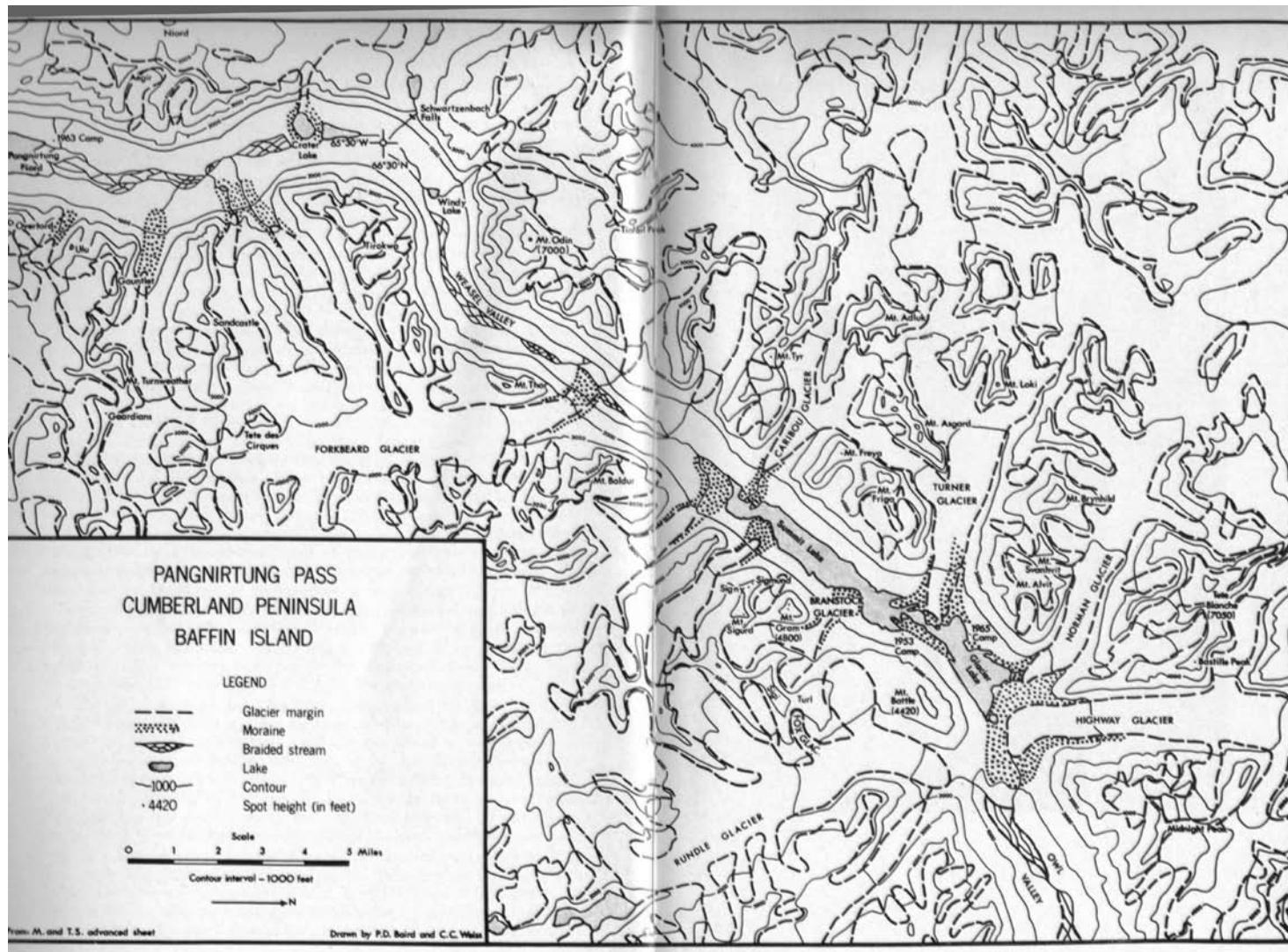
In the panorama from Base Camp was the profile of Mt. Thor far down Weasel Valley. We could see that the sheer west face must be overhanging slightly. In 1963 I had almost reached the summit in a solo attempt up the north ridge, but I had to turn back when the climbing became too risky without a belay. I had to return to Thor and finish it this year. Lyman Sptizer was planning to hike down the valley to catch a plane from Pangnirtung a few days ahead of the rest of us. I decided to accompany him as far as Thor so that we could attempt the peak together.

After a day of rest from our Asgard trip, Lyman and I joined Pat, Stan, Mike and Bob, who were heading for objectives on the east shore of Summit Lake, and set out in the boat. Both lakes had many open areas now but considerable ice breaking was still necessary in order to reach the moraine of the Branstock Glacier on the far side of Summit Lake. Lyman and I left the others here about 1:20 p.m. and set off down the east shore. Six hours and 8 miles after leaving the boat, we set up our tent on a grassy spot just up river from the moraine below the Forkbeard Glacier. Mt. Thor rose majestically above the glacier on the opposite side.

Wednesday morning, July 21, was a little cloudy when we set out about 8.15 a.m. Lyman and I climbed the 1,400 feet of mossy slope above our camp and then crossed the Forkbeard Glacier towards the north-east face of Mt. Thor, gaining another 600 feet. We ascended another 1,500 feet over moss-covered boulders, passing under the subsidiary north peak on our right, until we were nearly level with the col. There we ate lunch and then traversed a little to the left and up over a mixture of rocks and snow towards the vertical rock just below the summit.

On the first belayed pitch we retraced my route of two years ago and the second pitch took us up the left-sloping crack that had stopped me then. For the third pitch I led left into an inside corner which offered little security. I did not hesitate to drive several pitons and I was thankful for Lyman's belay. I stood in a sling once to get past an unpleasant spot. Beyond this the route eased considerably and soon we were able to walk continuously up the ridge to the summit to complete the first ascent in 9 hours from our camp. The altitude measured about 5,300 feet which was 4,700 feet above the river at the base. The sun had come out by now and we enjoyed our conquest for nearly two hours.

I tested our impression that the whole upper part of the west face was overhanging by dropping rocks from the top; they fell free for a long way. Across the Weasel Valley was the ice-capped summit of the Queen, now renamed Mt. Odin at the suggestion of the Committee on Geographical Names because Canada already had a Mt. Queen Elizabeth in the Yukon. In the opposite direction unclimbed peaks bordered the Forkbeard Glacier for miles.



P.D. Baird and C.C. Weiss

Pangnirtung Pass, Cumberland Peninsula, Baffin Island



S.D. Rosenbaum

Asgard (left) and Loki (right) from Turner Glacier.



S.D. Rosenbaum

Friga (left), the King's Parade Glacier, and Asgard (right), from Valkyrie II

Our descent over the vertical part of the route took five 75-foot rappels. From there it was just a long scramble down over the boulders and we were back at camp after nearly 17 hours on the mountain—a relatively short day for a Baffin climb.

Sigmund And Signe (The Twins).

M. MacCallum

From the 1965 campsite we could see hundreds of mountains most of which were just waiting to be climbed. In particular those on the south side of Summit Lake attracted us because we could go at least part of the way by boat saving us the tiresome journey round the head of Glacier Lake or the cold crossing of the narrows between it and Summit Lake—one full day of packing.

On July 20, six of us set out in the boat on what was to be an all out assault on these peaks. That we had to fight our way through the ice floes on the lake for some 3 hours only increased our eagerness. The boat trip took us past the Turner Glacier at the head of which towered the majestic Loki. Bob Paul and I set up camp shortly after leaving the boat, bade au revoir to the others and had what we knew would be our last substantial meal for some time.

At 3 p.m. we set off, angling up the valley to pass just below the glacier separating the Twins from the peak which Pat Baird and Stan Rosenbaum were at that minute attacking. Air photographs examined before leaving camp had not indicated any easy routes so we decided to climb the northeast face at right angles to Summit Lake to attain the eastern extremity of the ridge leading to the summits of the Twins. After 3 hours' scrambling we stopped to rope up. Our inexperience on mountains such as we were now climbing made us take more precautions than perhaps were necessary; whenever climbing reached grade 3 we roped up because of the uncertainty of what lay ahead. Inevitably this slowed us down. Initially, climbing was very easy and we made good progress. One or two moderately difficult pitches only whetted our appetite. Since we were evenly matched as regards technical ability we led through to save time.

By 10 p.m. we reached a low point of the ridge. Since we were tiring by now we found a nice sheltered ledge, had a bite to eat and slept for an hour or so until the cold woke us up. From here both the Twins seemed the same height. The higher one we were going to call Sigmund, the lower Signe. At 1 a.m. we were on the top of the first peak and, feeling that the other Twin was a few feet higher, we named our summit Signe. The sun was below the horizon but it was as light as it would be, say 15 minutes after sunset.

From here the ridge appeared formidable and route finding difficult, both to get down to the col between the Twins and to climb Sigmund. Our route often fell away in large steps which we worked round on one side of the ridge or the other, generally the south side. We were quite tired when we arrived at the col, and quite worried by the time we had taken so far, some 12 hours. How long would it take to climb Sigmund which looked even more difficult? How long would it take to get back? We decided to rest in the morning sun for a couple of hours.

Much refreshed we pushed on, to the most interesting pitch so far. The ridge became a knife edge for about 100 feet. Horizontal it would have presented little problem but it rose at an angle great enough to overcome the friction of either boots or pants. The exposure on both sides was interesting. Fortunately there was a fault after some 50 feet and a belay piton could be placed. Hereafter the angle became less severe and we were on a large ledge (the horizontal part of one



Don Morton

Mt. Loki from the Turner Glacier



Don Morton

The Northwest Wall Of Twin Peaks Of Mt. Asgard Seen From Mt. Loki.

The snow summits of Mt. Friga are visible at the left. This wall is over 3000 feet high

of the steps). And so on to the summit at 7 a.m. We used artificial aids three times, once using a peg as a hold to get into a 20-foot long tunnel formed by a huge block. The other two were simple assists from Bob, the more interesting one being a 15-foot jam crack, the first 8 feet of which were overhanging about one foot.

A short rest and we set off down to the col, Bob leading. We used one short rappel. From the col the south-facing snow gully seemed an easy exit although we could not see the bottom. After a drop of about 1,000 feet the snow petered out and we were on easily negotiable slabs. We angled right towards the lake and the area whence we had climbed up. The going was easy except where the slabs were wet. On one I slipped and went sliding down the slab at an ever increasing pace, helpless. Fortunately we were still roped. Bob was on a dry piece of slab and able to stop my slide.

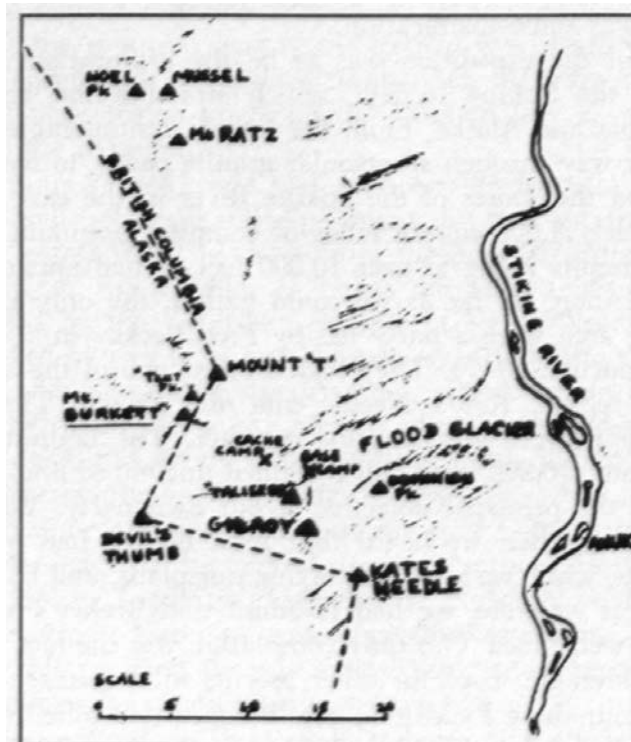
Without further incident we reached camp about 9 p.m.—30 hours after setting off—very tired, but pleased with ourselves.

A Scottish Expedition To The Canadian Coast Range

Introduction.

Derek Fabian

In CAJ 1956, "Homathko", Paddy Sherman quotes me as remarking: "and some of the people back home have never even heard of these mountains". Since that time I have nurtured the idea that more attention should be given by British climbers to the far western and northwestern mountain ranges of Canada. A British expedition; perhaps; and what more fitting than the SCOTTISH CANADIAN COAST RANGE EXPEDITION.



Sketch of Devil's Thumb Area

With a grant from the Mount Everest Foundation and official patronage in the well known names of Lt.-Col. Pat Baird and Bill Murray, the expedition was first launched in September 1964, to culminate on the Stikine Icefield the following summer.

To our Scots party we added one Englishman, John Denton, already versed in Coast Range climbing, and one American, Dave Wessel, whose explorations in the Canadian Mountains are well known. The renegade Scot, now perhaps Canadian, Dr. Stanley Paterson was included but it is regretted that Stan at the very last moment found himself delayed in the Canadian Arctic — where he was engaged in glacial survey work for the Department of Mines and Technical Surveys — and was unable to make the rendezvous for the “fly-in”.

Travel to a mountain region by road has generally proved the most rewarding of possible approaches; Canada from east to west offers so much variation of scene and terrain that we felt, time permitting, this must surely hold true once more. Our budget formed a decisive factor and when Rootes Motors (Canada) kindly agreed to provide vehicular support, we chose to exchange an extra week, possibly two, in the Stikine itself for the opportunity of tasting this vast country by road. This decision taken, our undoing could be the elements; but luck was with us and for the almost 3 weeks between ‘fly-in’, delayed by storm, and the bushwhack out the weather remained generally excellent. A high-pressure system that centred over the Alaska Panhandle brought a departure from the notoriously poor weather conditions of the area.

We should like to record our thanks to all those friends encountered whose help smoothed so much our passage. Journeying to and from the Stikine proved almost an expedition of itself, but this is an Alpine journal; Ken Bryan tells our story.

The Expedition.

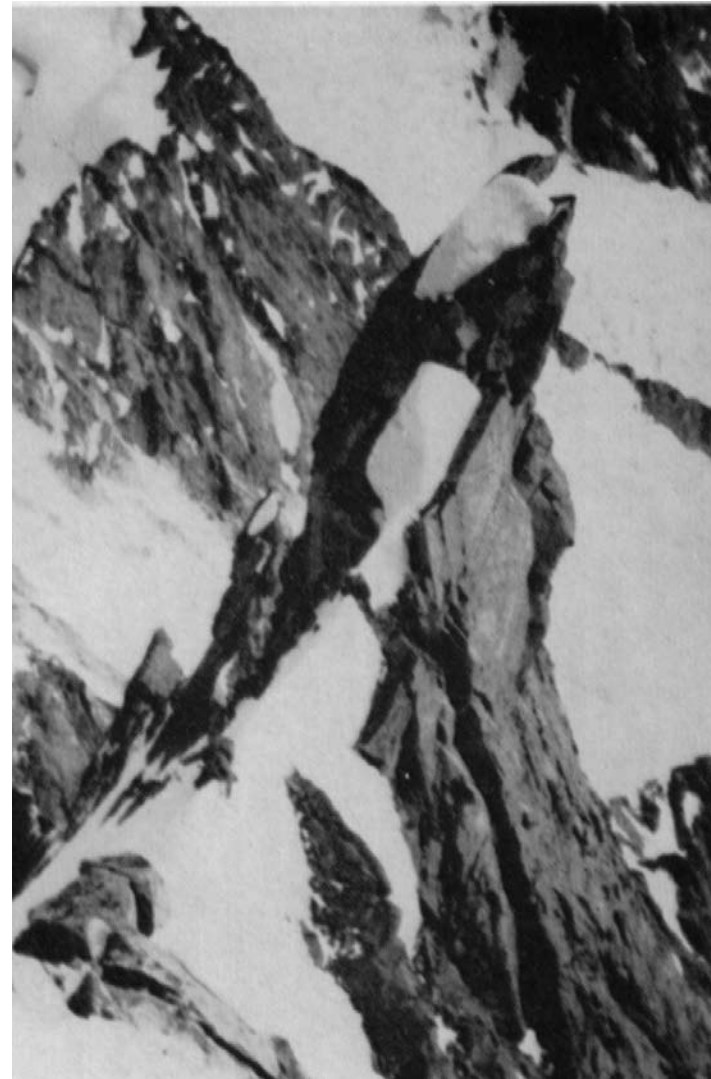
Ken Bryan

As we were the first expedition from Britain to climb in the Stikine area, we had expected to be accused of poaching on the traditional preserves of Canadian and American climbers. But Scotsmen have always tended to feel that they have certain proprietary rights in Canada and when our party was greeted at Telegraph Creek in British Columbia by a swarthy, eagle nosed Indian answering to the name of Hamish Campbell, we felt there was some justification.

The object of the expedition was to be the exploration of a group of mountains on the Stikine Icefield, which straddles the border between British Columbia and Alaska. From the icefield innumerable glaciers twist and wind their way through spectacular granite peaks, to reach the Pacific in the west and the shores of the Stikine River in the east. Although the area covers nearly 1,000 square miles of complex mountain country with several fine summits rising to over 10,000 feet, it had apparently received very scant attention. As far as we could gather, the only people to have climbed in the area were a party led by Fred Beckey in 1946 (Canadian Alpine Club Journal, 1947). They had climbed two of the most attractive peaks in the region; Kate’s Needle and the Devil’s Thumb but had experienced some pretty discouraging weather. The highest peak on the icefield, Mt. Ratz (10,290 feet) still remained unclimbed and it was decided this should be the principal objective of our own party. We were thus a little disconcerted when we heard that Fred Beckey had made a second visit to the area, while we were still laying our plans, and had climbed Mt. Ratz. Put out as we were, we had to admit that Beckey’s ‘coup de grace’ had been very well timed. Our only consolation was the fact that there still remained considerable scope for other ascents in the area.



Mount Burkett, Southeast Ridge In The Center Of Picture
The upper part of the route climbed utilized the rock islands seen to the right of the ridge



Climbing The Southeast Ridge Of Burkett

On July 13 our three Expedition cars bumped and jolted their way over the last few miles of dusty road to Telegraph Creek, a small isolated community lying at the head of navigation on the Stikine River and consisting of not much more than a few houses and a little wooden church. After a 3,500 mile drive from Toronto the cars looked a little worse for wear, being covered in thick grime and dust and having windows cracked and broken from stones on the Alaska Highway.

Abandoning the cars at Telegraph Creek, the five of us squeezed ourselves and our kit into a small Beaver aircraft and flew 80 miles down the Stikine valley to the mouth of the Anuk River. At Anuk, the Kenco Mining Co. landed supplies for a diamond drilling operation in the nearby mountains. Everything they required at the drilling site had to be taken in by helicopter and we had arranged with Kenco to get the use of one of these helicopters to drop us and our equipment on the icefield near Mt. Ratz.

The day after our arrival at Anuk, the riverboat came up from Wrangell on the Alaskan Panhandle. There standing on the deck was Derek Fabian, the leader of our party, and Dave Wessel from Montana. Beside them lay a pile of teachests full of food and equipment which we had last seen several months before on the docks at Glasgow. At last the whole expedition was together and ready to go but, unfortunately, as the cloud lay down to the level of the icefield in the Ratz area, it was impossible to get a helicopter in.

For three days we waited patiently at Anuk where we were made very much at home and made many friends. Among these was a helicopter pilot who, we learned, very much to our delight, had a grandmother who owned a public house in Maryhill Road, a well known Glasgow thoroughfare.

On the third day we radically altered our plans. The Ratz area was still clouded in but the southern part of the icefield was clear. So, rather than waste more precious time we decided to abandon the Ratz group in favour of the Flood Glacier region in the south. Thus on July 17 we were finally on our way to the mountains.

Within an hour a base camp had been established at the head of the Flood and a cache of food and equipment dropped on the edge of the icefield, 3,000 feet above. The situation of the base left little to be desired. Sitting on a spit of dry moraine it looked out onto a beautiful cirque of peaks dominated by the 7,000-foot ice face of Kate's Needle. Behind the camp and flanked by two huge icefalls, rose a gentle buttress leading to the upper icefield. This buttress supported an almost tropical confusion of flowers and other plant life, to say nothing of marmots and wild goats. But perhaps most delightful of all were the little green hummingbirds which on occasion, were bold enough to come right into the tents.

The day after our arrival we climbed the spur behind Base and set up our camp on the edge of the icefield, leaving Norman Harthill, our tame scientist, and George Liddle working on the Flood. Norman is an exiled Glaswegian doing post-graduate work in geophysics at the Colorado School of Mines. On this occasion he was investigating some recently developed electrical techniques for geophysical measurements.

When we first arrived on the icefield a dense mist obscured all view of the mountains. By 1 p.m. the following day the sun started to break through and out of the luminous haze of dissolving mists the peaks began to appear. In front of us lay an undulating sea of ice split up by isolated peaks and ridges and breaking away in tangled icefalls where it spilled over the edge of the plateau to the Flood Glacier 3,000 feet below. One peak dominated the scene; a tall truncated pyramid which we knew to be Mt. Burkett. Mt. Burkett was, without much doubt, the finest unclimbed summit in the area and as we were now working in the south was to be our principal target. Our first impression



North Face of Kate's Needle

of the mountain was that it looked fairly straightforward and could be climbed by its north ridge. We later found that we had not done it justice. It took us 5 hours on ski to reach the col below the north ridge which, in its upper sections, proved to be narrow and very heavily corniced. Although the ridge itself lay at an easy enough gradient, the traverse of the slope below the cornice line seemed far from attractive. The snow was soft and unreliable and the angle of the slope quite considerable. However, we decided to try it.

The following night we bivouacked at the base of Burkett. The weather was perfect and we felt we had a reasonable chance of success. John Denton, a post-graduate student from Cambridge, and I crossed the lower part of the east face and started up the steep snow flank leading to the upper part of the north ridge. At first progress was good but when the sun at last reached the face the snow began to deteriorate at an alarming rate and we were forced to make a rapid and undignified retreat. While John and I had been making this abortive attempt the other members of the party, Dave Wessel, Derek Fabian and Eddie Thompson, successfully climbed an 8,700-foot peak rising next to Burkett which they named 'Tent Peak'.

After a brief return to Base to get ourselves reorganised and to pick up George and Norman, we found ourselves back at the camp on the edge of the icefield. The next day Dave, Derek and John were going to ski 20 or 30 miles north to the Ratz group and, if time and weather permitted, try and climb Mt. Ratz itself. The rest of us were returning to Burkett to make a more determined assault.

We set out from the camp in brilliant sunshine but before we had reached the foot of Mt. Burkett, ragged masses of dark grey cloud were breaking over the mountain accompanied by a bitterly cold wind and flurries of snow. In the fading light our bivouac site looked bleak and inhospitable and we were beginning to regret having left our sleeping-bags behind to save weight. To give us some protection, we built a small stone wall and stretched the fly-sheet of a tent, which we had brought as an afterthought, over our heads. After preparing a meal with some difficulty we settled down for the long cold wait until dawn. The night seemed interminable and, as our improvised shelter was really far too small for four, we sat shivering, miserably cold and cramped while the wind whistled through the holes in our rather inadequate wall. But, by sunrise, the wind had blown itself out and the air was sharp and crystal clear.

It was great to be moving again. We left our bivouac and skied across the intervening snow basin to the base of the east face, where we abandoned our skis and started to crampon our way up the lower part of the face. The larger bergschrunds had fortunately been bridged by old avalanche debris and the final bergschrund, above which the face rose in a steep fluted icewall to the summit ridge, was crossed at its extreme lefthand end. Above this point a steep 150-foot wall led to a notch on the southeast ridge. The ridge itself did not present a very practical route, being extremely narrow and edged by a series of teetering, flame-like gendarmes; but below it, on the precipitous ice-flutings of the east face lay a line of steep slabby rock islands. By traversing these we could cross the intervening sections of ice face with relatively good protection.

From the moment we launched ourselves onto the open face and started the long upward traverse, the climbing was exposed and spectacular. The face between the rock islands had been carved by wind and avalanches into a series of channels 3 or 4 feet deep. These channels and the ribs between them varied from soft rotten snow to hard water ice and dropped away below our feet at an impressive and unrelenting angle. Using 150-foot run-outs we were just able to cross these sections with the protection of rock belays but on the final 400 feet of extremely steep ice, which we had to climb to regain the upper part of the southeast ridge this was not possible. There we



View Down the Flood Glacier



Climbing On The Lower Spur Used For The Ascent Of Kate's Needle and Gilroy

were very conscious of the 2,000-foot drop beneath our feet and had to exercise great care. After reaching an airy knife-edged snow arête on the ridge, a further 300 feet of climbing took us to the summit, which we reached at about 5 p.m.

During the climb the weather had been almost perfect except for some heavy cloud which had been building up in the west. But, by the time we started the long, time-consuming descent, this cloud was spilling over the cols and gradually covering the whole icefield. When we crossed the last bergschrund it was already dark and we were enclosed in a dense mist. The first snow was beginning to fall and the wind was rising. We abandoned the possibility of returning that night to our camp at the edge of the icefield, as we had originally intended, and resigned ourselves to a second night's bivouac. After collecting our skis at the foot of the face we set off across the snow basin to reach our bivouac site. But as we were traversing a steep slope George slipped, lost a ski, which vanished into the mist and darkness and broke a bone in the back of his hand. By the time we reached the bivouac his hand was badly swollen and very painful. We were all, in fact, feeling very tired as the climb had taken us over 17 hours.

By now quite a respectable blizzard was blowing and continued to blow throughout the night. Tired as we were it was impossible to sleep, due to the extreme cold and discomfort. In the morning it was still snowing heavily and visibility was almost nil. We ourselves were covered in fresh snow. As we had not enough food to sit and wait for a clearance we were forced to take the risk of heading into the white-out using only the roughest of compass bearings in the hope we would strike the eastern edge of the icefield somewhere near our camp. The prospect was even worse for George who had no skis, and whose broken hand we could do very little with.

After eleven tiring, frustrating hours in the white-out we reached the edge of the icefield but were convinced that we had made some basic error in navigation and were in totally unknown terrain. We were faced with the prospect of a third bivouac, this time on the open glacier. So, while there was still some remaining light we built a snow hole. It was a long weary job and when it was complete we crawled inside, soaked to the skin and feeling pretty exhausted. We realized how serious the situation would be unless there was a clearance in the weather fairly shortly. But, before settling in for another dreadful night, Norman and I thought we would go out and have a final look around. As we did so there was a sudden unexpected break in the mist and there, not a hundred yards from our snow hole was the camp. We could hardly believe it. Within a quarter of an hour we were in warm dry sleeping-bags surrounded by as much food as we could eat.

The next day was clear, warm and sunny and we clambered around the rocks behind the camp, dressed in an odd assortment of underwear, discussing the route we must have taken the day before. Around us lay steaming heaps of sodden clothing drying in the sun.

In the evening we descended to the world of hummingbirds and flowers. In the south Kate's Needle glowed coral-pink in the light of the setting sun and the buzz of contented conversation increased in inverse proportion to the level of a bottle of good Scottish malt whiskey which sat in front of us.

After a day of sybaritic life at Base, Norman and I returned to the icefield camp and from it climbed a 9,000-foot peak which we named Mt. Talisker (In Fred Beckey's article in the 1947 C.A.J. this peak is referred to as Mt. Gilroy but its neighbouring peak is slightly higher and it seems likely that it is the Mt. Gilroy shown on the map.) The summit was reached by the 3,000-foot west ridge which presented no great technical difficulties but gave a long and enjoyable climb. At the top huge cornices overhung the 6,000-foot east face which dropped in one great plunge to the Flood Glacier. Talisker also proved one of the finest view points in the area, looking out onto



View To The Southwest From Mt. Burkett, With Kate's Needle In Background



Mt. Talisker, Mt. Gilroy Behind In Cloud.

On extreme left is the ice spur used on the ascent of Kate's Needle and Gilroy

Kate's Needle, the Devil's Thumb, Burkett, and, in the immediate foreground, the beautiful snow draped north face of Mt. Gilroy.

While we had been amusing ourselves on Burkett, Derek, Dave and John had been making their trip to Mt. Ratz. Like us, they had trouble with the weather and their climbing time was cut to a minimum. As a result John and Derek were forced to turn back from an attempt on the southeast ridge of Mt. Ratz after climbing about 2,500 feet. Dave Wessel successfully made a solo ascent of an 8,300-foot peak to the east of Ratz called 'Pulpit'.

On July 30 we evacuated the icefield camp and a small helicopter came into Base to fly out our heavier equipment, including Norman's collection of cables, wires, batteries and instruments. For the remaining few days we intended to climb from Base.

Opposite the camp there rose a prominent little mountain called 'Dominion', with a fine thumb-like summit. Dave, Derek and John climbed it the first day after they arrived back down at Base but found the summit tower very disappointing. The mountain which most interested us, however, was Kate's Needle and we knew we would feel dissatisfied if we left without climbing it. From Base it certainly looked magnificent. Rising from a tangle of ice-falls around its feet, it thrust up 7,000 feet to three beautiful ice summits supported by walls of fiery white snow, delicately etched by a tracery of crevasses.

Norman and I had decided on a route up the Needle. (At this stage we did not know what route Beckey had used but we later found we had chosen the same line.) It started by ascending a 4,000-foot spur to avoid the lower ice-falls. This led to a snow basin from which it appeared one could easily get to the base of the summit ridges.

As we were due to leave in three days, we wanted to waste as little time as possible and decided to travel lightly. We would bivouac as high as possible on the first night and try for the summit the following morning.

We did not get away from Base until mid-day on July 31. It took 2 1/4 hours to reach the base of the spur where we left our skis. The spur proved to be a good route and, except for some steep rotten rock near the top, went without much difficulty. By 6:30 p.m. we were at the top looking over the snow basin to the broad crevassed snow face which rose at an easy angle for perhaps 2,000 feet to the start of the final summit ridges. It took us 3 1/2 hours of exhausting work to climb that slope, plodding through knee deep snow, but by 10:30 p.m. we were at the top and preparing for a bivouac under a safe looking cornice.

Under our cornice we were well protected from a biting wind and after the bivouacs on Burkett our bivouac on Kate's Needle was remarkably tolerable and pleasant. The night was clear and starry and at 9,500 feet we were already higher than most of the surrounding peaks.

When we started out in the morning at 6:00 a.m. the first warm glow of sunshine was catching the heavily corniced ridge which rose directly above us to the west summit. Just showing beyond we could see the central summit which is the highest. The traverse of the west summit looked as if it would be straightforward, if rather exposed, and would have been in good snow conditions. Unfortunately we found ourselves near the top climbing on long sections of iron-hard water ice which gave us some very tiring work step-cutting. A final extremely steep ice scoop which cut up to the summit cornice gave an unexpectedly difficult pitch. The character of this pitch was greatly enhanced by the view to the Mud Glacier 6,000 feet straight below us.

Once over the west summit we made quicker progress and at about 9 a.m. arrived on the central summit. Below us the view of the Flood Glacier was obliterated by cloud but to the west we had a beautiful view of the peaks lying to the west of the Stikine, none of which we could

recognize by name.

By the evening we were both back at Base camp feeling pleased and satisfied with our climb. During the descent we had met Derek, John and Eddie ascending the spur leading up to the basin. At first we thought they must be heading towards Kate's Needle, but when we spoke to them, we found they were after Mt. Gilroy which rose on the opposite side of the snow basin to Kate. That night they bivouacked on top of the spur and the following morning climbed the south ridge of Gilroy. Like us they ran into a lot of water ice near the top of the mountain.

On the morning of August 3 we packed up Base camp, leaving a cache of food for goats or future climbers and started down the Flood Glacier carrying heavy loads. We had arranged to be picked up August 5 at the mouth of the Flood River by the boat coming up from Wrangell on its weekly trip to Telegraph Creek. But this simple plan ran into unforeseen difficulties. Probably because of the abnormally good weather the rivers draining from the Flood Glacier were carrying a surprisingly large volume of water and we found our progress cut off by a complex system of tributaries. We waded several of these fast flowing streams through waist deep water but always found our way eventually barred. A whole day was lost trying to find a way through before four of the party succeeded in finding a huge tree bridging one of the main tributaries. After an all-night bushwhack they reached the shores of the Stikine. During this night in the bush they had several misfortunes. They had to fight their way through a terrific tangle of devil's club and slide alder and were continually plagued by mosquitos and blackflies. At one point they unfortunately disturbed the branch of a tree containing a wasp's nest. The furious wasps came pouring out and headed straight for Eddie. He was badly stung all over the face and within minutes was completely blind with his face swollen like a balloon. He was in considerable pain and for the remainder of the way he had to be led through the dense tangle of undergrowth. Dave Wessel also had the misfortune to lose two expensive cameras and a monocular during their struggle to get to the Stikine for the morning of August 5.

But the irony of the situation was not realized until they got out of the bush to find the boat had come up river a day early and was already gone. This information they received from the remaining three of us who had found our way to a shingle island in the middle of the Flood River itself. From it we had seen the boat passing up the Stikine about half a mile away but were too far off to attract attention.

We were now separated from the rest of the party by an unfordable river and were just about to try and construct a rope-way across when a helicopter arrived to solve our problems, having been attracted by a smoky fire we had lit for the purpose.

Within a couple of hours we were all back at Anuk where we were given a warm welcome by our friends whom we had not anticipated seeing again so soon. But our stay this time was relatively brief and the following day we flew up to Telegraph Creek.

Looking back, we all agreed that the mountains of the Stikine Icefield had exceeded our expectations and appreciated our great good fortune in visiting them during a period of weather which was almost beyond reproach. But now that we were back in Telegraph Creek we felt we were almost home; three and a half thousand miles to Toronto, another three thousand across the Atlantic and we would be there.

Mount Kennedy Trip, SW Yukon, 1965

By James Craig

In January 1965 the Canadian Government named an almost 14,000-foot peak near the Alaska-Yukon border about 100 miles west of Whitehorse in honour of John Kennedy, the late President of the United States.

Shortly after, Werner Himmelsbach of Vancouver called about making a first ascent.

On March 24, 1965, the first ascent of Mount Kennedy was made, but not by a Canadian party. Werner Himmelsbach could not leave at the time planned, and in the meanwhile the National Geographic Society party was on its way to the mountain.

The climb achieved some historic importance by the inclusion of Senator Robert Kennedy, brother of the late President, as a member of the climbing party. It was widely reported by the press, by radio and television. American magazines presented accounts, more or less factual. Television interviews followed, editorial writers in some of the Canadian and American newspapers conjectured about the Senator's motive in climbing the mountain and some concluded that it was personal aggrandizement. Those of us who were on the climb, lacking journalistic insight and foresight, did not, I believe, think so.

Contrary to some accounts, the Senator was not carried, pulled, pushed up or dropped on to the summit. He accompanied the party and in the last few minutes he preceded the other members of the party to the summit.

Members of the party were the Senator, a photographer William Allard from the National Geographic Society, James Whittaker and Barry Prather of the 1963 American Everest expedition, Dee Molenaar a member of the American K2 party, George Senner of Seattle, Bill Prater of Ellensburg, Washington, and myself, the one Canadian.

The trip was sponsored by the National Geographic Society and the Boston Museum of Science.

My involvement in the trip came about through Paddy Sherman of the Alpine Club of Canada. On Friday, March 19, he phoned and proposed making a climb of Mount Kennedy; Saturday night it was arranged that I should join the American party and on Monday morning at Whitehorse I met the Senator, Jim Whittaker and Bradford Washburn of the Boston Museum. The other five members of the party had been flown in to the mountain a week before.

When I arrived, high cloud lay over Whitehorse and to the west. There seemed some doubt about our flight in but we were then awaiting a report from a reconnaissance flight by R.C.A.F. jet. On the field was an R.C.A.F. rescue helicopter from Comox, B.C. News correspondents and photographers were talking of a phone call to Ottawa and of the helicopter, and while we changed into climbing clothes our flight by the helicopter was announced. An hour and some minutes later, we landed by the two tents that formed our base camp at 8,500 feet on the Cathedral Glacier. Barry Prather and the photographer met us here. Nearby, three men from the National Film Board and Montgomery Alford of Whitehorse, were camped. Shortly after, three planes arrived and the assembly now included photographers, news correspondents, three pilots and the R.C.A.F. crew of three.

By 5 p.m. the last of the planes left and we settled in the tent for supper of frozen ground beef. The presence of the Senator did not result in special mountain fare. The sky was clear that night. The air was still and, for the time of year, warm. We talked about Mount Everest and what



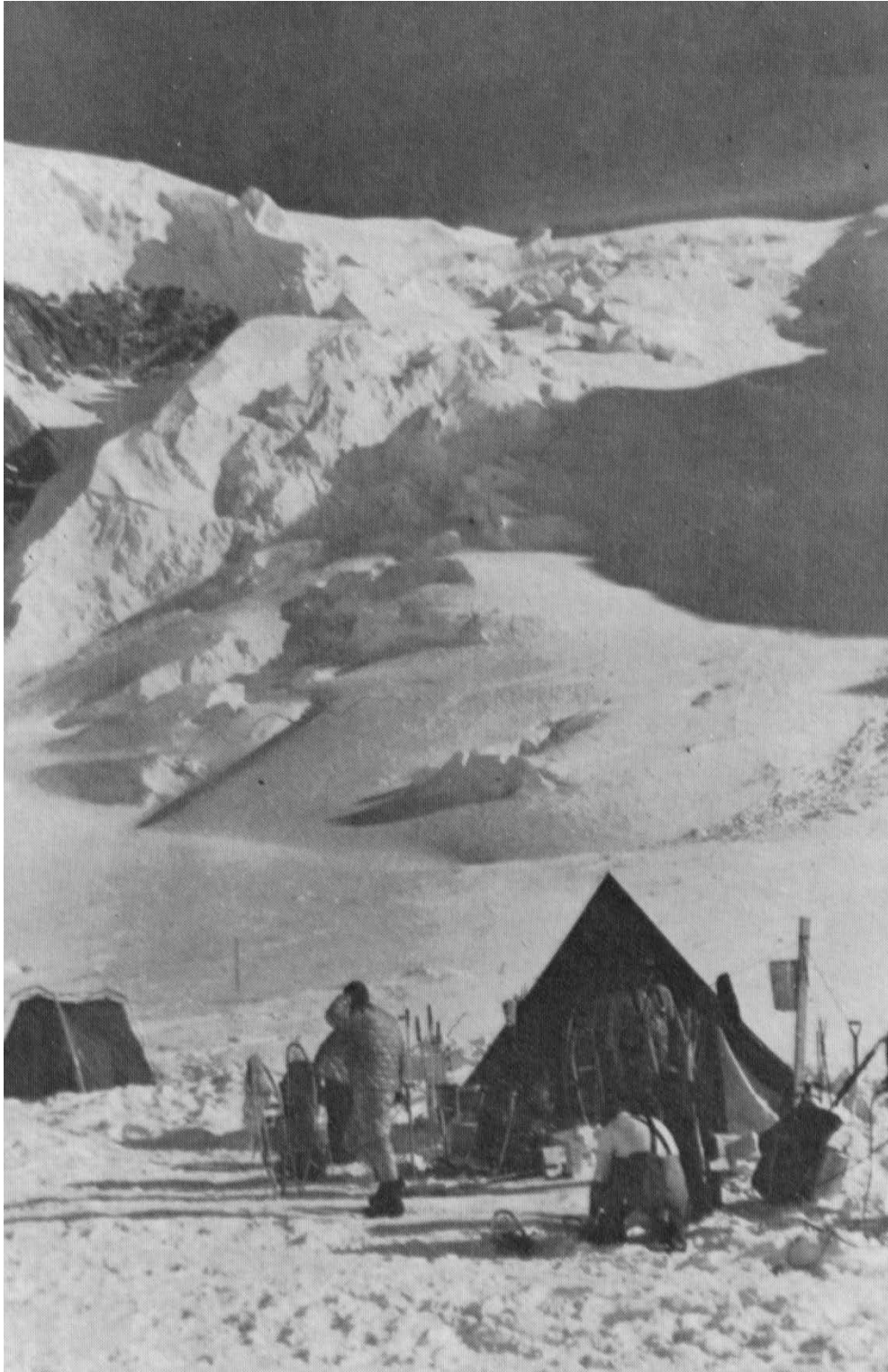
J. Craig

North Face of Mt. Kennedy from ridge at upper end of south fork of Kaskawulsh Glacier



J. Craig

Kaskawulsh Glacier



J. Craig

Morning at Base Camp

we might find ahead of us.

Tuesday morning we were up after sunrise and after a leisurely breakfast we set out on snowshoes followed and sometimes preceded by the National Film Board crew. The weather was again beautiful and warm enough so that by noon when we were having lunch Robert Kennedy had his shirt off.

The route to the high camp was on a long gradual incline. Few crevasses were visible, probably because it was too early in the year for them to show up. The snow was soft enough to settle under foot. With frequent pauses for photographs and for lunch we arrived after about 7 hours at our high camp as a light snow began falling.

The high camp was below the elevation visible from the base camp, on a slope from which one would turn left for Mount Alverstone or right for Mount Kennedy. Here we were met by George Senner, Bill Prater and Dee Molenaar. The camp consisted of two tents and a snow cave large enough to accommodate all of us. We chose the tent and later regretted it because the light breeze of the late afternoon turned to a strong wind that buffeted our tent all night. I had given Robert Kennedy and the photographer a sleeping pill, and while Whittaker and I slept fitfully, they remained unaware of the violently flapping tent and the sounds of the wind scouring the snow above and around us.

For the evening we were gathered in the snow cave dubbed the Senate Chamber. Dee Molenaar was making a National Geographic Society flag out of material cut from a shirt, a duffle bag and a nylon tent bag. The one we were to have taken to the summit had been left at Whitehorse.

Wednesday morning after an undistinguished breakfast we set out. The snow varied from hard-packed to loose and wind-blown. The slope became increasingly steep and we moved more slowly, two ropes of three persons and one rope of two, alternating the leads and now feeling the effects of altitude. We stepped easily over the few crevasses that were visible and eventually came to a rock out-cropping where the snow was hard frozen. Here was the first place where our inexperienced members found the use of crampons. At the top of the slope one comes to a plateau at about 13,400 feet which slopes slightly downward to the base of the peak some 500 yards distant. The peak from here has the appearance of a pyramid with one edge facing the plateau. Here we stopped for lunch and looked at the narrow ridge cut by two crevasses, one across the base and another at the beginning of the steepest part of the ridge. On both faces of the pyramid green ice was visible. We wondered whether we would have to traverse on to the exposed ice faces and how our two inexperienced members would face the exposure.

We came to the base of the pyramid and here found that the route appeared to have no technical difficulties; but there was a knife-edged ridge one-third of the way up where the exposure was considerable; to the left about 7,000 feet down to the glacier at an angle between 65° and vertical; to the right, not as continuously steep but descending rapidly. The two crevasses were easily crossed by driving an ice axe in deeply and reaching up to a high step. On the steepest pitch Whittaker kicked steps in the hard snow and then we respectively belayed each other for the distance of one rope length. Above the steep part the route was a walk. Robert Kennedy led with Barry Prather and James Whittaker. The other rope of three followed and then Bill Prater and myself.

It was about 1 p.m. when we arrived on top. A cold wind was whipping the flaps of the packs and freezing hands bared for undoing ropes and cameras and food. Overhead one or two planes were flying. The eight of us were milling around among the packs and ropes of those

who remained roped, photographing and being photographed. The party was loaded with cameras. There were more Leicas among the party than one normally sees in a dozen parties. Attached to ice axes and ropes were the Canadian flag, the American flag, the Alpine Club of Canada flag, the Kennedy coat of arms, the National Geographic Society flag, and Dee Molenaar's pennant—three of his children's socks flying from an ice axe.



J. Craig

On Peak of Mt. Kennedy.
(Senator Kennedy left; Jim Craig right.)

For an hour or so we remained on the peak. During this time, in a depression scraped in the frozen snow, Robert Kennedy placed a copy of the late President's inaugural address, a gold medallion bearing his likeness and three gold PT-109 tie clasps. Planes continued to circle us for awhile. The first had arrived about two hours before and we were quite conscious of being observed and photographed. All about us were great fields of snow and ice and high mountains. In the distance we could see Mount Seattle to the south and Mount Vancouver, 15,700 feet, to the west, and still further to the northwest, 50 miles distant, the massive peak of Mount Logan.

The wind continued blowing while we were on the summit. There was no sheltered place

to sit or stand except behind other people; we had gained what we had individually wanted, the National Geographic Society had its pennant on the summit and the Senator had honoured his brother. Unscrambling the ropes we set off with myself in the lead and Bill Prater behind to fix a rope at the steepest pitch to make for a safer and quicker descent.

Two hours later we were at our high camp. The sky was still clear and it was becoming quite cold. The time seemed a fitting one to remain horizontal in the tent; but within an hour a report was obtained by hand radio from a plane that was still in the vicinity and we learned that a change in the weather was expected. Outside my tent people were discussing an immediate descent to the base camp and a voice finally said "What do you think, Bob?" From my tent the Senator said "Let's get it over with". This seemed to determine the matter and we began packing. Two tents, ropes, clothes and sleeping bags and a small amount of food was all we had. After a brief attempt to descend on snowshoes, Bill Prater and I removed these encumbrances and walked down, passing our National Geographic photographer on the way, walking flat-footed on snowshoes and complaining of sore feet.

Shortly after sunset the two of us were at the base camp. Bob Erlam, publisher of the Whitehorse Star, was awaiting us to take the first photograph of Robert Kennedy after the climb. An hour later the other six of the party arrived, the photograph was taken and we settled in the big base camp tent. Over steaks and ice-cream—food left by the National Film Board crew—and questioned by the Senator, conversation again was of Mount Everest and now Mount Kennedy. Supper was not finished until after 10 p.m., for only one steak could be cooked at a time. The weather seemed colder then. Overhead were uncountable stars and on the glacier no sound disturbed the stillness of the night but the hissing of the gas stoves that we were allowing to burn out.

Thursday morning, anticipating an early flight, we were up well before the R.C.A.F. helicopter arrived at 6 a.m. to move survey equipment lower down the glacier and to take some of the party to Whitehorse. The rest of us followed soon after in two Beaver aircraft of Yukon Flying Services.

Awaiting our arrival at the airport was a R.C.A.F. transport to fly us to Seattle. We have pleasant memories of being served with drinks and a steak dinner on board the plane, of having calls placed from the aircraft to Seattle and, for me, of arrangements for the flight to Vancouver, of being met at the airport by officials from Seattle, and soon after of having my own flight arrangements completed without effort on my part, and of being welcomed on board by name by a charming stewardess. That concluded the first ascent trip.

Later, on August 12th, at the request of a fund-raising committee for C.A.R.C. (Canadian Association for Retarded Children) I went to Whitehorse. I was to act as guide for an artist from Calgary who was commissioned to do a painting of Mount Kennedy. This was to be presented to Mrs. Joseph Kennedy at the opening of a National C.A.R.C. fund drive. Through the generosity of the Arctic Institute of North America we flew from Kluane Lake, west of Mount Kennedy, on Thursday afternoon August 19, up the Kaskawulsh Glacier and at the head of the south fork of this glacier were set down. From the saddle 300 feet higher, at an estimated 8,600 feet, we had a view of the north face of the mountain and the Lowell Glacier below. The artist made no sketches but took many photographs and from these did the painting presented to Mrs. Kennedy in September and now at her home in Hyannis Port, Massachusetts.

The following morning soon after sunset we were sitting outside the tent watching clouds drifting up towards us and endeavoring to light the stove. The naphtha can at Kluane Lake had contained kerosene which burned fitfully with clouds of black smoke and billowing flame

enveloping the pot. Our 4-day gas supply was exhausted in cooking supper and in boiling water for coffee in the morning. Fortunately we were spared the prospect of days of cold food by the arrival, soon after 9 a.m. of our pilot and a few minor misadventures later we were on our respective journeys home.

A High-Level Traverse Of The Lillooet Icecap

British Columbia Coast Mountains

Don Poole

Early in the winter of 1964 Dennis Holden approached me about making in the summer of 1965, a high-level traverse of some of the little-known Coast Mountain glaciated ranges lying between the heads of coastal inlets and the Lillooet River Valley. The original idea was to start from the head of Toba Inlet for Silt Lake at the tongue of the Lillooet Glacier, using skis over much of the high-level route, then to utilize expected sandbars of the Lillooet River for an easy 2-day jaunt over the remaining 32 mad miles to civilization and a car at Pemberton Meadows.

During the winter various people familiar with the area were contacted: Mills Winram who had visited the area from the Lillooet side in 1932¹, and from the Toba Inlet side in 1933²; Dick Culbert, and others. The result was a change in route to a traverse hopefully starting from Icewall Lake. The 1959 first ascent of Mount Raleigh³ had commenced with a first plane landing on this small lake (elev. 3,025 feet), and although that party travelled the Filer Glacier, to our knowledge a traverse eastward from that glacier to where our route would enter the Lillooet Icefield area reached by a 1960 party^{4,5} had not been done before. Oblique aerial photos were used to determine most of our route—an excellent method for route selection.

Our party eventually numbered six: Dennis and Ann Holden, Byron and Jane Olson, Jim Craig and myself. At 7:05 a.m. on the bright clear morning of June 27, 1965, pilot Al Eustis of B.C. Airlines took off from Campbell River with us, our shortie skis⁶, poles, rucksacks, and such food and equipment as we would need before reaching a later airdrop. We had received a report that ice remnants in Icewall Lake might make a landing unsafe, so en route we had a look at a lake of similar size which from its proximity to Tahumming Mountain we called “Tahumming Lake”, but it was still frozen. However, Icewall Lake proved to be open, and we landed at 8 a.m.

After unloading us Al flew me to the Cattermole Logging Company camp on Bute Inlet to pick up our further supplies and equipment which that company had kindly brought up in a company plane a week earlier. These we dropped on the large glacier flat at the top of the southwest arm of the Filer Glacier, and I was returned to Icewall Lake. Our food was divided into nine 6-man-

1 Exploration in the Lillooet River watershed. This Journal, 1932, pp. 8—18

2 The source of the Toba River. This Journal, 1933, pp. 56-62.

3 Mount Raleigh. This Journal, 1960, pp. 30-36.

4 The Lillooet Icefield. This Journal, 1961, pp. 17-27.

5 Reports collected in an article by Don Munday (This Journal, 1940, pp. 159—168) indicate that Stanley Smith and a companion most likely crossed the Lillooet Icecap somewhere in their pioneer journey through unknown glaciated ranges between Squamish and the head of Chilko Lake, June 24 to September 13, 1898.

6 The lengths of these skis varied from 3 1/2 to 5 feet; the harnesses were adapted to take climbing boots. A length of between 4 and 4 1/2 feet was found to be most suitable. Climbing wax was used rather than skins and found satisfactory.

day bags, three to Icewall Lake, and the remaining six in the airdrop. Our suppers consisted almost entirely of freeze-dried foods.

Shortly after 9 a.m. the same day we began the traverse through bush. After an hour of this we reached the creek which we followed up to the bottom of the headwall, arriving there about 1 p.m. Avoiding the active hanging glacier on the south side, our route led almost directly up the centre of the headwall through some of the toughest steep bush. An afternoon of awkward but not difficult climbing made a small steep meadow appear luxurious. Here we made Camp 1, about two-thirds the distance up the headwall.



B.C. Government Air Survey photo No. 555:102 (by permission)

Icewall Lake (Just Right Of Center), Tavistock Mtn. In Center Foreground, Route To Filer Glacier Is Over 6800-Foot Col Between Icewall Lake And Left Edge Of Photo

Less than 3 hours of easy rock and snow took us to the pass at 7,200 feet and the warm morning sunshine. A steep descent down a partially avalanched slope north of the pass put us on the large flat glacial area south of Mount Filer. The airdrop was plainly visible, and with little delay

we had it unpacked. The only casualty was 1 1/2 quarts of gas lost through the incompatibility of crampons and fuel tins, but fortunately the leaking gas did not get into any of the food, and we had brought extra fuel.

A camp spot northwest of the glacier beside the lower icefall was a welcome sight after 2 hours of “arms-and-legs skiing” calisthenics. Camp 2 was at 4,700 feet, with running water and warm rock. As on the first night we slept out in complete comfort, it being neither cold nor dewy.



Dennis Holden

The End of Icewall Lake from Camp I on the Headwall

The next day, June 29, we descended to the Filer Glacier (elev. 3,950 feet) and then continued across to a glacier east of Tavistock Mountain. As the map we were using did not indicate any glacier in this small valley we named it “The Glacier that Isn’t”, and we do wish that it had been “The Glacier that Wasn’t”! The sight up this valley to the pass was not encouraging: an icefall separated us from the slopes leading to the high pass at the head of the valley, and on the valley’s

south side was steep rock and a large, extremely broken icefall; the north side appeared to be an easy rock climb on the lower part but the upper part was out of sight and therefore unknown. After some deliberation we decided to climb the rock and snow beside the icefall on the north side, and attempt to gain the glacier slopes above.

Our packs were heavy, and with skis often awkward. The climbing was slow and in two rather difficult spots our packs had to be hoisted up. Although the rock was good it was often wet. About 2 hours of climbing put us below a steep smooth slab of wet rock. Byron and I took the lead rope and avoiding the steep rock gained the glacier slope above the icefall with little difficulty; Dennis, Jim and the two girls followed. Progress was slow as the few large crevasses were poorly bridged.

The perspective of the upper slopes was now more realistic, and it was seen that there was still considerable steep snow to ascend. Byron and I led slowly as the slopes became increasingly steeper, and we traversed west onto a snowfield adjoining the glacier. The afternoon was hot, the snow soft, and the slope steep. A small slush avalanche started under the feet of the lead rope, but by quick action the second rope was able to avoid it.

We could see the slope easing off above, and the last and steepest pitch was ascended directly to the fall line. On reaching the ridge at 7 p.m. after a long and tiring day an inspiring panorama of peaks, many still unnamed, broke into view.

That night we used our tents for the first time. Unanimously we voted that the next day would be a "rest" day on which we would attempt a first ascent of nearby Falcon Mountain.

With no difficulty we traversed the upper slopes of the Falcon Glacier on the north slopes of the unnamed peak west of Camp 3. The crevasses were well bridged and we were able to cross the broad flat col south of Falcon Mountain to gain the prominent east ridge. Here we lunched and left Ann and Jane to bask in the sun.

A short distance up this ridge a large gendarme necessitated dropping onto the glacier on the north side. Falcon kept looking more unfriendly as we progressed higher. We attained the steep snow ridge at about 9,100 feet on the north side after jumping the bergschrund. Although this led almost to the summit, it was steep, exposed, and soft—a dangerous route late in the day. Returning over the bergschrund we traversed over to attempt the east ridge.

Dennis led, and as the bergschrund was well bridged, the ridge was reached over steep snow with little difficulty. We then traversed on the north side of the ridge on steep snow. Dennis led again, and with a long belay crossed a steep snow couloir to a small rock platform. Byron then made a good lead, moving slowly up the east side of the second couloir on exposed rock and snow. The ridge was regained at a notch just below and to the east of the summit, at about 9,150 feet. The route above consisted of a very exposed knife edge which became steep and led into a narrow smooth face. With difficult and slow climbing ahead and the sun low in the sky, we left Falcon Mountain to her virtue.

Two long rappels put us below the bergschrund. As the sun was setting over the peaks and glaciers to the west we reached camp.

(It appeared that the best route for attempting Falcon Mountain would be to ascend to a point high on the south ridge via the large glacier situated between the south and east ridges, then to follow this ridge to the summit.)

Next day, with our packs and skis again on our backs, we roped up to traverse around the unnamed peak east of Camp 3. We made an early start to get us across the lower reaches of a small active icefall while the morning air was still cool. After crossing the icefall and dodging some

crevasses we were again on the ridge that divides the Toba Inlet and Bute Inlet watersheds. Easy going on foot got us to the high point (about 8,650 feet) on the ridge at noon, where Byron marked our progress with an “aesthetically beautiful” cairn.

Early in the afternoon we came to a steep corniced snow slope on the ridge. A short discussion resulted in a democratic decision to perhaps sacrifice Jim, Jane and Byron. Joining our ropes to give a 250-foot belay, Dennis and I belayed the three down. Perforating the top of the slope Jim released two small slab avalanches. Was the route now safe? In a few minutes the first three were at the bottom. Dennis and Ann then followed on a running belay, and I came last. (The high point and this pitch might be avoided by traversing high on the Falcon Glacier north of the ridge.)

The large snow-covered icefields of the Compton Névé were soon reached and on went our skis with climbing wax. About 6 p.m. we made Camp 4 beneath one of the pinnacles projecting impressively out of the glacier. This 8,700-foot camp gave us the most magnificent view. Flaming yellows and oranges closed the day as the sun sank excitingly behind Mount Gilbert.

A clear crisp morning greeted us on our sixth day. The anticipation of about 2,500 vertical feet of downhill skiing made the early morning even brighter. We were finally going to really ski!

Although the snow was hard at first, it soon had a shallow layer of ice crystals—almost perfect conditions. About 2 miles of open downhill slopes were pure fun with the exception of a short crevassed section, where we skied roped up. In too short a time we were at the top of the Toba Glacier at about 6,000 feet.

Our original plan had been to traverse high on the south side of Compton Mountain and Toba Peak; however it now appeared advisable to drop down the Toba Glacier and then ascend the ridge on the north side (i.e. south ridge of Toba Peak) to attain the large icefield east of Toba Peak. (The high route is likely better than the route we took, being both more direct and involving less loss of elevation. There appeared to be no difficulties along this route.)

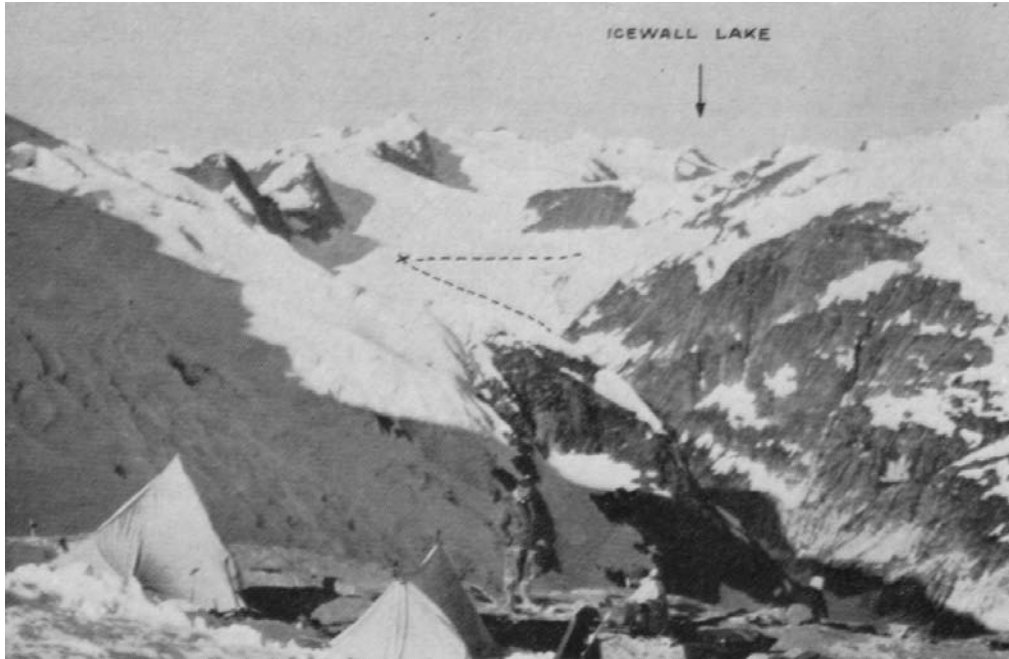
Extremely large combination wind cirque-crevasse formations gave an eerie atmosphere to the top of the Toba Glacier. No longer was skiing a pleasure. The melt ridges had become large and the crevasses open. Keeping to the left side we progressed down the glacier.

After lunching among the rocks we ascended to the next ridge on steep snow and rock. On reaching its crown however we could see another similar ridge about a half mile further down the valley—the one we had planned to climb. The heat now drained our energy rapidly, and exasperation prevailed. Byron and I climbed further up the ridge to find it did lead to Toba Peak but that a badly crevassed glacier and the next ridge separated us from the icefield east of the peak.

We reached the 6,100-foot level on the true southern ridge of Toba Peak after two hot, tiring hours. With a heathery ledge, running water, and a small stunted alpine fir for shade, Camp 5 was made early on an ideal site.

Dennis and Ann reconnoitred the route ahead and found no problems. Contented that the remaining part of the unknown route was passable to the Bishop Glacier, we made inroads on Jane and Ann’s talentedly converted freeze-dried supper rations and slept soundly.

After breakfast we descended the east side of the ridge, gaining the icefield on the crisp, sparkling morning snow. The altimeter indicated 7,000 feet as we reached the high point. “The Archbishop” rose prominently out of the glaciers to the southeast. Happily we moved our skis from packs to feet and skied down the gentle slopes for about 2 miles. A further mile by foot and we were on the Bishop Glacier (elev. about 5,000 feet). The long afternoon journey up this glacier



Dennis Holden

View Southwest From Camp 3 Showing Airdrop Location. Tahumming Mtn. Area In Background



Don Poole

Falcon Mountain (left), Mt. Gilbert (right)
from the southeast

SPECIAL NOTE FOR THE CAJ DIGITAL EDITION

An oversized map of the Lillooet Icecap was included in the hardcopy version of the 1966 Canadian Alpine Journal.

It is not included in this digital version due to size restrictions.

to the plateau between it and the Lillooet Glacier (elev. about 6,000 feet) was very tiring, and with not even a breeze the midafternoon heat was almost unbearable. We used skis where possible over the plateau to ease the loads on our shoulders and to make the crossing of the many crevasses safer.

The trip down the Lillooet Glacier was long, hot and boring—mile after mile with little loss of elevation. At last Silt Lake was visible. Fortunately the end of the glacier gave us easy access almost to the lake's edge via a narrow crevasse-free "highway" of "sandpaper ice". There were twelve tired and sore feet as we made Camp 6 by the clear little pool in the moraine beside Silt Lake. It had been a long and tiring day—about 20 miles and 15 hours.

In the morning Byron and Jane made a monument to the traverse with their skis, poles and odds and ends; then with thoughts of a pleasant 2-day stroll along the sandbars and through mossy forests, we left Silt Lake.

The past 7 days of hot sunshine had been excellent for the high-altitude traverse; but now we were to pay the penalty—all the creeks were swollen. Our route was on the south side of the Lillooet river, so Manatee Creek was the first major tributary to be crossed, not without some anxious moments. The high Lillooet River drove us into the bush, and BUSH it was! By 8:30 that evening we had covered only 6 map miles. Bush and bugs, an unbearable mixture of agony and frustration, had thoroughly exhausted us. The dense undergrowth claimed some victims—four pairs of shortie skis and poles. A small clearing northwest of Plinth Peak made a most welcome spot for Camp 7.

An early start was made next morning to get some miles behind us before the mosquitoes arose. We traversed along the river's edge on a large pumice slope and then back into the bush. Keeping to the forest on the northeast side of Plinth Peak we avoided the worst of the canyon; however, northeast of Meager Mountain we dropped down to the river and into extremely steep sidehilling. Considerable time was wasted here and a route higher up on the slopes of Meager Mountain would have been better. Early in the afternoon we reached Meager Creek quite pessimistic about our chances of crossing it. Luckily however, with the recent flooding, new log jams had formed near its mouth, and the other side was reached after an hour of log hopping and deep wading. About a mile east of here Camp 8 was set up on a relatively mosquito-free sandbar.

On the following day, July 6, South Creek was reached after 9 hours of bush, mosquitoes, wading and the occasional sandbar. Again we were lucky—South Creek was also in flood and running in many small streams through the forest. Again the main channel was crossed on log jams. After lunching at an old empty trapper's cabin we soon came unexpectedly to another large creek—South Creek had two channels about a mile apart! On crossing this we entered about a 5-mile stretch of bush, devil's club, swamp and beaver ponds, which made the worst of the two previous days seem like an alpine meadow. After some 6 hours of this we reached the road at 1:30 a.m. Never a more gratifying sight! A roaring fire, warm dry clothes and the remainder of our food supply (tea sweetened with two lemon candies), readied us for our sleeping bags. The fact that Dennis' Volkswagen was not there was insignificant; the bush-wacking was over! Next morning after a breakfast of tea we limped slowly down the road in search of the car. With the help of two loggers and some of their sandwiches we were able to locate it, whereupon leaving the packs to be picked up later we were soon in Pemberton downing two breakfasts each. The misery of the past three days gave way to the memories of the earlier days on ice, snow and rock.

Ape Lake, 1965

B.C. Mountaineering Club Summer Camp, Bella Coola Area, B.C.

Barry Hagen

ABOUT 60 miles northwest of Mount Waddington in the Coast Mountains of British Columbia lies Ape Lake, in the midst of the Jacobsen-Monarch complex, often called the Bella Coola Mountains. Because of enthusiastic reports of scenic grandeur, ready accessibility, and virgin peaks (see articles by Dick Culbert (page 13) and George Whitmore (page 16) in the C.A.J., 1965), the British Columbia Mountaineering Club chose this area for its 1965 summer camp.

July 17, fourteen members and friends met at the Lac La Hache public camping grounds on the Caribou Plateau of central B.C. Next morning our six cars headed west on the notorious gravel road which winds 300-odd miles through the Coast Range to Bella Coola.

By late afternoon we arrived at Chelanko Lodge on One-Eye Lake, near Kleena Kleene, having journeyed 160 miles from Williams Lake in five hours. Mr. Roger Dane, after welcoming us to his beautifully situated lodge, decided to begin flying our party to Ape Lake at once. The lake was about 70 miles to the west at an altitude of 4,400 feet, and each round trip took about 80 minutes. Two passengers and as much equipment as space allowed in the Cessna 180 were taken on each flight. Three trips were completed by 9:30 that evening.

By noon the next day Roger had flown the entire party, in a total of seven flights, to our base camp at the north end of the lake and had left us to ponder the uncertainties of the weather and the unseen mountains around us in the clouds. Although we had set up a small radio transmitter, we were unable to maintain contact with the plane beyond the eastward bend of Jacobsen Creek, and we all felt an acute sense of isolation. However, within a few hours, piles of packs and boxes on the sandy beach had been transformed into a comfortable tent town, complete with sheltered cooking area, fresh running water, and a "fully modern" privy with a beautiful view of the ice-clad Jacobsen Peaks across the lake.

MOUNTS "ICARUS" AND "DAEDALUS"

Tuesday, July 20, was our first climbing day. Because the weather was still unsettled and we were still "soft" the entire group of fourteen elected to attempt Mt. Atavist, just a few miles to the northwest along the eastern edge of the Fyles Glacier. Crossing the gravel moraines and creeks to the glacier in 30 minutes, we were able to walk comfortably along the dry, pebbled ice, and in another half hour were leaving the ice to climb up the terminal moraines and steeply sloped tongue of the "Atavist Glacier".

We soon reached the firm line, and after we had roped up, Martin Kafer led us skilfully through the crevassed area and across a wide névé to the base of a peak which we had glimpsed for a moment through the clouds.

After a stop for lunch, four ropes of two climbed by various routes (class 3 to 4) directly up the south face, while the remaining seven persons scrambled up the west ridge. Arriving on the summit at 2 p.m., we were surprised to find no cairn. As the clouds parted briefly, we found that we had climbed the northeasterly peak of a group of four, all of heights about 8,000 feet, which partially enclose a cirque opening to the southeast, and across the mouth of which we had travelled.

Because a small amount of wet snow was falling, we did not linger on the summit and quickly descended the west ridge to a col. While seven of the party returned directly to Base,



Sketch of Bella Coola Area

Some details of the area around Ape Lake, the dotted lines showing routes taken to and from the various peaks climbed. Based on the map by Glenn Woodsworth accompanying the "Climber's Guide to the Coastal Ranges of British Columbia".

Martin and Esther Kafer, Sheila Pilkington, Alice Purdey, Bill Wortman (Iowa Mountaineers), Jim Martin, and Barry Hagen scrambled from the col up the southeast ridge of the next peak to the west. We arrived at the peak in less than an hour from the col and found that it, too, had no sign of previous ascent.

Because our two peaks were western extensions of the Borealis group (Luna, Aurora, Helios, and Hyperion), we proposed the names “Icarus”, for the first peak climbed, and “Daedalus”, for the second, after the mythical Greeks who managed to fly by fastening feathers to their arms with wax. Icarus, the son of Daedalus, flew too close to the sun (Helios), and the wax melted, whereupon he fell to his death.

HYPERION AND THE APE PEAKS

July 21 dawned brilliantly fresh, with a few clouds clinging to the Jacobsen Peaks, which towered above us across the lake. Packing supplies for three days, nine climbers left Base Camp to attempt Hyperion and the three remaining unclimbed Ape Peaks. Once again, we packed along the eastern edge of the Fyles Glacier and up the Atavist Glacier. We then marched across the broad névé to the south of Icarus and stopped at the foot of Hyperion. After a leisurely snack, we left our heavy packboards behind and, after less than two hours of scrambling up the southeast face, we reached the two virgin summits of Hyperion (ca. 8,200 feet). Clouds prevented us from seeing the Edwards Range, but we were able to lay out a fairly easy route through a 6,000-foot col between Icarus and Hyperion and down the east side of a glacier to Gyllenspetz Creek.

Descending from Hyperion, we picked up our packs and hiked quickly down the highway-like Borealis Glacier to its snout, then across gravel moraines to Aurora Creek (elev. 4,400 feet), which runs along the northwest faces of the Ape Peaks. It was well after dark by the time we had eaten and set up our fly camp.

On July 22, we were up by 4:30 a.m., but were delayed an hour forcing crossings of several branches of Aurora Creek, and it was 7 a.m. by the time we began to gain altitude. The sky was devoid of clouds—indeed, the fine weather was to stay with us to the end of our summer camp. We found an excellent goat trail which led us up through dense bush to the northwest flank of the westerly two Apes, and almost into the midst of 15 healthy-looking mountain goats, who clattered away across the rocky ledges with amazing ease. Traversing northwards, we crossed a glacial remnant and climbed a loose gully to gain the crest of a steep ridge leading up to the second peak from the south end of the Ape massif. Half way up the ridge we roped up because of exposure and class 3 climbing. Extremely loose rock for three leads gave way to firm, steep rock with good holds for another three leads. Then the angle eased off, and easy scrambling carried us to the peak. Unfortunately, nine people on ropes are slow, and the summit (ca. 8,700 feet) was not reached until 4:45 p.m.

To the south stood the first Ape peak, approximately the same height as our summit, and first climbed in 1964 by the Firey party. The intervening ridge was sharpened-edged, with small cornices, and appeared to dip no lower than to about 7,800 feet. The Firey party had proposed “Orangutan” for the name of their peak, but several of our group proposed “Orang” for the first peak, and “Utan” for the second. Leaving the summit 15 minutes after the last rope arrived, we hustled down the easy east ridge for 500 feet, then across the bergschrund to the glacier between Utan and the next peak to the north, which we were already calling “Chimpanzee”. Several members of the party decided to wait in the col at the top of the glacier while Bill Wortman, Alice Purdey, Jim Martin, Barry Hagen, and Martin and Esther Kafer made an attempt on “Chimpanzee”.

A direct rock route up the southwest ridge from the col appeared challenging, but Martin was realistic; “We’re not proud anymore”, he said, “just late”. So we tramped down the lightly crevassed glacier, scrambled up a rotten gully, and kicked steps with rhythmic determination up a 30° snow slope to a steep-walled ‘schrund, which was overcome by way of an avalanche path. Thence up 40° good snow to the summit ridge, and with a few hundred feet of scrambling we arrived at the 8,850-foot summit of “Chimpanzee,” highest of the Ape Peaks. Looking north to the fourth Ape, which we christened “Gorilla”, we realized that we could not hope to climb it, for the hour was now 6:30 p.m., the peak was a considerable distance away, and the south ridge appeared to involve class 4 and 5 climbing.



Barry Hagen

The Jacobsens to Southwest of Base Camp at Ape Lake

Returning to the “Utan-Chimpanzee” col by way of our ascent route, we gathered up our chilled companions, roped up, and began to descend a very steep couloir on the northwest face. Well belayed from above, Esther probed her way down, in soft, wet snow, the angle increasing relentlessly. When she had stopped at the end of 120 feet of rope, the people above began to follow in her tracks, ropes spaced tightly. Suddenly, with a hiss, the surface snow around their feet broke loose and slid away. Esther saw the slide develop, rammed her ice axe deeper and crouched down. The mass sped rapidly downwards, slithered heavily over Esther, and raced towards the crevasses lower down, sweeping a broad path free of the loose surface snow. Esther stood up, shook the snow from her clothing, and smiled brightly, whereupon we continued our descent. Threading our way down the broken-up lower section of the couloir, we were forced to belay one another over snow-covered crevasses, into which a few of us broke to waist-level before rolling off to the side.

Although darkness had fallen by the time we had rapelled over the gaping lower ‘schrund, we decided to push on, for the night was growing cold and we were only lightly clothed. Traversing southward out of the couloir and over a buttress, we crossed a broad snow slope and climbed up to the north ridge of Utan. From the site of our lunch stop 12 hours earlier, Bill guided us down the rotten couloir, but was unable to pick a route down the 200-foot cliff to the ice below. We decided to bivouac till dawn. Crowding together amongst the rocks, we gazed at the stars and the mountains’ strange midnight beauty, racked by uncontrollable spasms of shivering. At 4:30 we struggled into frozen socks and stiff boots, rapelled out of our bivouac site, and struck out across the hard ice to the high meadow and goat trail. We were back to camp by 7 a.m., in time for breakfast, last night’s supper, and a few hours’ sleep.

Instead of returning to Base via the Borealis-Atavist pass, we chose the route up Aurora Creek to the south of Second Fiddle, thence over the southeast shoulder of Musician Mountain. A spectacular sunset and the dramatic view of the Jacobsens from “Symphony Col” helped compensate for a dark, two-hour bushwhack with awkward packboards down the west slope of Musician. We all agreed however, that the best route from Ape Lake to the valley of Borealis Creek is that over the Borealis-Atavist pass.

“THROWBACK”

Although Saturday, July 24, was scheduled as a rest day, Alice Purdey and Barry Hagen felt that the best way to enjoy the fine weather was to attempt Mount Atavist by a route up the rocky south face. Shortly after they left camp, Martin Kafer led John and Enid Harris, Dan Chercover, Fred Brownsword, and Mary Wells toward the east ridge of the same objective. Both parties followed the “standard” route across the gravel flats to the Fyles Glacier and along its east border to the terminal moraines of the Atavist Glacier. From there, Alice and Barry scrambled up mossy slopes and a series of class 3 gullies to the upper east ridge. Scrambling along the gentle ridge, they eventually came to an 80-foot pinnacle with dramatic exposure to the east and west. They traversed along the north moat to the opposite side, whereupon Alice led a class 4 pitch to the top (ca. 7,800 feet). Within a few minutes, Martin’s party had arrived, having climbed the easy snow of the east ridge. Martin and Enid joined Barry and Alice on the rather unstable pinnacle, while the others lounged in the sunshine by a small pool.

The pinnacle appeared not to have been climbed previously, and was the highest point of the mountain. About a half mile to the northwest we saw another, slightly higher, peak with a broad, rounded summit on which a cairn was clearly visible. That must be Mount Atavist, we decided, for we had climbed the other three of the four summits which surround the cirque from



Barry Hagen
**View To Southeast From Just Below "Blackfly"- "Muskox"
Col.**



Barry Hagen
Summit Pinnacle of "Throwback Mtn."



Barry Hagen

View to Southwest from East Ridge of "Throwback Mtn."

SPECIAL NOTE FOR THE CAJ DIGITAL EDITION

An oversized panoramic photograph from the summit of “Throwback Mtn.” was included in the hardcopy version of the 1966 Canadian Alpine Journal.

It is not included in this digital version due to size restrictions.

which the Borealis and Atavist glaciers flow. We returned to Base in time for an excellent supper prepared for us by Esther and Jean, and afterwards, began to argue over the meaning of "Atavist". We agreed, finally, to provide a one-word definition by proposing the name "Throwback" for our peak of the day.

THE EDWARDS RANGE

On July 25 Bill Wortman, Martin Kafer, Alice Purdey, Jim Martin, and Barry Hagen shouldered heavy packs and departed for the Edwards Range, the first good view of which we had had only a day before, from Throwback. Once again, we crossed the flats to the Fyles Glacier, marched along the east margin, and climbed the terminal moraines of the Atavist Glacier. After second breakfast, we worked our way up the steep tongue and through the crevassed section of the glacier, then across the broad névé to the 6,000-foot Icarus-Hyperion col, four hours after leaving camp.

Progress down the relatively gentle "Icarus" Glacier was rapid, and we soon reached Gyllenspetz Creek at 4,100 feet. But crossing the boiling stream proved a major problem, and, while being used to place a heavy log between two widely spaced boulders, Barry's ice axe was snapped in two. Once over the creek, we stumbled onto a vague game trail with evidence of recent passage by a grizzly. Losing the game trail almost as soon as we had found it, we fought our way up through slide alder, devil's club, and slippery shrubs to an elevation of 4,400 feet, where we established an uncomfortable camp amongst the trees in a "bear hollow", a small scoop out of the 30° mountainside. The air was thick with hordes of blackflies, goatflies, mosquitoes, and horseflies, and we lost no time getting into our two mountain tents.

Next day easy scrambling on solid rock carried us to the summit (ca. 8,000 feet) within four hours of leaving camp. Our fly camp was situated on the southern flank of the first Edwards Range summit to the east of Polar Bear and Cub peaks and it, like the peaks to its east, was unclimbed. As we sat studying the Edwards peaks to the east, we agreed to christen those we might climb in keeping with the Arctic motif of the westernmost summits of the range, Polar Bear and Cub. The uninspiring hump upon which we sat was dubbed "Blackfly", and the two subsidiary peaks over which we traversed were referred to as "Goatfly" and "Horsefly".

We left the summit at about 11 a.m. and descended the steep east face, using one 60-foot rappel. Setting our sights on the next peak to the east of Blackfly, we crossed a broad col, traversed along the north side of a subsidiary peak (ca. 8,200 feet), and followed a class 3 gully system to the upper west ridge. We stepped onto the small but flat summit of "Muskox" (ca. 8,600 feet) four hours after leaving the Blackfly cairn. The afternoon sun was warm, the views on all sides were beautiful, and we dreaded the thought of returning to the hungry hordes of insects at our "Fly" camp. Thus, for nearly two hours, we snoozed on the slabs, admired the great south and east faces of the Horn, Matterhorn, and Arjuna peaks to the north, and planned our approach route to the peaks next to the east.

Leaving Jim peering morosely at Bill's pocket book of poems, the others struggled next morning up the bushy lower slopes to a goat trail, which we followed across the gorge and over the east shoulder of Blackfly. As we paused for breath before striking out across the glacier to the Blackfly-Muskox col, a mass of ice broke loose from the sun-warmed cliffs and slid across our tracks of the day before.

We descended to the middle of the icefall which serves as the easternmost source of Nusatsum Creek. Martin led us eastwards up the icefall to the névé which stretches for five level

miles from Muskox to Arjuna, and we paused for second breakfast in the welcome shadow of Muskox. Bill Wortman, who was seeing the Coast Mountains for the first time, declared that the broad, unexplored glacier before us, surrounded by steep-walled peaks, was one of the most beautiful sights he had seen, and resolved to return. He proposed to call the glacier "Itasca", a Chippewa word meaning "headwaters".

We circled the north buttress of Muskox and climbed around scattered crevasses to the low pass between Muskox and the next Edwards peak to the east. Climbing solid class 3 rock directly up the west ridge, we arrived on the summit (ca. 8,950 feet) at 3 p.m. After building a cairn and christening the peak "Eskimo" we retreated a short distance along the west ridge, and cautiously descended a 2,000-foot couloir whose steepness approached 50°.

July 28 was to be our last climbing day, and the sky was, once again, cloudless. We continued southwards up the gentle ridge on which we had camped, traversed "Mount Lemming" (ca. 7,800 feet), and climbed down its steeper east ridge to a col, then scrambled directly up the northwest face of the 9,100-foot peak directly east of Eskimo. After building a cairn and leaving the name "Seal Peak" in a film container, we retraced our ascent route for 500 feet then traversed to the east ridge and glissaded down to the col between Seal and the next summit to the east, the highest of the western Edwards Range. Frequent changes of lead as we kicked steps up the steep snow soon brought us to the rock, which offered solid class 3 climbing all the way to the highest of the two summits (ca. 9,250 feet) which are separated by a 200-foot deep cleft. It was noon as we built our last cairn of the summer camp. We christened the twin peaks "Walrus Tusks" (the shorter simpler name "Walrus" is probably a better choice), and left the ascent record in a B.C.M.C. cairn tube we had saved for this mountain. Another of the well-made tubes had been left on Chimpanzee, highest of the Ape Peaks.

We left Fly Camp at 9 a.m. July 29, bound for Base Camp via Gyllenspetz Creek and Icarus-Hyperion col. A forced march across the Atavist névé and down the glacier tongue to the Fyles Glacier carried us to Base Camp by 3 p.m.

POET PEAK

Shortly after the Edwards Range party had left Base Camp on July 25, Esther Kafer, Fred Brownsword, Fredrika Mendel, John Harris, Mary Wells, and Jean Finlay fought their way through the bush directly above Base Camp and traversed upwards and eastwards across the open slopes of Poet Peak, which had first been climbed by Cooke and Whitmore in 1962. On July 22 some of us had attempted Poet by way of the south flank but had turned back when a number of boulders, knocked loose from the rotten slope, rolled down on Enid Harris, injuring her shoulder painfully. This time, the party chose a more easterly route and encountered solid, straightforward climbing to the top.

MOUNT BELIAL

On July 26, the entire party at Base Camp started the first ascent of Mount Belial, an 8,000-foot mountain six miles southeast of the Jacobsen Peaks and on the western rim of the Monarch Ice-cap. Esther Kafer led John and Enid Harris, Fred Brownsword, Mary Wells, Jean Finlay, Sheila Pilkington, Fredrika Mendel, and Dan Chercover around the west end of Ape Lake and across the Fyles Glacier to the Ape Glacier. After pausing beneath the Jacobsens to photograph the beautiful Ape icefall, they descended to timberline and bushwhacked for two hours to reach Deer Lake, about two miles southeast of Ape Lake. There they forded an icy run-off creek and climbed above



Barry Hagen

View To North From Summit Of "Muskox", Across Nordschow Creek Source

Mad Dog Mtn

Matterhorn

Arjuna

Unnamed

the lake to a somewhat boggy meadow, where they established a fly camp.

The next morning, July 27, while Enid Harris remained at camp, the others struck out across the tongue of the Jacobsen Glacier for Belial. The ice was a tangle of crevasses and folded ice ridges, necessitating much step-cutting, belaying, and route-changing, and nearly three hours went by before they reached the easy snow and rock leading to the base of the mountain. They were on top almost three hours later.

JACOBSEN PEAK

The next morning, July 28, while the others set out for Base Camp, the "Girl Guide Troop" (Esther, Sheila, and Jean) set off for the East Peak (ca. 9,500 feet), higher of the two Jacobsens, first climbed in 1958 by Wilson, Steck, and Burnett. By following an old moraine alongside one of the creeks which tumble into Deer Lake off the slopes of the Jacobsens, the girls avoided several cliff bands on the flank of the East Peak. Their route then continued up the big snowfield which leads to the col between the East and West peaks and which serves as the source of the Ape icefall and glacier.

From the col, the girls traversed on to the southwest ridge, joining the route of the first ascent. Without roping up, they were able to climb solid, dry, class 3 rock all the way to the summit, which they reached seven hours after leaving Deer Lake. Next day they returned to Base camp, and all flew out on July 30.

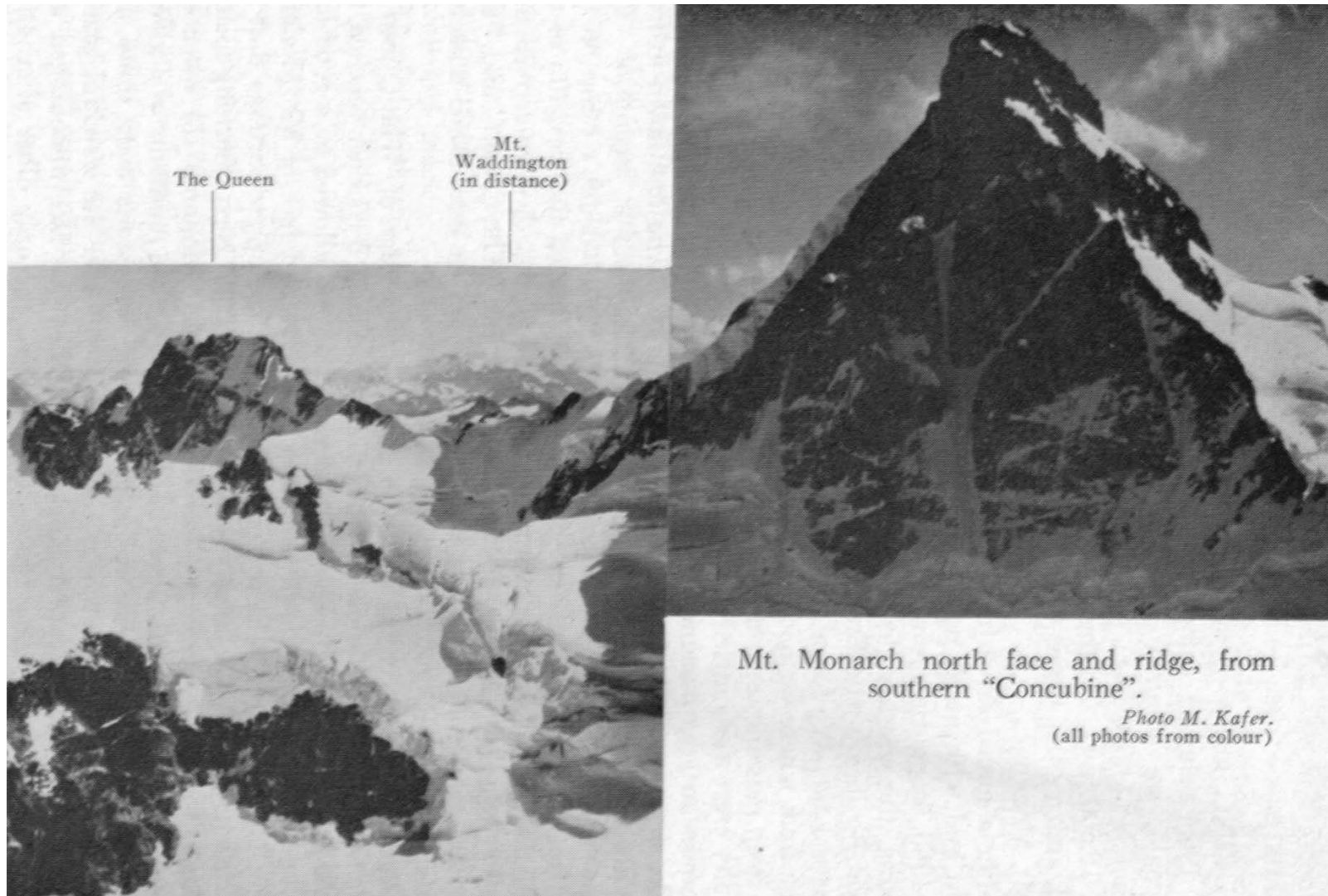
Although only 15 peaks were climbed during the ten days that the B.C. Mountaineering Club was at Ape Lake, thirteen of them were first ascents. The area is heavily glaciated and spectacularly beautiful, and, although few peaks exceeded 10,000 feet, the rock is sound and the relief is good. Only a few first ascents are left to be done, but second ascents await by the dozen, and challenging new routes abound.

Mt. Monarch's Court

Martin Kafer

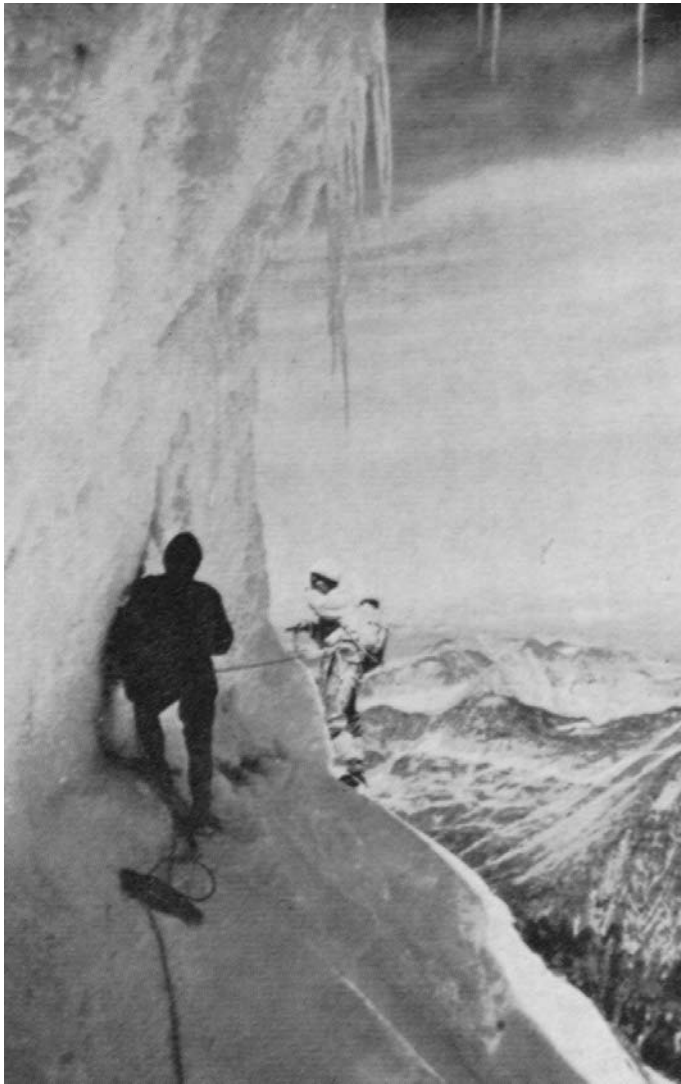
During many of our climbs from the B.C. Mountaineering Club's 1965 summer camp at Ape Lake (see report elsewhere in this Journal), we admired at a distance the daring rock pyramid of Mt. Monarch (11,590 feet) and its rugged neighbour the unclimbed "Queen" (ca. 10,600 feet). On the flight home we made a sudden decision: to come back and try the ascent of at least some of the unclimbed peaks just north of Mt. Monarch.

After a forced drive from Vancouver to Kleena Kleene, this time overnight and with much poorer road conditions, we arrived early on August 26, 1965, in pouring rain at Roger Dane's Lodge. After a day of impatient waiting, the weather cleared sufficiently to have Roger fly the three of us, David Boyd, my wife Esther and myself, with all the gear, to the northern Success Lake. We found the only suitable landing spot to be a big beaver lodge from where we had to hack our way through the bush up the side of the steep moraine separating the two lakes. To carry our heavy packs along the airy crest was a mixed pleasure, especially when we noticed recent vibram prints in an area presumed unvisited this year. As we found out later the tracks were made by a party of six Seattle climbers who had flown in from Campbell River two weeks before us and made the first ascents of "The Queen" and the two "Concubines." To reach the first day's camp on the east shoulder of the northern "Concubine", we skirted the west rim of the fantastically broken

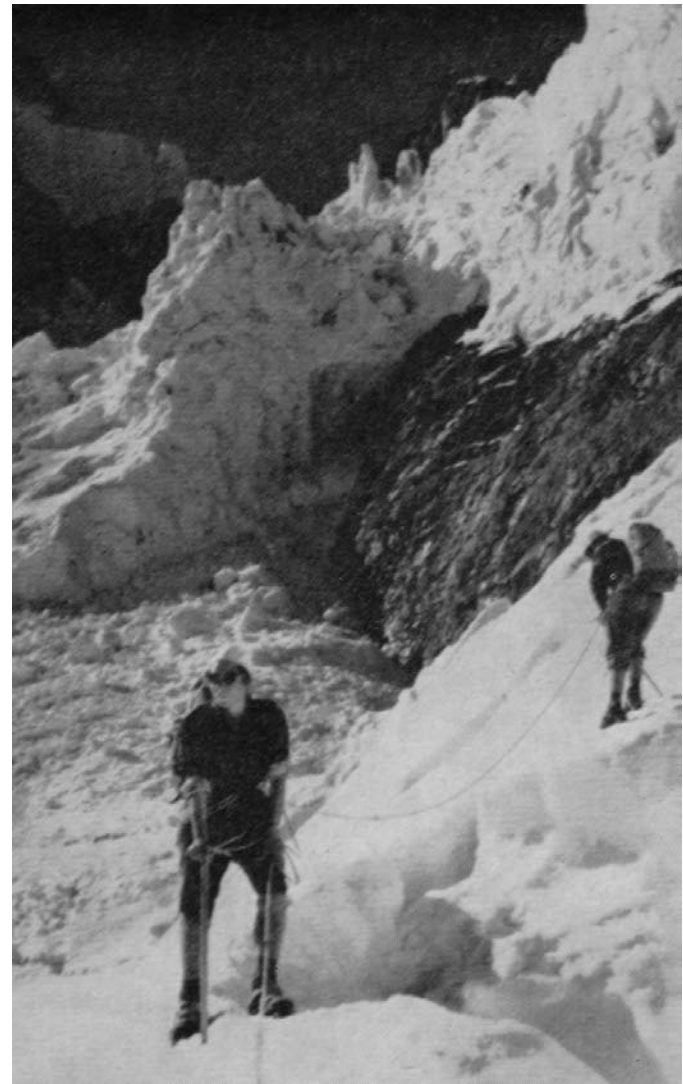


M. Kafer

Mt. Monarch North Face and Ridge, from Southern Concubine



D. Boyd
Bergschrund Manoeuvres On Mt. Monarch's East Face



D. Boyd
Upper Anarchist Icefall

lower Anarchist Icefall. The next day we arrived in a howling wind at the 8,500-foot snow col between "The Queen" and "The Throne", where after 5 hours of cold and wet toil we established ourselves in a spacious and comfortable snow cave.

On August 29 we set off early to give the west ridge of "The Queen" a try and after about 5 hours of cramponing and class 3 rock we reached the already cairned summit. The weather was clear and allowed us a good look at our next objective, the intimidating east ridge and face of Mt. Monarch itself. There seemed to be so much blue ice in the upper portions that we decided to first try a new route from the south. Next morning's early daylight found us crossing the 9,500-foot Queen-Monarch col whence a tricky 2,000-foot descent of very hard snow led to the remnants of a glacier southeast of Monarch. From there a laborious ascent over snow and rubble brought us to the foot of the south ridge under the watchful gaze of a curious mountain goat. A quick look at the west face discouraged any further search for an easy route, so we tackled the only other alternative, the south ridge. The ill-defined ridge offered first some fairly easy rock but later turned into a nightmare of route finding and we spent most of our time climbing back from promising looking but dead-ending ledges. Higher up we encountered some more solid and difficult rock requiring a few pitons for protection. In the late afternoon at about 10,000 feet we got stopped short on top of an overhanging 300-foot gap facing a vertical wall of tremendous proportions which should remain a virgin challenge for many years to come.

To recover from the exertions and late return we felt a rest day was called for, but as the weather continued beautiful we turned our attention towards a lesser member of the royal household. A short descent down the Queen Glacier brought us to the south face of a 9,500-foot peak which we ascended over easy rock in about 2 hours. "The Serf", as we later named it, was our only first ascent on this trip. On the return we were surprised by a sudden blizzard and were glad to retreat into the cosy quiet of our snow home.

Next morning at 3 o'clock it was still blowing hard, but within an hour the stars promised another fine day. Once again we cramponed up to the Queen-Monarch col and from there a varied and exposed 4-hour trek over knife-edge snow ridges and snow-plastered gendarmes led to the bottom of the hanging glacier on the east face of Mt. Monarch. From here David hacked his way in evenly spaced zig-zags up the steep ice and hard frozen snow to the prominent bergschrund where we stopped for lunch. Fortunately the subsiding lower lip of the bergschrund allowed a reasonable exit to the right from where we managed to reach the nearest rocks after another hard 1 1/2 hours step-cutting and belaying on the 50° ice slope. We found the use of the solid and hollow ice screws of invaluable assistance for first class belays. Then we followed a shallow rock gully to a debris-covered ledge which we traversed to the right. From here two fairly tricky leads on solid rock brought us to the north ridge, where a cold wind sounded a chilly greeting in the broken rock. The ascent of the ridge turned out to be a wild mixture of steep snow patches, sloping rubble ledges and delightful rock pitches with a wobbly shoulder-stand thrown in.

And we reached the peak at 6 p.m. In the last rays of the evening sun we admired the distant silhouette of Mt. Waddington, which all three of us had climbed in 1962. Retracing our steps across the north ridge we began to admit that a bivouac was unavoidable. By 8 p.m. we had descended as far as the last rocky ledge above the hanging glacier at 11,000 feet, where we tied ourselves into the rocks. The next 8 hours we spent dozing fitfully, gazing at the stars and shivering in unison. A short rappel with stiff fingers and we were belaying each other carefully down the icy slopes to the first rocks of the east ridge. The return along the ridge seemed interminable, requiring 6 hours after we left the bivouac before we arrived back at the cave for a hot meal and some sleep.

Late the same afternoon we reluctantly left this hospitable abode to return to the flapping noise of the tent at our lower campsite.

On our last climbing day we reached the higher (southern) of the two “Concubines”, from where we gained a memorable view of the imposing rock pyramid of Mt. Monarch and into the vast reaches of the Monarch icefield.

Summary of climbs (each by all three of party):

Aug. 29. “The Queen” (ca. 10,600 ft.), second ascent via W ridge, class 3.

Aug. 30. South ridge of Mt. Monarch to 10,000 ft., class 3 and 4.

Aug. 31. “The Serf” (ca. 9,500 ft.), E of “The Throne”, first ascent.

Sept. 1-2. Mt. Monarch (11,590 ft.), fifth ascent, via E ridge and face.

Sept. 3. “Concubine Pk. South” (ca. 10,100 ft.), second ascent via E face, class 3.

Atna And Sicintine Ranges

West Central British Columbia

George W. Whitmore

The lure of virgin territory drew us into the remote Atna⁷ and Sicintine Ranges in west central British Columbia. Fifty miles north of Hazelton, these mountains had caught my attention a number of years ago during a study of oil company road maps. The available government topographic maps were not much more enlightening. The uncertainty made it difficult to interest others in the area, but for us the fact that this was unexplored territory made it all the more attractive.

In August of 1965 Dave Bradford accompanied my wife, Frances, and me on a 3 1/2-week trip. We flew to Sicintine Lake. Upon alighting from the airplane, we were greeted by a sight which is becoming distressingly commonplace in the Canadian wilderness. Prospecting parties had preceded us, leaving in their wake a mass of rubble and destroyed trees. Depressed by what we had found, we spent the remainder of the day cleaning up the area.

Late the following afternoon we shouldered two-week packs and headed for timberline in the Atna Range. After a few hours of uphill traversing we reached a minor ridge crest. Peering out between the trees, we were quite confused by what we saw, for the topography bore little resemblance to what the map shows. Instead of a traverse across a gentle wooded slope, we were confronted with a steep avalanche-swept headwall of slide alder and other dense growth. A mile in width, it was so repellent that we altered our course and headed straight up into the unknown.

The following day we were forced further upward by the terrain, and eventually we reached the crest of a small peak which we called “Raven Ridge”. We descended from it to a campsite on a broad, undulating plateau of heather and fir. With a few small lakes nearby and a stream wending its way past our tent door, this turned out to be the most pleasant camp of our entire trip. We were to find that such delightful alplands, scenic and easy to travel in, are a relative rarity in the Atna and Sicintine. With very few exceptions, our cross-country travel lay either along valley bottoms or up on the glaciers; we tended to avoid the middle ground because of its generally uninspiring nature.

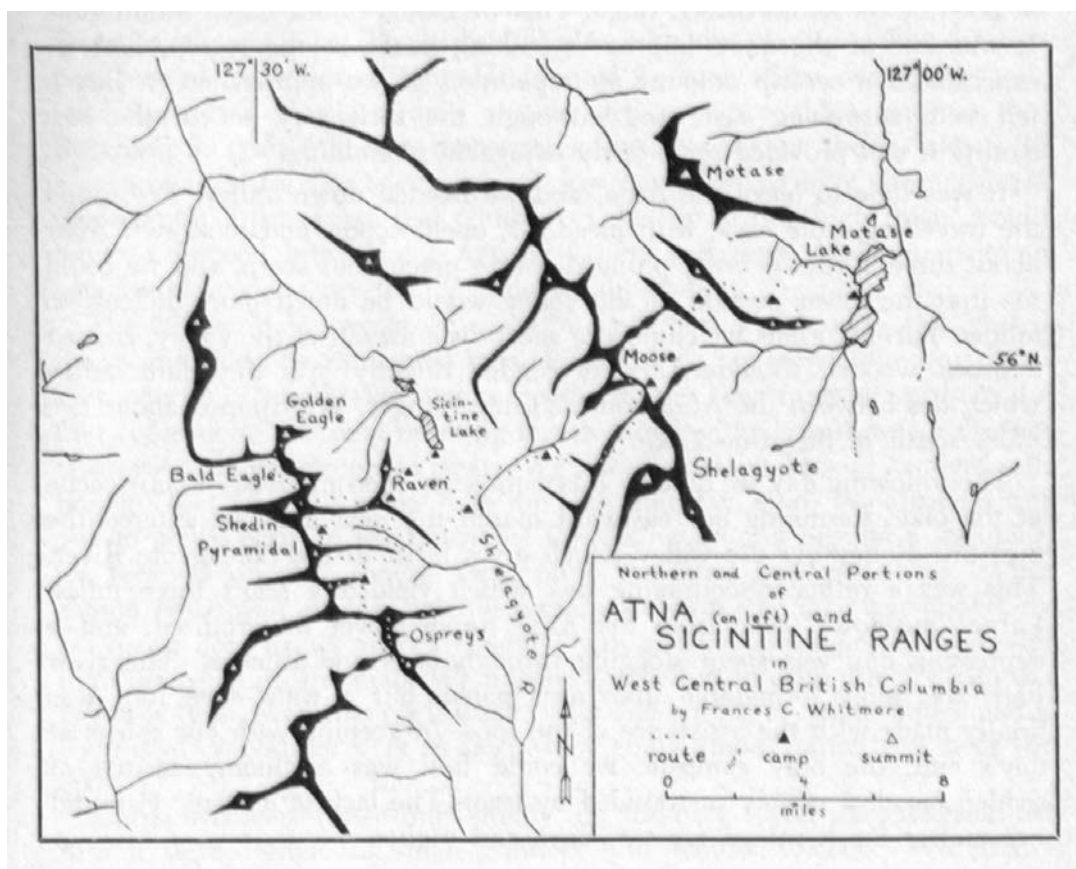
Shedin Peak, the highest in the area (8,500 feet plus), was climbed from this camp in a very long day. We proceeded above our plateau up the east ridge of Shedin until further progress was impractical. From a notch in the ridge we descended on steep snow to the northeast glacier of Shedin. This gave us easy access to the east side of the final peak. Uncertain whether to tackle

⁷ Not to be confused with the Atna Peak near Kitimat.

the northeast ridge or the southeast slopes, we committed ourselves to the ridge. This turned out to have been a mistake, and almost cost us the summit. Although the steep rubble of the ridge proved very time-consuming, the route nevertheless offered breathtaking views down the tremendous north face, including two golden eagles circling far below in the depths, silhouetted against the glittering white of an icefall. At 7 p.m. we finally reached the summit.

The descent was made via the loose rock of the southeast slopes in a fraction of the time we had taken to ascend the ridge. The glacier was regained more easily here, as there was no bergschrund problem. A speedy retreat was begun down the glacier, but it was after midnight when we reached camp.

Although our camp was in an idyllic setting, it was too far from the mountains we wished to climb. We crossed the valley to the south and set up a new camp on a small niche of heather tucked high between two glaciers. On our first day here we hiked in the fog up a low-angle ridge which rose directly above us. This hike culminated on a minor granite peak of the main Atna divide. The following day we enjoyed a long trip across the glaciers to the south, and along a granite ridge with three peaks. We climbed into the saddle between the middle and south peaks, and then ascended the southerly peak first. Then we traversed to the north over the middle peak, ending up on the summit of the northerly peak, which was the highest of the three. We descended from the saddle between the middle and north peaks. The rock work on these three peaks was the most enjoyable we encountered during our entire trip. We called these the "Osprey Peaks".



Frances C. Whitmore

Sketch of Atna and Sicintine Ranges

We then moved camp back to the north again, at the very head of the valley which drains the southeast side of Shedrin Peak. In making this move, we crossed a snow col close under an attractive little pyramidal peak immediately south of Shedrin. Dropping our packs, we climbed the east ridge of the peak. We descended its north ridge until we could regain the snow, and then traversed back across the glacier to pick up our packs. The rotten metamorphic rock of "Pyramidal Peak" turned out to be more suitable for looking at than for climbing upon.

Our new campsite was in a very pretty location. In the midst of a broad expanse of heather and grass, we were surrounded by small snowfields, glaciers, and multi-colored rocks and lakelets. This would have been the logical camp from which to climb Shedrin, but our attention now was centered on two 8,000-footers farther north. Dave and I climbed the farthest one, two miles north of Shedrin, via its southwest ridge. We called it "Golden Eagle Mountain". Near the summit, high on its barren crest, we found two chipmunks living what must be a rather austere life. The following day all three of us climbed the closer peak, one mile northeast of Shedrin, via its northwest ridge. This we called "Bald Eagle Mountain". It was one of the more impressive-looking peaks in the region, and we experienced a certain amount of trepidation as we approached it. But it fell with surprising ease, and although the rock was not of the best quality it still provided some fairly enjoyable scrambling.

It was time to leave the Atna, and we headed down valley. We found the travelling quite easy, with meadows, open woods, and moraines. After about three miles the creek plunged over a precipitous scarp, and we could see that the lower portion of the valley would be much more difficult to follow. Turning aside, we climbed a short distance out of the valley, crossed a broad wooded shoulder, and descended directly into the main valley which lies between the Atna and Sicintine Ranges. We camped about two miles south of Sicintine Lake.

The following day we quickly hiked through open meadows to our cache at the lake. Resuming our eastward march the next day, we entered the Sicintine Range via the valley which gives birth to the Shelagyote River. This was a rather discouraging day which yielded a scant three miles. Large "meadows" seen from the Atna Range never materialized, and a depressing day was spent slogging through bogs and thickets. The river itself was more formidable than anticipated, but a waist-deep ford was finally made with the assistance of the rope. In keeping with our spirits at day's end, the only campsite we could find was a gloomy swatch of sodden meadow closely surrounded by trees. The lack of a scenic vista did not matter for it rained for two days and nights.

The third morning dawned clear, and with new-found enthusiasm we headed for timberline. Even our packs were lighter, as we were now only four days from our rendezvous with the airplane. We had hoped to climb two or three peaks in the Sicintine Range, but the rain had eliminated a critical two days from our itinerary, and all efforts now had to be directed toward reaching Motase Lake before the airplane. Open woods provided easy travel, and we were soon working up a broad ridge crest above timber. At the top, we crossed onto the broad glacier north of Shelagyote Peak, followed it for a way, and then crossed back through an easy notch to gain the next glacier north. Traversing across the head of this, we crossed through another pass, and this put us on the east side of the main Sicintine divide. Our only snow camp of the entire trip was made in this pass.

Only a mile to the west of us lay an attractive granite peak which had held our attention from the Atna Range. We scrambled from the pass to the summit of a subsidiary peak, and Frances decided to stay behind on it while Dave and I raced up the east ridge of the main peak, which we named "Moose Mountain". By the time we had rejoined and broken camp, it was late afternoon

and we had many a mile to go.

The route we had selected on the map lay across the glacier, went through a pass in a ridge on the far side of the glacier, traversed a mountain flank, and dropped through another pass onto the slopes leading down to Motase Lake. The only difficulty with the plan was that the first pass seemed to be nonexistent. Undaunted by such trifles, we slopped our way through a glacial swamp and headed over the ridge, pass or not. Reaching its crest well into the evening, we peered over the far side with a gasp of surprise. The system of two low passes linked by a short traverse was a myth. Instead, we had climbed to the top of one high ridge, would have to descend into a long, narrow valley, and then climb out over an equally high ridge on the far side of the valley.

The following day we broke camp in a lull between showers and crossed the second ridge. Accompanied by a steady drizzle, we picked our way down past a series of small lakes and camped within a few hundred yards of the first vegetation. The next morning it was snowing, and there was a distinct impression of winter on its way. We shouldered packs and trudged off, hopeful that we could make it to the lake that day, since the airplane was due to arrive early in the morning. Traversing up and around a shoulder, we received another shock. Once more the map had misled us. What should have been an easy sidehill traverse down to the lake was hopelessly cut up by deep draws and cliff bands, with an over-all angle much greater than indicated on the map. We had no choice but to drop directly into the valley bottom, even though it was brushy and cut up by ponds and sloughs. By late afternoon we were in fairly easy going among large trees near the lake.

Our spirits were raised only briefly, for the easy travel soon deteriorated into a nasty tangle of small conifers and willow thickets. We finally despaired of finding a flat spot big enough to camp on, and curled up individually in the hollows under a pair of spruce trees. We awoke to gray skies and a cold wind, with new snow on the nearby peaks. The plane was late, but by mid-afternoon we were back at Telkwa.

We had sought adventure and discovery in virgin mountains, and these we had found. Except for the prospectors' camp at Sicintine Lake, and a bundle of claim posts near Motase Lake, we had found evidence of human activity in only three places.

Of the ten peaks we had climbed, all were apparently first ascents. A claim marker on Raven Ridge was close enough to the top that the summit would logically have been occupied, although apparently by helicopter. A claim marker on Golden Eagle Mountain, although high, was quite some distance from the summit; again, we suspect that it was placed by a helicopter party.

The geology of the area is quite mixed, and this undoubtedly accounts for the prospecting activity. Metamorphics of sedimentary origin are thoroughly mingled with areas of granitic intrusion. None of the higher peaks are granite, and the metamorphic rock we climbed on tended to be rather loose. It was still preferable, though, to much of the climbing in the Rockies.

The Sicintine contains much more granite than the Atna, but is far less rugged; although nice country to hike in, it holds little challenge for the mountaineer. Worthwhile peaks remain in both the northern and southern ends of the Atna. It is entirely possible that the southern portion would be most easily reached on foot. By crossing the bridge at Kisgegas and gaining elevation on the trail which leads to Atna Pass, the most southerly peaks could surely be reached rather easily. Whether it would be feasible to penetrate further into the southern part of the range is something else again. Our views of the region indicated that cross-country travel would not be easy.

Attractive though they may be, we doubt that the Atna and Sicintine will be overrun by climbers until the current demand for technical challenge has run its course. But for those who seek communion rather than conquest, the rewards to be found in northland ranges such as these are more than ample.

Mount Thomlinson Massif
Western Central British Columbia
George W. Whitmore

The exploratory mountaineer who is addicted to map study of the British Columbia coastal ranges eventually “discovers” the Mount Thomlinson massif. The highest for quite some miles in any direction, it is only 20 miles north of Hazelton and is closely approached by a road on its west and north sides. Devoid of climbing history and rumored to be of granite, it seemed overdue for a reconnaissance in late July of 1965. Six days were devoted to this by my wife Frances, and me.

Leaving the main Skeena River road at Sterritt Creek, we followed a logging road on the south side of the stream. In about a mile the road forked for the second time. At this point we took the fork which turned to the south, away from the creek. (We later discovered this to have been a mistake.) After a long ascending traverse up the mountainside the road ended in a large logged area at about the 2,000-foot level, just above Sediesh Creek.

The next morning we headed directly up the slope through easy timber. In only 2 1/2 hours we were free of the woods and were able to follow open areas between patches of trees. The last part of the ascent was up broad heather slopes, and late in the afternoon we topped out on Point 5,968 (shown as 5,965 on the 1:50,000 map). This point had been previously occupied by survey parties. We camped on the ridge crest immediately north of the point. This was an excellent campsite, and actually turned out to be the only one we found in the entire distance between the car and the glacier.

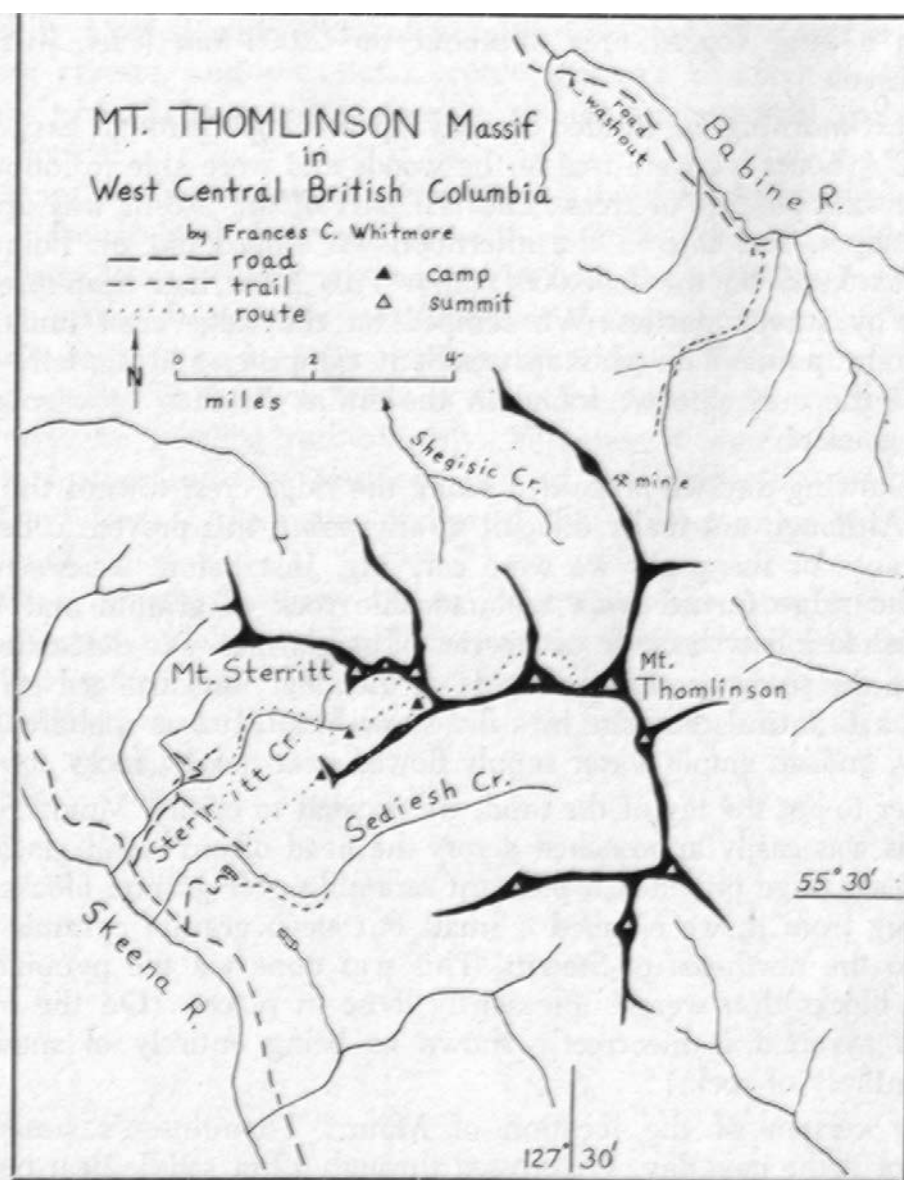
The following day we proceeded along the ridge crest toward the glacial plateau. Although not really difficult at any point, this proved to be rather slow because of the packs we were carrying. Just before we reached the glacier the ridge turned from metamorphic rock to granite and became impractical to follow because of a series of gendarmes. We descended loose granite to the snow on the north side of the ridge, and trudged up simple slopes to a beautiful campsite in a flat snow basin. It was sheltered, had a fine view, and an ample water supply flowed over nearby rocks.

In order to get the lay of the land, we decided to climb “Mount Sterritt” first. This was easily approached across the head of our small glacier, and its northeast ridge provided a pleasant scramble over granite blocks. Upon descending from it, we climbed a small but steep granite pyramid immediately to the northeast of Sterritt. This was done via the pyramid’s east arête on blocks that were unpleasantly loose in places. (On the 1:50,000 map this pyramid is incorrectly shown as being entirely of snow; it is almost entirely of rock.)

Finally certain of the location of Mount Thomlinson’s summit, we headed for it the next day. We crossed through a low saddle near our camp and traversed to the east across the head of a large glacier. Climbing into another saddle, we then descended a steep bit of snow on the far side of it and walked out onto the main northwest glacier of Mount Thomlinson. By going to the head of this glacier we reached the foot of the southwest ridge of the final peak. This provided an easy snow climb almost all the way to the summit rocks. We half expected to find a cairn, but were pleasantly surprised by an apparently virgin summit.

The following day we considered climbing an attractive granite peak which was quite near our camp, but finally decided to leave it for the next party. It might very well have proven to be the most interesting climb in the area. Instead we simply spent an hour and a half moving camp from the glacier down to the inviting greenery and flowers at the head of Sterritt Creek.

The final day was occupied in descending the creek. The upper portion was fairly easy to follow, and a stretch of good blazed trail was found. Eventually, we lost the trail and crossed to the south side of the creek in order to intercept the road we had driven up. A half mile of sidehilling through very dense young conifers proved quite distressing, but suddenly we rounded a corner and found ourselves in open woods once more. We soon intercepted the road, and a walk of one mile put us back at the car. Driving back down to the road fork at Sterritt Creek, we decided to check out the north branch of the road. We were able to drive only a few hundred feet along it, and were then stopped at a damaged bridge which crossed to the north side of the creek. Leaving the car, we walked up the road for about a quarter mile. It went steeply up in a long grade to a bench above the stream, and then cut sharply to the north, away from the stream. The road soon showed signs of petering out, but about 100 yards from the turn where it had left the stream we noticed signs of a blazed trail heading straight up the slope.



Frances C. Whitmore

Sketch of Mt. Thomlinson Massif

We followed this up the mountainside for about a quarter mile, and became convinced that it was the start of the trail which we had lost higher up while descending Sterritt Creek. We would apparently have saved ourselves a lot of trouble if we had come down the north side of the creek all the way, keeping a couple hundred yards away from it in the middle and lower portions. Certainly there was every indication that, had we found this trail at the beginning of the trip, we could have reached our high camp on the glacier in only one day.

Returning to the car, we drove on down to the main Skeena River road. We decided to follow it up the river and then on up the Babine River past Kisgegas. While making this tour the next day we discovered a helicopter camp a mile or two east of Shegesic Creek.

While on the summit of Mount Thomlinson we had heard a helicopter, and had spotted it taking off from a saddle 3 miles to the north. Looking more closely, we had discerned several white tents in the saddle, and had realized that we had found the Southwest Potash Company's molybdenum mining camp. Now, with the discovery of the helicopter camp on the road, the picture was becoming more clear.

We camped nearby, and the next morning were awakened by the sound of the helicopter arriving. Tearing down the road, we met pilot Jim Grady of Nelson, B.C. One thing led to another, and we soon found ourselves being invited to accompany him on one of his trips up to the mining camp. Of course we leaped at this opportunity to learn still more about Mount Thomlinson and its approaches.

Up at the camp, we learned that they were drilling test cores into the mountain in order to decide whether to bring the claim into production. If and when this comes to pass, then a road would be built up the mountainside from the present roadhead at the "Big Slide". (It seems that the present road was built in 1951-52 by the Fisheries Department to enable them to clear a 1951 slide which was blocking the salmon run. The road has deteriorated since then, and is now blocked by a rather permanent-looking land-slip about 4 miles short of the Big Slide.)

In the meantime, a trail extends from the roadhead to the mine. The beginning of it is obscure, having been purposely laid out that way by earlier prospectors. By going into the woods about 150 feet behind a cabin, one will intersect a game trail. By turning left and following this for about 1/4 mile one will find a blazed trail beginning near the stream. The trail then follows the stream, sticking to a ridge crest some distance above it. This route has been used within the last year or two by experienced local people, and they describe it as being quite satisfactory. The same people recently made a trip down Shegesic Creek, and stated this was a very inferior route; apparently the trail which existed there at one time is now completely gone.

Later, talking to Harry Simpson of Hazelton, we learned of still another route of access to the peaks. Just south of Sediesh Creek a logging road goes up from the main road. We had reconnoitered this, and found that it leads to a bench at about the 2,000-foot level. At present, it ends about 100 yards west of a small lake at the north end of the bench. A trail is said to lead around the south end of the lake and up onto the crest of the obvious spur which runs along the bend of Sediesh Creek. It follows the spur up and around the bend, then drops down the slope to the creek. The trail ends at this point, but 3 to 4 miles of travel up the creek bed are apparently quite open, with no trail necessary. We looked down upon this route from the ridge crest which we followed, and were impressed by the long stretches of open gravel flats. It seems very likely that the Sediesh Creek route may provide the easiest access of all.

For most of this information regarding trails we are indebted not only to Harry Simpson but also, indirectly, to Neil Sterritt Sr. (for whom Sterritt Creek was officially named) and to Sterritt's son.

A statement in the new Climber's Guide to the Coastal Ranges of British Columbia regarding visibility of the peaks from Hazelton can possibly be misconstrued. The peaks which are clearly seen from South Hazelton are those at the head of Sterritt Creek, and a secondary summit which lies 3/4 mile west of the main peak. Mount Thomlinson proper can be seen from the highway only along a short stretch of road 6 to 9 miles west of town.

Our impression of the Thomlinson massif is that, while not exceptionally rugged, it nevertheless offers attractive alpine scenery with remarkable ease of access. Most of the climbing is on sound granite, and could be as difficult as one chose to make it. Any of the peaks could probably be climbed on a strenuous week-end trip, and by starting from Sediesh Creek a solo climber could reach most of the peaks without being forced to cross glaciers. We found our trip to be quite rewarding, and hope that those who follow will derive equal pleasure from this accessible bit of coastal range wilderness.

Sunshine In The Selkirks

Roger Neave

Circumstances had prevented me from joining Ben Ferris, Paul Doherty, and their "Rockettes" during the construction of the Sir Sandford Hut in 1964 (CAJ Volume 48, page 145, 1965); so when the summer of 1965 rolled around it seemed like a good plan to make use of the Club's new hut for some climbing, and to finish up the interior work that still needed to be done. I was fortunate in being able to enlist the support of congenial personnel from previous trips into the Caribos, and, with a couple of newer recruits, our party of six assembled at Bush River Ranger Station on July 31. It consisted of Freddie Chamberlin, Gertrude Smith, Pat Boswell, Ed Gibson, Bill Primak and myself. Arrangements had been made with Okanagan Helicopters to ferry us from this point to the Sir Sandford Hut.

A striking feature of entering mountain areas by helicopter is the sudden transition from complete inaction to a mad scramble to get loaded and away, and also the equally dramatic change from civilization and transportation facilities to complete isolation. After unloading and parking our vehicles we sat around with ears cocked for any sound that might be a chopper. In mid-afternoon the welcome noise was heard, and we came to life as the machine slipped down across Bush River and landed beside us—only to find that it was not our 'copter, but one on lease to the Forestry Department. So we lapsed into frustrated inaction again with the means of transportation staring us in the face. Much later the pilot took off and disappeared down the Columbia valley. We had about given up hope of getting to the hut that day when again we heard a motor. It must be ours this time! But no, it was the same machine back again! However, disappointment turned to excitement when we were told that radio contact had been made with Okanagan's base at Revelstoke and an O.K. given to take us in. In a matter of minutes, equipment was strapped on the carriers below the whirling blades, and two of us had climbed inside the bubble and were on our way.

As we crossed the swampy Columbia valley to the Gold River, and then turned up the narrow precipitous Palmer Creek, we could not help being delighted with this easy way of overcoming the hardships of heavy backpacks, slide alder, windfalls, devil's club, mosquitoes and other features of the B.C. bush. As we rounded a final ridge, there was the hut perched in spectacular rocky surroundings high above the tongue of the Sir Sandford Glacier. As we circled for a landing we were surprised to see two figures emerge from the hut and wave to us. They turned out to be Bill

Putnam and Rob Wallace, who had come over from Fairy Meadows after completing the erection of a new Club hut in that location. They had spent several days at the Sir Sandford Hut, and had built bunks, a table, benches, shelves, etc., so that there was nothing left for us to do but spend our time climbing! We pumped as much information about the area from Bill as we could, while the rest of our party arrived at half-hour intervals. Then we waved goodbye as the helicopter took off on its last flight out, and left us to our sudden isolation in this mountain paradise. What a change that last hour and a half had made, not only in physical location, but in psychological outlook!



Roger Neave

Mt. Sir Sandford Hut, Mt. Blackfriars in Distance

The hut is in a superb location facing the tremendous 6,000-foot glacier-hung north face of Mt. Sir Sandford. To the right the icefall of the Sir Sandford Glacier sweeps around Mt. Ravelin, and down the valley to a smooth tongue 400 or 500 feet below the hut. In the other direction, behind the hut, and about a mile up the valley, the magnificent icefall of Silvertip Glacier is silhouetted against the sky. The glaciers in this area have receded at such a fantastic rate that it is hard to believe that only 55 years ago the Silvertip, Howarth and Sir Sandford glaciers were all joined together and that the site of the hut was then covered by 50 to 100 feet of glacial ice.

The first day's activity consisted of going up Haworth Glacier to climb something that would permit a good view of the surroundings, so that we could get better orientated. The Haworth is an amazingly smooth and even glacier with no icefall and hardly a crevasse. It is a veritable highway to an extensive névé lying between Palisade and Silvertip mountains. At its head is Alpina Dome (8,900 feet) and as this looked like a good viewpoint, we crossed the névé and climbed a snowridge to its summit. A beautiful day and a splendid view were no inducements to start the

descent, so on this, and our subsequent climbs, long summit visits became the order of the day.

Mt. Sir Sandford (11,555 feet) is the highest peak in the Interior Ranges. It not only dominates the view from the hut, but also the whole area. As it was an important item on our agenda, we decided to take advantage of the good weather, and made plans to climb it on the second day, even though some of the party had not had much conditioning. Leaving the hut at 4:30 a.m., we descended to the tongue of the Sir Sandford Glacier and cramponed across the bare ice to the right lateral moraine. Climbing the moraine directly under Mt. Ravelin we followed the moraine right around the west side of this peak and gained the Ravelin—Sir Sandford col, mainly up snow slopes.

From here, climbing in two ropes of three, we followed the ridge to the first vertical step. A short detour to the right ended in a cul-de-sac, and forced us to retreat back to the ridge. The left side went quite easily and we gained the ridge again higher up. Crossing over to the right, or west side of the ridge, we worked our way up easy ledges till we reached the ridge again at the bottom of the "Hourglass". Steepening snow slopes took us to the neck of the "Hourglass" which consisted of very steep bare ice. To avoid this we took to the rocks at the edge of the ice and climbed a small waterfall to gain the upper glacier. From this point the route was quite straightforward up the glacier and along the slightly corniced summit ridge. The last part was heavy going, with the leader often sinking to the knees in the unconsolidated snow along the ridge. The actual summit, reached at 2 p.m., was a narrow pinnacle of snow onto which we belayed each other one at a time. The descent followed the same route, except that a 100-foot rappel was made to avoid the little waterfall, which had by now become a big waterfall. The hut was reached just at dusk, about 9:15 p.m.

At first sight the hut appears to be located in rather barren stony surroundings. However, the morainal area extending up the valley behind the hut is gay with paintbrush, daisies, and other mountain flowers. Higher up on the slopes of Palisade Station are lovely alplands of heather and grass. These provided attractive places to wander on non-climbing days. Hollows scooped in the rock by glacial action and filled by running water, provided handy wash-basins by the hut, while a little below, a larger one provided an ideal bathtub that was daily heated by the warm sun, and received much use after hot climbs. Such comforts of home were hardly to be expected in the Selkirk wilds!

There were several violent thunderstorms with heavy rain, but as these all occurred in the evening or at night, they did not interfere with climbing. During one of them we saw the summit of Sir Sandford struck by a brilliant flash of lightning that lit up the whole top of the peak. One unusual feature was the mild temperatures even at high elevations. Precipitation was in the form of rain at over 11,000 feet during these storms.

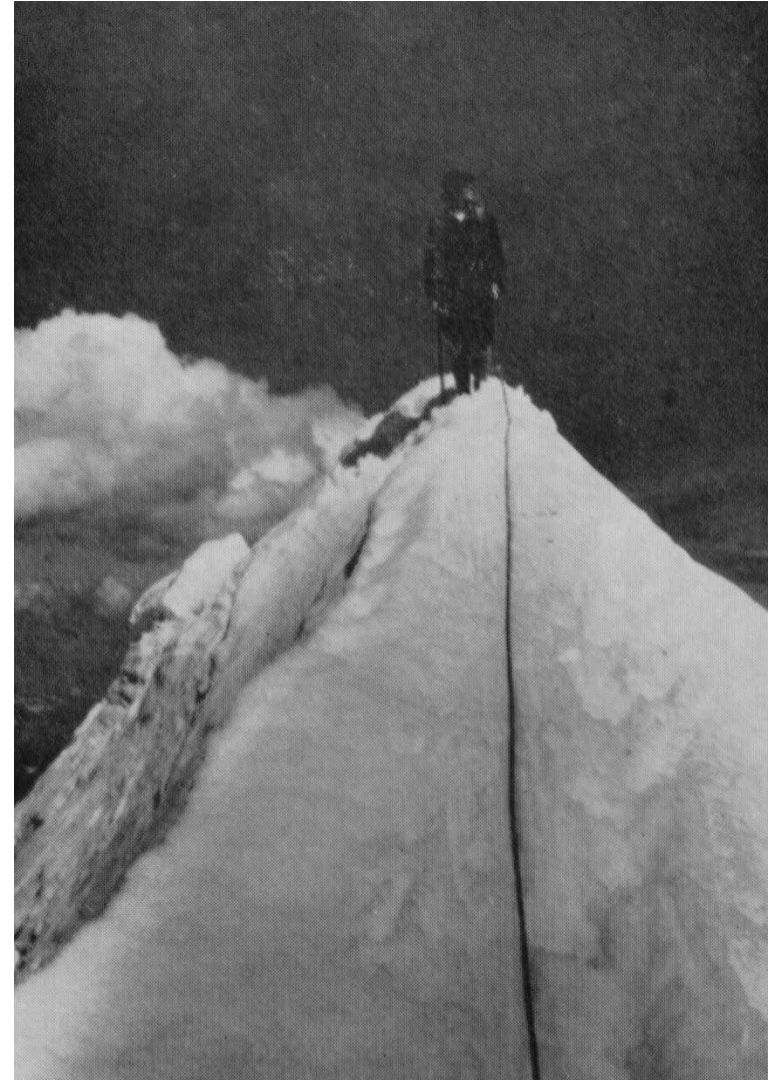
During our stay at the hut, climbs were made of Silvertip (9,450 feet), Palisade Station (8,900), Azimuth (8,410), Big Blackfriar (10,580), and Citadel (9,601). Big Blackfriar was the only one that presented any technical difficulties. Crossing the bergschrund at the bottom of the couloir was an interesting problem, and the long, steep couloir of very hard snow required the cutting of many steps.

We had made arrangements for the helicopter to fly us out on August 11th. This was again a day of inactivity, as we could not wander far from the hut. At 5 p.m. Mike McDonagh suddenly appeared flying down over the Sir Sandford glacier, having come over from his base at Revelstoke. Again there followed the short period of intense activity, and we were snatched from our isolated, but beautiful eyrie, and plunked down into the land of cars, radio and T.V.

The approaches to the peaks in this area are, generally speaking, up the glaciers. Both



Gertrude Smith
Mt. Sir Sandford from Not Far Above the Hut
(shown in circle)



Roger Neave
Summit of Mt. Sir Sandford

the Sir Sandford and Silvertip glaciers are quite extensively crevassed and considerable care is therefore required until the névé proper is reached. Crampons were a big help, and were worn quite a lot during our climbs.

The Sir Sandford Hut, with its six bunks, foam mattresses, stove, pots and pans, and dishes, makes a very comfortable place in which to stay. The location is superb, with a good variety of climbing in the area. It provides a fine climbing centre for small parties, and the helicopter transportation costs of \$80 to \$90 per person are well worth while when one considers the time saved, and the difficulties and hard work that would be involved in getting into this area on foot.

Selkirk Scrambles

Robert Kruszyna

It certainly was a far cry from my first trip to Glacier back in 1958—the day-long train ride from Banff—the seemingly endless uphill grind from Golden—the gradual appearance of blue-gray shapes—my anticipatory delight as Jack Taylor pointed out peaks—the startling darkness of the Connaught Tunnel—and finally, the unforgettable vision of Sir Donald from Glacier Station, stark, aloof, alluring. Now, in Leigh Andrews's 40-horsepower VW, we were swooping up through the snow sheds to Rogers Pass—and an entirely different set of sensations. Where once the colors ran from the smoky green of conifers to the steely gray of quartzite, from the crystalline white of snowfields to the saturated azure of sky—now the garish green roof of a hotel, the brazen yellow of gas pumps, the dulled red of maintenance buildings obtruded on our consciousness. I felt a pang of regret that my companions' first impression of the incomparable Selkirks should be so mundane.

Through the Illecillewaet "Motel" we drove, past trailers, kids, pets, Mt. Tupper Street (one-way)—to the Wheeler Hut. I felt somewhat guilty about the ease of reaching the hut, but was relieved to find it had resisted the encroachments of "civilization". Probably by intent, the hut literally turns its back to the outside world. The campground is kept nicely at bay by the outhouses and the dump. Unfortunately, it seems but a matter of time before it too will be swept by the tide of "progress".

But enough of such gloomy negativism. No matter what modernity demands, the grand Selkirk peaks still retain their charm and challenge. Moreover, the advent of the highway has made easily available to decadent mountaineers like myself a splendid climbing area. Just think, only four hours from the licensed premises to the beginning of Sir Donald's fabled northwest arête! This was the summer we didn't climb Uto, thanks to the attractions of the Big Bend Hotel in Golden.

With such easy access, it seems to me doubly unfortunate that a majority of parties are interested only in Sir Donald, and occasionally Uto Peak or Mt. Tupper. Drive in, bag the famous peak, and move on to other "conquests". Such an attitude overlooks the plethora of fine, varied ascents in the Glacier region. True, these climbs are justly considered the classics in this most classical of North American climbing areas—but to concentrate solely on them is similar to listening only to Beethoven without ever experiencing the joys of Mozart or Brahms. I hope in this admittedly polemical article to introduce the mountaineer to a number of neglected and recent routes worthy of his time, his effort and his skill.

With few exceptions, the standard routes in the Glacier area were originally climbed around the turn of the century when the Glacier House was in its heyday. Sir Donald, Mt. Bonney, Uto,

Tupper, Rogers Peak—the routes pioneered in the early years are still in vogue. During the 1930's, Georgia Engelhard added several worthwhile routes, and a superb route on the north ridge of Mt. Swanzy was first ascended in 1945. Recently, however, we have witnessed an upsurge of interest in attempting novel climbs in this region.

Fred Beckey has added the tremendous north face of Mt. Sir Donald and the south face of Mt. Tupper to the Selkirk repertoire. Bob West penetrated the bush north of the Rogers Massif to conclude a first ascent of Mt. Shaughnessy by its attractive east ridge, followed in 1964 by the writer's ascent of the adjoining "Mt. Hennessy". The north face of Mt. Macdonald, overlooking Rogers Pass, first felt the Vibram soles of climbers in 1964. My comrades and I have recently ascended the south ridge of Terminal Peak (1958), the west ridge of Rogers Peak (1965), and the north face of Mt. Bonney (1965).



Robert Kruszyna

Mt. Bonney - North Face

(From Mt. Abbott)

I have searched high and low through the literature to find some mention of an ascent of the south ridge of Terminal Peak, to no avail. I still find it hardly credible that this obvious line had not been followed before our ascent in 1958, but then, Terminal Peak is a sadly neglected mountain—undeservedly so!

One morning this past summer, I set out with Leigh Andrews, Jim Hebert, and Bill Sharp to make another climb of this delightful ridge. After the conditioning of camp, we blasted up the trail to Perley Rock—to Jim's discomfort, as he had just flown out from the east. Soon we were crossing the Illecillewaet Névé under the west face of Terminal to a snow-filled couloir leading up to the south ridge. We arranged ourselves into two ropes, Leigh and Jim, Bill and I, and proceeded

to scramble up the easy blocks to the first step in the ridge. The ridge is composed of a series of steps divided by relatively horizontal sections. As we progressed up the ridge, the steps became steeper and higher, the flat sections shorter.

About halfway to the summit, the first real obstacle presented itself. To avoid an overhanging wall, the obvious choice lay to the right, where it was necessary to vault a chasm on the very edge of the west face, with several hundred feet of failure staring one in the face. Although it was only a short jump, everyone was quite relieved when it was behind us. A beautiful slab, a delicate traverse onto the west face, another slab and back up to the ridge crest. About 200 feet below the summit, the ridge became overhangingly unfriendly, so we took to the well-jointed ledges of the west face for a long traverse. A delightful bit of exposed face climbing led us finally back to the ridge and almost immediately to the 10,000-foot summit. Jim, not yet acclimatized, quickly retreated a few feet to get below what he termed the “10,000-foot barrier” in order to recover his breath. Meanwhile, Leigh gulped down prodigious quantities of lunch before engaging in his second favorite pastime—napping. And Bill dutifully photographed yet another summit panorama.

Our “torporing” finished, we decided to traverse to the north summit of the mountain, known as Green’s Peak. The intervening ridge, while sometimes quite exposed, particularly on the east side, offered no difficulties. An unusual feature: a rock gendarme some eight feet high, shaped like a Grecian urn on a pedestal. Like all works of art, it was not easy to pass by. From Green’s Peak, we bailed off down steep snow, over a ‘schrund, and rejoined our approach route on the Illecillewaet. A bottle of Calgary Stock Ale finished off a grand day—and Leigh Andrews—in our traditional style. The Terminal traverse, technically in the class of Uto or Tupper, should appeal to those climbing in the Selkirks with an eye for a new and different peak and route.

Toward the end of the season, Charlie Fay, morose about the weather in the Alps, appeared unexpectedly at the Wheeler Hut—eager to get in a few good climbs. Leigh and I enlisted his enthusiasm in trying a new approach to Rogers Peak.

It seemed almost criminal to drive to the beginning of the Hermit Trail—but 7 a.m. did see us approaching the saddle in the ridge connecting Rogers Peak to Mt. Sifton. Scrambling unroped over boulders and talus, we made rapid progress up the wide westerly ridge of Rogers Peak. This ridge starts out as a south ridge, then circles back on itself until it finally approaches the summit from the north, so as a compromise, I guess it should be labeled the west ridge. After crossing a band of extremely friable rock, we roped up to attack a 300-foot wall barring the way. By zigzagging back and forth, sometimes on to the chilly verglassed northern side, we found a non-problematical route to the top of the cliff. For a while, the going was easy over the broken blocks so typical of Selkirk ridges—but then a gendarme forced us temporarily into some belayed climbing, again on the icy north side.

And then unfolded a gorgeous view down the immense steep snow fields comprising the northern face of the Rogers group. It seemed we could peer right down into the bergschrunds many hundreds of feet below. After a short tight-rope on a snow crest, a few feet more of shattered blocks, we emerged onto the final summit ridge, a glorious arc of corniced snow. Leigh kicked his way up this last obstacle—perched it seemed on the very edge of the abyss of the north face. The panorama from the summit was particularly rewarding because of the unusual views down into the deeply-etched valleys to the north of the Rogers massif—and the visions of other prospective climbs.

But the most gratifying climb of the past season resulted from the need to overcome a personal fear—a jinx, it might be termed. After my poor judgment had resulted in my hobbling

off Mt. Bonney with a broken leg in 1958, I was, perhaps justifiably, leery of going near the mountain again. But the enormous ramparts of its north face constituted an imperative challenge from the day of my first view years ago. And this year, we had both the party and the conditions, so the problem had to be faced. Leigh, Jim and I packed up one miserable, drizzly day to the new bivouac hut at Sapphire Col, intending to take advantage of the first break in the weather. Our most enthusiastic appreciation goes to those who made this sanctuary possible. The howling wind and driving rain of our first two days there only served to emphasize its sturdiness and comfort. Our alarm clock failed us, so it was not with a proper mountaineering start that we dropped down to the Lily Glacier and Lily Col. Perhaps it was just as well, for the snow was only beginning to soften as Leigh laboriously kicked steps diagonally up the flank of Mt. Swanzy's north ridge. Thanks to his persistence, we were soon taking a break on the uncomfortably narrow crest, two on one side, one on the other.

It was from here, with Jack Taylor and Charlie Fay prior to a fabulous climb on the Swanzy north ridge (personally, I feel it is more interesting than the Sir Donald northwest ridge), that I first saw the Bonney face close-up—with its problems all too apparent. The first of these was the incredibly contorted and crevassed Bonney Glacier, some 700 or 800 feet almost straight below us. With the assistance of Leigh's binoculars, we were able to plot a tentative route through the glacial chaos. If indeed we were successful in reaching the face itself sometime that same day, our proposed route was to follow the prominent buttress in the center of the enormous rampart, a *direttissima* of sorts.

Reassuring ourselves of our serious intent, we descended the unbelievably steep—and slippery—grass, the short, out-sloping cliffs to the edge of the glacier. The trip across the glacier, wending through gigantic crevasses, passing under teetering séracs, tight-roping on flimsy bridges, was the most interesting and enjoyable glacier traverse in my experience.

Eventually, our first goal hove into sight, the tongue of slabby rock forming the lower part of the central buttress. We attempted a direct approach on a cantilevered snow tongue, to find a 6-foot gap separating us from the rock, and a bergschrund black as the pit of Hell. We tried higher, then we tried lower, while the bridges became progressively softer in the mid-day sun. A mood of frustration and disgust began to grip us. "Well, we haven't gone all the way around to the other side yet". And so around to the right (west) side of the tongue we eventually slogged, our will sapped by the pleasant warmth. Surprisingly enough, this approach, although fraught with terror (if not with real peril), worked out very nicely. After two hours of peevish, disgruntled frustration, we found ourselves finally on the rock of the buttress, 2,400 feet below the summit—and it was already lunchtime. Except for Leigh, who was already working on his second or third repast.

Jim led off up the well-fractured slabs and we gained altitude rapidly. Soon we were at the base of the prominent ice slope in the center of the face. Fortunately, because of the warm season, the ice had receded sufficiently that Jim worked out a way around it to the right. Abruptly, the angle steepened. Jim contributed a nice lead over loose blocks and rotting ice patches taking us back left to the buttress crest directly above the ice slope.

For several hundreds of feet we moved directly up from ledge to ledge, belaying regularly, but not finding piton protection necessary. Although the rock was certainly well fractured, the predominant line of fracture was, of course, vertical. This helpful geology occasioned some rather tricky moves on steep slab and up short, rather wobbly walls. When a dislodged rock skidded miraculously between Leigh's legs instead of his ears, we decided to move one at a time. As we progressed, the average angle consistently increased. About 300 feet below what appeared to be

the summit crest, the terrain took on a real technical aspect.

The jingle of pitons reassured me as I attempted unsuccessfully several possibilities. The Mt. Bonney jinx began to crowd other considerations from my mind. A last alternative lay to the right and around an outside corner. It proved easy enough to reach the corner, but the continuation of the route seemed problematical. Jim traversed over and tied into a remarkable exfoliated flake, belaying me around the corner. After I surmounted a muscular corner, I shouted with glee to my friends that the way appeared clear. After a few more pitches, I heaved myself over a small snow cornice onto the summit crest. After the obligatory round of congratulations, we sauntered the few yards to the summit cairn as the sun dropped ever closer to the western horizon. Although a bivouac seemed inevitable, we lounged for quite a time, savouring the pleasure of a marvelous twilight, a superb climb, and most of all, each other's company.

In the waning light, we descended rapidly the easy ridge toward Clarke Peak and Mt. Swanzy. However, by the time we reached Clarke Peak the darkness forced a bivouac—and a gorgeous clear, starry night it proved. I mused to my companions about my previous night out on this same peak—its only saving grace the colorful auroral display. By mid-morning, we reached Sapphire Col—a nap—and a hot meal. The jinx had been broken.

MEMBERS ABROAD

Climbing Around Manali In The Kulu Himalaya

A.F. Thompson

MANALI is unique among Indian 'hill stations' in being close enough to real mountains to give comparatively easy access to them. In this it resembles a European climbing centre rather than the other Indian hill stations which are, for the most part, content with views of peaks 50 or 100 miles away. Manali is thus a promising centre for the kind of moderate mountaineering that must come into its own as Indians discover their mountains. The nature of the mountains near Manali also favours this; a famous description remarks on the "Alpine" nature of this Himalayan region.

The town is at just over 6,000 feet on the Beas River in the upper reaches of the Kulu Valley. Here the valley is narrow, and runs almost directly north and south. Long hillsides clad with immense deodars slope down on both sides toward the cultivated land in the flats along the river; and on both sides the snows look down over the shoulders of the hills. To the north as well is snow, on the heights that separate Kulu from Lahoul. For three summers now we have come up the road by the river (a vicious green mountain river for 50 miles) watching the forests come down closer as the bus labours upward, sniffing the cold air and straining for the first sight of the snows.

The bus arrives in the inevitable bazaar. But above the bazaar is a spread-out residential area that includes some fine houses and some excellent guest accommodation. Two summers ago we rented a lovely old house built nearly 100 years ago by a Forest Officer named Dunbar, the first European to live in the top of the valley. Tourists from abroad usually stay in one of the guest houses, for something like \$5 a day, including meals.

Rising behind Manali to the north and west is a group of peaks dominated by Hanuman Tibba ('the place of the god Hanuman'; dubbed 'The Solang Weisshorn' by some Europeans), 19,450 feet. This peak, though itself invisible from the town, is no more than 12 or 15 miles from it as the crow flies. Yet it is difficult of access—and this perhaps explains why it has been climbed

only once, by Colonel Bruce's guide Führer in 1912. One may approach it by the steep narrow Manalsu nullah, which begins directly above the town. Here a day's trek by woodsmen's and shikaris' trails brings one near the lower reaches of the Manalsu glacier. Up this a laborious ascent might be made to the snowfield crowning the mass from which the peak rises.

A more direct approach is via the Solang nullah. One enters this from the main road a few miles north of Manali; the nullah itself runs almost due north for a few miles and then swings west, behind the mountain mass above Manali. The Solang nullah ends in a spectacular cirque containing several unclimbed peaks of 17,000 to 18,000 feet, with Hanuman Tibba prominent above its south-eastern wall. There is a little-used difficult pass (16,891 feet) out of the Solang nullah to the regions to the west. From this pass it is possible to approach the long northern ridge of Hanuman Tibba—a ridge, let it be said, of sufficiently Himalayan proportions. In the summer of 1963 I went with an English climber, Bob Pettigrew, and one Ladakhi porter to attempt the mountain by this route. It snowed heavily the whole time we were out, and we could only sit below the pass watching innumerable avalanches stream off the face above it.



A.F. Thompson

A Section Of The Ridge Above The Manalsu

Hanuman Tibba Is Just Out Of Sight On The Right Skyline

There is still another way to approach this group of mountains. One may ascend a relatively gentle mound called Khanpara Tibba (13,207 feet) directly west of Manali; from here it is possible to follow a ridge, at heights from 12,000 to 14,000 feet, for 12 miles circling west and then north above the gloomy depths of the Manalsu and across from Hanuman Tibba and its attendant summits. This ridge eventually brings one round to a smooth glacier a mile or two west of the Solang nullah. From here one might turn back toward Hanuman Tibba.

Most of the expeditions that have come to Manali have turned east rather than west. Hidden

by the shoulders of the hills, but only some 12 to 15 miles due east as the crow flies, are the twin but very dissimilar summits of Indrasan and Dev Tibba. Indrasan (20,410 feet) runs up to great jagged spires. It was climbed for the first time in 1962 by a Japanese team, from the east and south. Dev Tibba is a tremendous snow hump, 19,687 feet. It is directly accessible from Manali by the Jagatsukh nullah, which one enters from a village just below Manali.

The most recent ascent of Dev Tibba was by three young members of the Climbers' Club of Bombay. We met them two years ago at a 'graduation ceremony' held by the Himalayan Mountaineering Institute in Manali. We recognized them again this summer, and found that they were staying at the Tourist Bungalow, resting from their fairly considerable labours. They seem to us representative of a new breed of Indian mountaineer, interested in mountains for their own sake and prepared to accept some of the challenges offered by their mountains.



A.F. Thompson

Indrasan and Dev Tibba from the Southwest.

Nearer Manali, also above the Jagatsukh, are smaller peaks. When I discovered that the two sherpas who had been brought from Darjeeling by the party from Bombay were restive and anxious for more climbing I employed them in the ascent of one of these. On Wednesday evening June 9 we left Manali and camped about two miles up the Jagatsukh nullah in company with a great flock of sheep. On Thursday we climbed the long shoulders of the hills and camped in the early afternoon at about 12,000 feet on the last remnants of unfrozen ground below the peak. An early start the next morning allowed an ascent of the peak by 10:10 a.m. (the whole of it on steep but easy snow slopes except for the last 400 feet which was steep rock and snow) and a return to Manali by evening. The peak is not marked on maps, but must be just over 16,000 feet. The knees still quiver at the recollection of a descent of 10,000 feet in about 4 hours (not including time

for meals and for striking camp) with men who seemed—appropriately enough—to be made of indiarubber. This venture seems to me to illustrate the kind of ‘Alpine’ climbing that is possible from Manali.

When one thinks of the Himalayas however, one thinks of ‘expeditions’. Eastward again from Indrasan and Dev Tibba lies the high country of the Tos glacier and the Bara Shigri. A recent article in the Himalayan Journal speaks of there being here “approximately 20 unclimbed mountains between 19,000 and 20,000 feet, of varying degrees of difficulty.”⁸

What exactly is needed to mount a light expedition into this region? About \$500 each, for three or four men, should take care of the main expenses (food and porters) of an expedition lasting 4 or 5 weeks. Mountaineering equipment is hard to come by in India, and persons entering to climb should bring with them extra boots, sleeping bags and jackets for high-altitude porters, besides equipment for their own use. Most of the food necessary for an expedition is available in Delhi, or even locally, particularly if one has an appetite for curries eaten with chapatis hot from the fire. (This is not true just now of sugar however; there is a shortage of sugar in India and this might be brought in.) Experienced Ladakhi and Kulu porters are available, and they are good companions, particularly if one has a bit of Hindi—though many speak a few words of English.

The best season in Kulu is from mid-September through into October, after the monsoon. At this time one should be prepared for low temperatures. The next best season is pre-monsoon, from the first of May to the middle of June; dry or snow-free weather cannot be counted on at this time, though it is usual.

The Grand Capucin, Mont Blanc Range

Dick Lofthouse

It is 4 a.m. and time to get up. This is the east face of the Capucin, one of Walter Bonatti’s famous routes. Our five-star bivouac is a low cave at the foot of some 1,500 feet of piton climbing.

By 5 a.m. it is light enough to start, and Lloyd Mackay leads off up the first artificial pitch, a vertical corner. In go the carabiners; the stirrups hang on by their fifi hooks. We are using double rope, but use tension only very occasionally. This is possible because the overhangs are not very pronounced, and all the pegs are in place. By the time I am up the first pitch we see climbers below, looking for the traverse from the south gully into the middle of the east face. They don’t seem to be very good at route finding.

Lloyd leads again, up an awkward chimney, then a steep diedre with some very long reaches between pegs. When I finish the pitch it becomes obvious that the climbers below are catching us up. Lloyd has great trouble with the next pitch; false lines of pegs tempt him away from the true route. Even when he is on the route, the rope runs out only very slowly. I grow impatient; there are now three of us waiting where there is hardly room enough for one. The other climbers, who speak for all the world like the Austrians I know, turn out to be from Zurich. Finally it is my turn for this difficult pitch. I soon find out why Lloyd was so slow: this is genuine grade 6 climbing, and not all on pegs. After half an hour of hanging in etriers and traversing smooth slabs I join Lloyd on Bonatti’s first bivouac ledge.

A rope hangs down from above; someone must have had a desperate time rappelling off the

8 R. Pettigrew, “The Ascent of Kulu Pumori”, Himalayan Journal Vol. XXV, 1964.

face. Lloyd reaches a poor stance above, and I lead through to the next pitch. Traverse right on two or three pegs, a few feet of free climbing, then the piton traverse continues. It's only graded AI, but I don't seem to be able to go very fast. I leave the pegs behind for the Couzy chimney (which makes me wish I had taken my rucsac off) and above that settle down on a good ledge, "the 1953 bivouac".

The Zurich climbers eat their lunch while Lloyd leads up the 40-metre wall, "which is about 50 metres high, and is the crux of the climb", as the guide-book says. Half an hour or more of slow progress, entirely on pegs, and he stops to belay the slings. I join him, and climb past up the wall above. There is a very long reach from one peg to the next, but then the climbing gets easier, and soon I am on the terrace where Bonatti had his second bivouac.

We eat some lunch and let the Swiss boys go past. They have been faster than us all day, but now we find they are holding us up. It's getting late in the afternoon, and we are all worried about getting off the face before dark. Easily round to the left, then up a difficult corner on pegs. I lose a chrome-moly piton (my own) while taking it out. We reach an overhang graded A3; the Swiss inform us that the loose peg at the vital point moves but doesn't actually come out when you hang on it.

The exposure is tremendous as I look down 1,000 feet of vertical and overhanging face, but then it's my turn to climb and I haven't time to think about such things. We pass Bonatti's third bivouac without even realising it. In goes our second peg of the day, traversing under a difficult roof (A3). I am climbing second again, going as fast as I can. It's getting dark already, but not too dark to see how rotten some of the wooden wedges look. We have to climb up them though, and the quicker the better.

The stance where I take over from Lloyd is about the lousiest of the whole route—we can't bivouac here. Lloyd starts up the next pitch, but soon has to stop and get his headlamp out of his sack. Another false line, and he has to retreat a bit. Finally he shouts down that he has reached a good four-star bivouac ledge. I start up, relying entirely on my headlamp. Up a few pegs, a bit of free climbing, a line of wedges, more pegs, and about 9.30 p.m. I reach the ledge. I consider it to be worth no more than three stars. "We may not have made the fastest time, but this is the first Canadian ascent", says Lloyd. There is no question of going any further. We spent an hour or two melting snow and cooking, then settle down for the night in down jackets and leg-bags.

Next day, down the glacier to Chamonix, 9,000 feet lower. Then I have to return to England and Canada, leaving lucky Lloyd to spend the rest of the season in the Alps.

Volcano Vignettes Of Mexico

Ellis Blade

Fire has belched forth from time immemorial, now here, now there, near the nineteenth parallel, which borders the Mexico plateau on the south. Over the long span of time since the Mesozoic period of the earth's history, such outbreaks have created a population of big and little volcanoes numbering in the many hundreds, nearly all extinct, but some of the large ones merely dormant. The line of fire extends from the great Citlalpetl, 18,700 feet, on the Gulf coast, to Popocatepetl, to Colima on the Pacific, and beyond to the Revillagigedo Islands offshore.

Irving Haber and I enplaned to Mexico in November 1965. Immediately upon arrival we boarded a bus for the West, to visit the little Volcan de Jorullo, which was born in 1759 and died a

few months later in 1760. We continued west to the Volcan de Paricutin, which startled the world in February 1943 by its sudden appearance in a cornfield near the then village of Paricutin. It erupted violently and disastrously for nine years, and then died. Further east, we visited the Colima massif, a spreading volcanic pile whose principal summits are the ancient Nevado de Colima (ca. 14,000 feet)⁹ and the contemporary Volcan de Colima (13,000 feet) in which we observed signs of renewing activity.



Ellis Blade with Religious Symbols on the Summit of the Nevado de Colima

We returned to Mexico City, and a climb of Popocatepetl, where we also found renewed activity. Finally, we visited and climbed the Cofre de Perote, extinct and dead, overlooking the Gulf of Mexico. This climb completed the mountaineering aspect of our trip.

We travelled everywhere by public bus, staying in hotels or inns at night, except when camping on a mountain. We travelled as lightly as possible, without tent, as we looked forward to using natural shelter wherever available.

The Colima Massif

Overlooking the Pacific, this mountain came into existence in various separate volcanic spasms of very different ages. The more ancient of these were toward the north, now represented by the chisel-pointed Nevada, a bare remnant of a once magnificent volcano. The present center of activity, several miles to the south, is the Volcan de Colima, a mountain on top of a mountain, a mixed cone of cinders and lava, which last erupted in 1941 and has been smoking more or less ever since.

After an overnight stay in Ciudad Guzman, we took an early morning cab twenty miles to the mountain and as far above as our driver was willing to attempt, a small fraction of the whole distance. We followed the forest road all day long, up and up, until at three o'clock we went through a minor pass marked Puerto de las Cruces, and for the first time saw the Nevada fairly close. Another hour brought us immediately beneath the peak, to a shallow cave sixty feet wide by thirty feet high. We were near tree line, an estimated thousand feet below the summit. The cave

⁹ The literature is conflicting". All elevations in this article are approximate.

offered us shelter against the impending rain, but our luck was that it dripped on us all night, while the night outside remained completely clear.

Next morning we broke camp at 9:30, and with perfect weather we reached the pass above in an hour. There is a sheet-metal emergency mountaineer's shelter there. After an early lunch, and minus the encumbrance of our camping gear, we strolled up the black sand and enjoyed an easy climb on ideal rock. The summit soon revealed itself to us by the presence of a two-bar pipe cross and an enclosed statuette of the Virgin. All Mexican peaks I have ever seen have one or more of these religious symbols. The clouds and gathering thunderstorm kept us from any possible view of the ocean.



Irving Haber on Ancient Lava Near the Volcan de Colima

Coming off the peak, we lingered an hour at the shelter to let the thunderstorm make up its mind, but nothing happened, so we took off down a long, high ridge of volcanic sand in the general direction of the Volcan, visible some miles away. The ridge led into the pine forest, and with trial and error and a good deal of luck we managed to locate and cross the high saddle between two deep-cleft east—west valleys that cut across our path. The bushwhacking became increasingly heavy as we ascended the last long ridge which separated us from the base of the Volcan. The growing darkness made impracticable the cross country descent from the ridge, so we improvised a poncho shelter in a well-protected place. Again the rain fooled us by going away.

The camp gave us a beautiful view of the whole Volcan. Not too far off, above, and directly opposite, at the very edge of the crater, we were in plain sight of a large steam vent or fumarole. At each blast, which recurred at frequent intervals all night long, an avalanche of rocks would be shaken down. We were fortunate to be there when the mountain was entering its phase of increased activity.

The scarcity of water discouraged us from climbing the Volcan, an estimated 2,500 feet over bare rock. The decision to forego the climb proved a wise one, for we reached the first water—a tiny drinking spring—after four hours of walking. The next one was five and a half hours later when we began to emerge from the forest and reached the first habitation. In this volcanic country there is very little runoff as the rain sinks immediately into the porous volcanic sand. Water

commonly does not appear again for ten or twenty miles until the gathering subterranean waters gush forth from an enormous spring, suddenly forming a full-sized river.

The whole day's walk was along a recently graded dirt road, which we were sure would descend immediately to some town or village. We were deceived in this for the road merely wound around the convolutions of the mountain, never seeming to reach any recognizable objective. Many times we considered abandoning the road for a straight-down cross-country bushwhack, but it might have been disastrous in such wild terrain, devoid of inhabitants, and virtually without trails. Worse yet, the forest conceals great cliffs everywhere, which would cause endless difficulties and delays.

As we emerged from the forest, near sundown, a stake-bodied truck stopped for us. We piled in quickly, to find we shared the ride with a milk cow guarded by a young cowboy. In the five miles to Atenquique we made a thousand hairpin turns, in each of which the cow did a waltz, and we had to steady her with our hands and hold her up so she wouldn't fall and crush us. The main road was another five miles, and thence to Guzman another fifteen or twenty. We rode all the way with the cow.

Popocatepetl

On November 9 Irving and I left Mexico City for Amecameca, where we took a cab to treeline at "Rancho" Tlamacas, where General Ochoa's sulfur works once stood. We set out afoot at 4:30, and in the next four hours ascended gradually over the black sand and onto the snow, meanwhile traversing considerably eastward to the tiny shoulder known as Las Cruces because of the symbols erected there. The full moon was already up when we laid out our sleeping bags. The clear air permitted a view of the vast spread of Mexico City, forty miles to the northwest, and of the many towns opposite in the valley of Cholula to the east. At 26° F, exposed to wind in our light bags, we Popocatepetl's were something less than warm.



The Summit and West Wall of Popocatepetl's Crater, Seen from the East Rim

The bright full moon shining through thin air and reflecting on the pure snow gave abundant light as we donned crampons at the magic hour of four. We placed one foot persistently before the other for the next four hours, each time a little higher. Presently we exchanged the moon for

the red sun, and up with the sun came the silhouette of Citlaltepētł, ninety miles away, black and gloomy through the thick haze. We also sought the Cofre de Perote, 102 miles distant, but it failed to appear. A week later, at the Cofre, we observed that Malintzin (14,600 feet) is almost directly in line. Were the earth flat, the Cofre might be visible above Malintzin, but a rough calculation indicates that the earth's curvature makes Malintzin appear 1,000 to 1,500 feet higher. Favorable light conditions make the very top of Popocatepētł visible from the Cofre, but the rear lighting and absence of snow on the Cofre prevent its visibility from Popocatepētł. Shortly after sunup the rising smoke and smog of the plateau usually obscure the view, even of relatively nearby objects.

Arrival at the crater's rim permitted us a view of the magnificent crater, a mile and a half in circumference, 1,500 feet deep, and replete with abundantly gassing fumaroles. Our traverse of the rim enabled us to view the crater from every side.

In the thin air of seventeen thousand feet plus, the sulfur fumes from the fumaroles were most unwelcome. We learned later that we had been present at a time of sharply increased activity.

As our shiny bright faces and chapped lips were later to remind us, the morning was bright and perfect, but a little to the south, and thousands of feet above stood a solid wall of cloud overhanging us like a mantle ready to be thrown. Near noon, as we approached the highest point, the mantle was thrown. In a moment both the mountain and we were invested with an impervious blanket.

The rim is highly irregular, with dropoffs directly into the bottom of the crater, and in our urgent desire to find a route down the mountain, we spent little time on the summit and its crosses. At the lower lip of the rim, we adopted the long-established Popocatepētł custom, making a sitting glissade for what seemed like thousands of feet. Our quick trip did not take us below the thick cloud, however, and we were several hours waiting to locate our landmarks at Las Cruces. All next day we spent walking to San Nicolas de los Ranches, where we made a fortunate connection with the last bus for Puebla.

Cofre de Perote

"Big Peter's Trunk", which lies 34 miles north of Citlaltepētł and like it overlooks the Gulf of Mexico, terminates in a sheer-walled volcanic plug. This is the frozen core of a volcano so ancient that all the upper part of the cone has been completely eroded away, leaving only the hard andesite center.

The ten-mile tramp through beautiful pine and spruce woods took all day. Nightfall found us on a high ridge, where we took overnight shelter beneath a giant lone spruce. In the morning, after ascending for an hour, we descended into a large cirque, which, proved instead to be the eroded remains of an ancient crater, whose floor is a beautiful alpine meadow and the source of one of the few streams of that porous terrain. Upon climbing the wall of the cirque or crater we found ourselves at the very foot of the plug.

The rock is solid, offering all kinds of routes, but after some examination we chose a very easy one which did not even require use of our rope, the whole climb from this side being not over a hundred feet. The summit was shared among eight crosses of various designs, which in my experience sets a record. Also sharing the summit, a little distance off, were two high-frequency radio antennas.

Further south, of nearly equal height, rises a secondary summit called I believe, the Pica del Fraile. An unexciting climb of the Pica gave us a startling view straight down. We looked in vain for the Gulf which was covered by a monotonous layer of little cumulus puffs extending forever.

Jorullo and Paricutin

The stories have been well documented concerning the birth and development of the volcano El Paricutin. Smoke came through the ground one day in a corn field soon to be followed by steam, cinders, and lava. The spreading of the lava caused 185 awe-struck residents to flee the village of Paricutin a few days later and eventually engulfed a second village, Parangaricutiro. El Paricutin was a tragedy to the people who suffered its onslaught, but it became also a popular and scientific curiosity without equal, that attracted visitors from all over the world.



Close-Up Of The Vent Of El Paricutin During Eruption In December 1945 (Sic).

Taken from a point on the summit only a hundred feet away.

El Jorullo, two hundred years earlier, appeared in a totally different social setting, Mexico being virtually the private domain of the king of Spain, governed jointly by the viceroy and the clergy. El Jorullo was taken as an evil omen. According to Humboldt, who was there 42 years afterward, the Carmelite missionaries, offended by the people, threatened that the land would be swallowed by fire, and afterward covered by perpetual ice. In the absence of a public press, no day by day reports of the volcano have been handed down to us. Yet most developments must have been rather similar to those of El Paricutin. El Jorullo became dormant after a few months, producing very little lava, whereas El Paricutin went on for years, with a vast production.

Both seem to have started with a cinder cone, but in El Jorullo lava soon welled up through the common vent and flowed out over the top. Then, by its great pressure and weight the lava cut through the northeast side, completely carrying away that side of the cone, leaving a great gaping hole, and flowing down the valley a half mile. The lava pools of El Paricutin commonly issued from the base of the crater but flowed some distance away. I suppose that, over the years of its activity, the pools froze in times of little flow, thereby obstructing the flow. At any rate, the lava pools changed location from time to time, now being on one side of the cinder cone, now on another. The final one appears to have been rather close to the cone on the northeast, continuing there so long that it produced a secondary cone of its own, primarily of lava, but undoubtedly strongly admixed with cinders from the main cone. Now in its terminal state, El Paricutin remains

a double cone, surrounded by oceans of lava miles across.

Crossing the lava is a major undertaking. After several hours walking on it we realized that an additional several hours would not suffice us to reach the cone, and regretfully, we turned back to avoid being benighted there. This type of lava, known by the Hawaiian word a-a, must be the world's worst walking. In the gross it forms an endless succession of valleys and ridges whose relative relief is 25 to 100 feet or more. In detail it is a collection of loose, friable, razor-sharp chunks which cut shoes and clothing, meanwhile offering most treacherous support. Walking there takes good co-ordination and constant vigilance. Walking on a-a can be compared unfavorably to walking on newly established glacial moraine of the Baffin Island type.

Notable in the Paricutin lava is the presence everywhere of fumaroles, some of them sulfurous. They are most apparent on a humid day. These fumaroles, unlike those of the great volcanic craters, must originate in the lava itself, which in places may be hundreds of feet deep. They show that, after well over a decade, there is still very hot material down under. The water source is likely the rain, which percolates down to the heat.

Even more remarkable are the fumaroles of El Jorullo, persistent for two centuries. Their presence in the crater offers the possibility that their depth may be very great indeed, for the crater once communicated with the hot bowels of the earth.

The black volcanic sand of El Paricutin is unchanged from the day I climbed it in 1945. Vegetation is absent. How long does it take for living plants to establish themselves? The answer given by the two little volcanos is something more than a decade, and less than two centuries, for El Jorullo, covered with grasses, bushes, and trees, is indistinguishable in character from the hills on its every side. Even inside the crater are a few plants and several full-sized trees. The lava field outside still resists, for whatever soil may blow in among the blocks is likely to sift through the millions of crevices, to be lost beneath.

ALPINE NOTES AND TECHNICAL CLIMBING

“Year Of The Alps, 1965”

N.E. Odell

In July I had the good fortune to attend the centenary celebrations for the first ascent of the Matterhorn (in 1865) as one of the delegates of the Alpine Club (London). Remarkable hospitality was extended by the Swiss at Zermatt, and later by the Italians at Breuil-Cervinia, the initial occasion being an anniversary dinner given by the Alpine Club in the historic Hotel Monte Rosa at Zermatt. Another social highlight was a Valais raclette party held at the Riffelberg, with speeches and performances of Swiss folk-music and dancing prior to a characteristic feast of the local cooked cheese and wine.

Conditions on the Matterhorn on the official memorial day (14 July) were not of the best for the live televised broadcast of the ascent by the Swiss Hornli ridge; and some heavy falls of snow next day made the intended crossing of the mountain itself by a considerable number of the guests quite impossible. Instead, the party were obliged to use the Theodule Glacier pass, and its almost absurd provision of modern cable-ways, to cross much of it. Even a “snow-cat” was available for the laziest or the more elderly! At Breuil, situated beneath the Italian crags of the Matterhorn (or Monte Cervino) we were again meted out most kindly hospitality both formal and

informal; and some of us were honoured with membership of the distinguished Societa Guide del Cervino (Society of Guides of the Matterhorn). A visit was also made to the picturesque old village of Valtournanche for the unveiling of a memorial plaque in celebration of the Italian first ascent of the Matterhorn in 1865, and a celebration of memorial Mass.

An interesting feature of these occasions was the presence as guests of descendants and relatives of the mainly British party (except for guides) that took part in the pioneer and tragic ascent of the peak from the Zermatt side in 1865; notable amongst these special guests being the daughter (Mrs. Blandy) of Edward Whymper, the only British survivor of the initial disaster.

In spite of the full official and social programme, which included several religious occasions, both Roman Catholic and Anglican, with a notable address by the Bishop of Leicester (A.C.), a certain number of ascents of the peaks round Zermatt were made during intervals in the 8 days of the celebrations. Although Zermatt has been so much expanded since I first knew it as a village 53 years ago, it remains one of the most charming centres in the Alps both for summer mountaineering and walking, apart from winter skiing which has been the quite unexpected development of recent years. Not more than 30 years ago a Swiss friend of mine, a distinguished geologist and noted sportsman, declared that Zermatt could never become a winter sports centre owing to the constant danger of avalanches, which menace the approach through the Visp valley!

The East Face Of Mt. Redoubt And Other Climbs

Fred Beckey

Jerry Fuller and I made this climb, directly above Amethyst Lake, in early August 1965, on a very long, strenuous one-day assault. The climb is about 3,000 vertical feet of steep ice and rock climbing, and is one of the major walls in the Ramparts. I would consider it the finest unclimbed face that I have done in the Rockies, along with the ascent of the north face of Mt. Edith Cavell.

We began the day by rowing across the narrow neck of the lake, then climbing the rockslide to a little glacierlet that led to the base of the wall. Here we were detained by the problem of how to get onto the rock, and we finally solved this by chimneying down through an ice tunnel to a point where we could clamber through loose ice blocks to the rock wall. This was a dangerous area to stay long, as one can be subjected to rock fall from above. Shortly after we left this point, rocks came whirring down at the maximum velocity.

To save time, we climbed unroped for the entire distance to the major cross-band that is so visible in all the photos of the frontal wall of the Ramparts. We found some interesting snow, ice and rock work here. Once on the band, we attempted to traverse left, but found the rock so rotten that it was impossible to climb safely, as there was nothing solid to belay from. Therefore we climbed directly upward, on a crest of very steep quartzite. This turned out to be the most difficult portion of the climb, technically, and we used about 12 pitons for safety here on two pitches. The route now worked left and then up again on very steep but good rock, and then traversed right again to a minor crest on the east face.

Here we were subjected to the most dangerous barrage of rockfall on the climb; fortunately we were able to get close to short vertical rock sections when this rock came down. We climbed the next few pitches quickly to get to safer terrain. A 300-foot ice patch had loosened rocks due to the warm sun.

The final two pitches were on absolutely marvelous rock, and we climbed directly up,

reaching the summit ridge just a few feet from the top. We descended via the normal route, which turned out to be a bit tricky in view of the fact we had not previously climbed it. We then traversed to the south Drawbridge Col, and descended a long snow couloir to the heather slopes above the lake. Unable to get the rowboat for the trip back to the cabins, we waded the lake's neck to the opposite shore. Still feeling frisky, we hiked out to the road, by moonlight, that same night.

East Face Of Bastion Peak

From a camp at Amethyst Lake Jerry Fuller and I set out to climb Bastion Peak, one of the major Rampart summits, by a direct route on the east. We had studied this problem from photos, and concluded that here was one of the finest unclimbed technical climbing opportunities in the Rockies.

First we climbed a glacier slope to a little col behind a spur ridge leading up the east flank. Then we climbed a 50° ice slope, navigating around a difficult crevasse problem. Once on the rock itself, we had two pitches of fifth class climbing, then about ten pitches of fourth class climbing, as we climbed northward and up, close beneath a crest of spiked summit-ridge pinnacles. Route finding was a major problem; several times it seemed we might have to turn back because of deep gaps in the crest, and by being cut off by steep ice slopes.

The final two pitches to the summit were among the finest I encountered in the entire 1965 summer of climbing. The crux was a vertical chimney on the summit massif. This chimney appeared to be impossible without resorting to direct aid, but it turned out that all the moves were possible, though difficult. A number of pitons were used for protection. We descended via the normal route, getting off just at dark.

North Face Of Mt. Blackhorn

In early August, Jerry Fuller and I made the first climb of Blackhorn's north face directly from Astoria Creek while we were hiking in to a camp in the Ramparts. Steep snow took us to the base of the steep ice gully separating the two summit walls. Here we encountered some verglas and difficult rock climbing. After this, climbing went better, as we kept on the left side of the gully. Some rockfall danger was encountered. About 300 feet from the summit of the east peak we again encountered difficulties, and spent some time getting up the final pitches. In general, the rock was sound. The descent was made by the east ridge.

Mt. Forbes, East Face

Jerry Fuller and I examined the eastern walls of Mt. Forbes, after a long hike up the Saskatchewan, including bush fighting and river crossings. Rock was extremely poor everywhere, and after we climbed to about 10,200 feet on the southeast face, we simply turned back because conditions were so bad. We could easily have traversed to the south ridge and completed the ascent from that direction, except that the heat had turned an otherwise safe snow face into a dangerous avalanche problem. The east face is magnificent to behold, but unfortunately it seems too loose and dangerous for a good face route. We made the entire trek in and out from the Icefields Highway in three days.

Northeast Buttress Of Mt. Ball

A new route on Mt. Ball, from Shadow Lake, was climbed by Jerry Fuller and myself. We climbed a major ice basin to a pass on the east buttress of the mountain, and followed the many

steps of this buttress to the summit. Some good and steep rock was found.

Winter Ascent Of Mt. Sir Donald

On March 20, 1965, four of us from Seattle stood on the summit of Mt. Sir Donald, and completed what we felt was one of the finest climbs of our careers.

Our party, Don Liska, David Beckstead, Alex Bertulis, and myself, had planned this winter climb for some years, but we did not find the right combination of weather, free time, and snow conditions until in March, after our successful first winter ascent of Mt. Robson.

Arriving at Rogers Pass late one afternoon, we had just time to pack up and ski in to the campground cabins to stay for the night. The next day, on skis and snowshoes, we moved up to about 7,500 feet in perfect weather, there to dig out a large ice cave. Despite a cold night, about -5°F., we slept comfortably and were able to get started early. Using crampons, we rapidly climbed to the top of the great couloir on the southeast face. Here we made many belayed pitches, traversing rightward, then climbing a steep ice headwall that led to the southeast ridge. Here we used some ice pitons for safety and chopped some steps. The final sections of the climb followed the ridge, and just required careful climbing. One rock step leading to the top of the false summit gave us some trouble, and we had to do a few feet of rock climbing in crampons. The final few pitches to the summit of Sir Donald were interesting in view of the exposure and great cornices on the east. We stayed on the top just moments, since a sharp wind was blowing and the temperature was still about zero. A snow squall added to the problems of the descent; this was made using the same route. We reached the ice cave just before darkness.

North Face Of Mt. Macdonald

Jerry Fuller and I made the first climb of the north face of Mt. Macdonald, above the Rogers Pass Highway in the Selkirks, in July. A bivouac was made at timberline, and from there the big quartzite wall above was climbed to the summit ridge. Rock was excellent, and a number of pitches required the usage of safety pitons. The descent was made by the west slopes to Rogers Pass.

South Face Of Mt. Tupper

In July Jerry Fuller and I also climbed the south face of Mt. Tupper, this being the first climb of this magnificent wall above the Rogers Pass Highway.

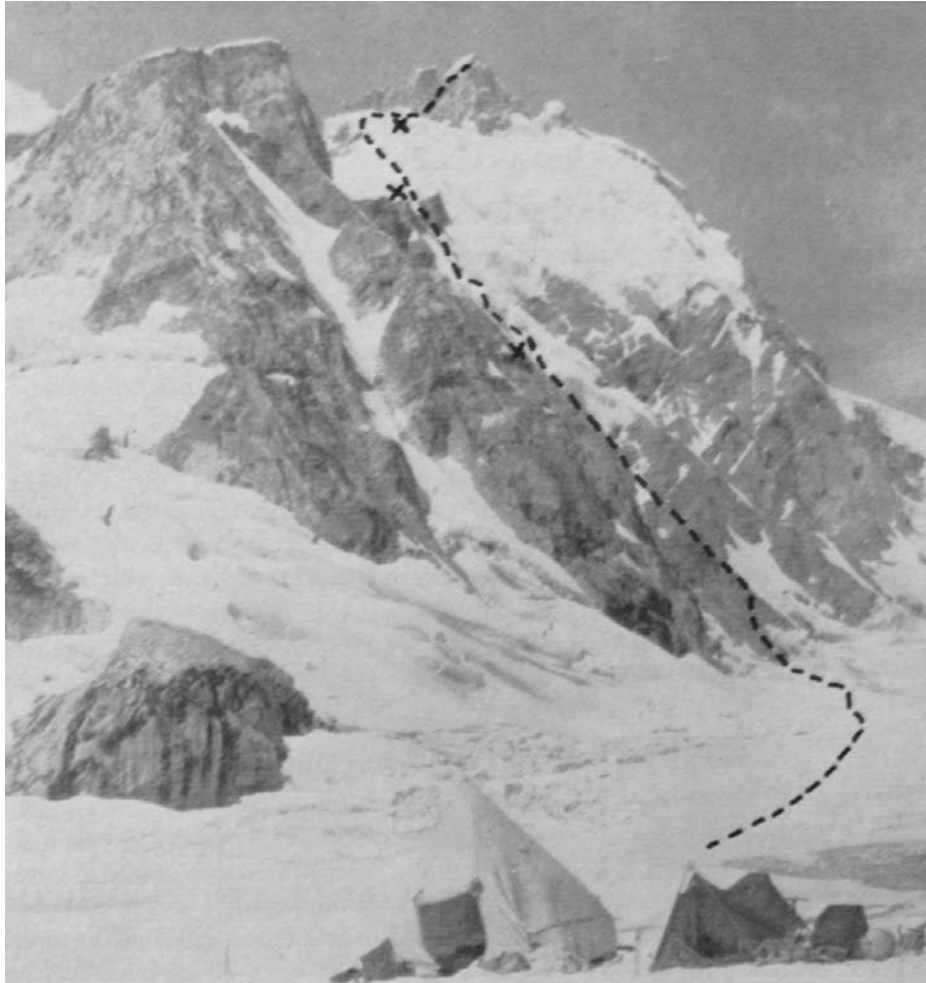
The route involved a long gully climb, some roped and some unroped, until a major transverse ledge was reached. From here, we kept on the crest of a snub-nosed ridge on the south face, and ended climbing to the summit on a sheer face. About 21 pitons were used for safety and direct aid. Some of the pitches involved quite difficult climbing. We reached the summit just before evening, and then descended the west ridge.

Mt. Waddington

New Route from Tiedemann Glacier to Spearman Col thence usual route to Summit

The high point of our 2 1/2-week expedition to the Tiedemann Glacier and Mt. Waddington was the direct ascent of Waddington's north face. From a camp on the Tiedemann Glacier between Serra and Waddington, Jerry Fuller, Leif Patterson, Don Liska and I probed the lower defences of Waddington in a search for a safe passage to the smoother and safer icefields some 4,000 feet above.

The most obvious arête to the upper glaciers was rejected because approach dangers were too great. Everywhere ice cliffs threatened access along the 2 miles of walls above the glacier floor. We finally decided on a spur arête that led directly to Spearman Col, well right (west) of Bravo Peak. Fuller and Liska spent a day climbing the lower pitches, just off the glacier, and packing loads several hundred more feet up the spur. It was necessary to do some tricky fifth class climbing here, and place fixed ropes.



Fred Beckey

North Face of Mt. Waddington,

climbed directly from base camp shown on Teidemann Glacier at 6000 ft. (x's mark bivouacs).

On the final assault, we carried food for 5 days, sleeping bags, and light bivouac equipment, but no tents. Weather was perfect, and we had to conserve as much weight as possible in order to make the climb in one carry.

Once past the fixed rope section, where it was necessary to haul packs, we climbed up some 500 feet of most rotten and treacherous rock. Belaying was almost impossible, so we climbed unroped. At one point a narrow snow arête added variety to the ascent. More loose rock made the climb treacherous again, and we spent the whole afternoon gaining about 2,000 feet on very bad rock. We made place for a bivouac on a solid rock platform about 2 feet wide, and tied in to pitons

for the night. Before sleeping we climbed another 300 feet and placed fixed lines.

In the morning I did not feel well, so retreated solo down the wall to the glacier and returned to camp while the others continued on up the ice slope to the crest of the face. This procedure required almost a full day of step-cutting, belaying, and placing of ice pitons. What from below had appeared to be névé turned out to be solid ice. Finally, just before darkness, they were able to crampon up the final ice slope to the safety of the upper glacier, not far from the Bravo Saddle. They dug an ice trench and slept for the night, then continued the next day for a high camp beneath Waddington's summit tower.

On the next day they climbed the summit tower via the now-normal route, in excellent weather, and on the final day descended the Bravo Glacier to the Tiedemann. This was a bit of a route-finding problem, as there were no ascending steps to follow until about the 9,000-foot level, when signs of a Japanese party's tracks were seen. They had been in the area some two weeks prior, but had trouble in the glacier icefalls, and did not reach Bravo Col.

On our route in and out of the Tiedemann, we used the Ghost Lake-Nabob Pass approach, flying to and from the lake with B.C. Airlines.

Mt. Stiletto, Via Southwest Face

While in the area of the Tiedemann Glacier in mid-August 1965, we moved a 3-day camp to the shoulder of Claw Peak. From here Leif Patterson and I crossed the Tellot Glacier on a long march and climbed the ice slope to the col between Serra I and Stiletto Needle.

Using crampons we descended the south slope three pitches, and climbed back into the little col beneath the Needle, to bypass some pinnacles. Now we climbed up two pitches, and worked right two more to get past the Needle. Some very interesting fifth class moves were made here on several occasions, and finding exactly the correct route was difficult. Once beyond the Needle, we had to spend about two hours traversing a knife-edged ridge of pinnacles; this again proved to be a route-finding problem. A final traverse of the last pinnacle, on the west side put us into a little notch beneath the summit walls of Stiletto.

Here a difficult pitch, just possible to do free, led up the sheer face above, and at one point it was necessary to clamber up an ice-cased rock chimney. A rightward traverse put us out on the most exposed part of the south face, and here two final pitches of wonderful, steep fifth class climbing led us to the summit blocks. A short traverse of these blocks took us to the cairn at the top. This proved to be the second ascent of Stiletto, as well as a new route. We used about 25 pitons for safety on the climb. We descended via the same route, using rappels whenever possible, and managed to get to the Needle Col just after dark. We climbed the ice slope to the Serra I col in the dark, and waited in bivouac until about two o'clock in the morning, when a moon arose and gave us sufficient light to descend the Tellot Glacier to camp.

Squamish Chief - Direct West Face by the "Northwest Passage" Route

Curiosity of Vancouver climbers who discovered knee-deep tracks in the January 1965 snow to the base of the sheer west face of The Chief led to disbelief when they saw several ropes hanging on a lower area of the 1,600-foot wall. After a welter of speculation, they discovered Alex Bertulis, Eric Bjornstad and I had made a few cold and snowy sorties onto the beginnings of what was the really logical crack line and most direct complete route up the grand West Face. It had always been our opinion that the 1961 Cooper—Baldwin route followed a devious and poorly-chosen line that necessitated a great deal of unnecessary bolt placing, and then it exited right, off

the wall some 200 feet below the summit.

The tracery of the winter snowfall confirmed our belief that the classic 'direct line', several hundred feet north of the other route, should be possible largely with pitons; it ran straight up a concave wall with good-looking crack systems, then through an immense overhanging band to the smooth upper walls. With binoculars we could plan out a route that was almost in a perfectly straight line, and one that seemed to offer piton cracks except on one vertical slab section on the upper walls.

Our winter progress went surprisingly well, for despite cold winds and occasional snow flurries, the rock and even moss in cracks was absolutely dry or frozen, and we merely had to hack it away. The second pitch proved interesting, with a direct-aid traverse; this ended at twilight, with rappelling off the face in a blizzard. The next two pitches went mostly free, with one slab taking two bolts.

A saw we hauled along was handy for cutting brush and small evergreens on this section of the wall.

Since our free time for climbing was largely limited to weekends, it was necessary to climb when possible, and leave ropes behind. The sixth pitch was one of the meanest, with mossy cracks and loose flakes on the route. Bertulis and Leif Patterson spent two separate weekends climbing this pitch and the two above, bivouacking on small ledges each time. The seventh pitch went free, surprisingly, except for a few feet of aid; from below it appeared to overhang. The next pitch was a real crux, and involved some 'upside down' nailing on the badly overhanging band. The top of the lead probably overhung the tiny base ledge some 30 feet; some of the piton placing was quite difficult as well as strenuous.

With a team of four, Bertulis, Patterson, Hank Mather and myself, we pushed through to the top May 9, 10, and 11, with two bivouacs and marvellous weather. We actually began prusiking up our ropes with Jumar ascenders at noon on the 8th, to find ourselves bombarded by rocks thrown off the summit rim by a group of youngsters; the situation became worse than perilous, forcing us to retreat, then form a posse to chase them away from the area. The press found this episode more amusing than we did, and ran a front-page cartoon on this caper. Apparently there was a news drought in Vancouver, for after the climb we found we had been on the front pages for three days; The Province even sent a helicopter out with a team of photographers to spend almost an hour whirring back and forth about 100 feet away while we were on the especially spectacular slabs of the upper West Face.

The first evening I placed six bolts on a flawless headwall, then retired to the bivouac for the night, returning to place six more in the morning. Patterson went up the pitch, placed several more, and then we finally were able to get back to piton work again, to finish nailing under an overhanging flake system, then up a difficult and exposed dihedral.

That night we were able to bivouac on a big ledge, and find wood enough for a fire. We gorged on food, water, and watched the twinkling lights of the town of Squamish and car headlights, almost a vertical half-mile below. The waters of Howe Sound, snows of the beautiful Tantalus Range and Mt. Garibaldi in the near distance, coupled with the industrial activity of the town almost at the foot of the rock, make a big climb on The Chief a unique undertaking. A more beautiful setting, in crystal clear weather, for a sub-alpine major rock climb, would be hard to imagine.

On the final day we made a traversing climb northward along a slip-off ramp, hauling our duffle bags behind us. Mather went up a final pitch of very thin cracks, using a variety of tied-off

pitons, and two ropes to minimize friction. About noon he got off the stirrups and onto the slabs leading to the rim. Soon we were all hiking back down the trail, accompanied by local climbers and the press who had come up to greet us. Despite some of the comic aspects of the ascent, it was a Grade 6.

Papoose Rock And Nightmare Rock, Howe Sound, B.C.

A new direct route to the top of Papoose Rock, about 450 feet in height, was climbed by Eric Bjornstad and myself. Called the "Hallucination" route, it features the pitoning of a major overhanging band, easily identified by a yellow rock 'triangle'. About 42 pitons and 13 bolts were used on the climb.

A direct route was climbed on Nightmare Rock, near Murren Lake, by Leif Patterson, Eric Bjornstad and myself. Called the "Traumatic Experience" route, it required the use of 15 bolts in addition to a number of pitons.

A "Yamnuskanalysis" - 1966

Brian Greenwood

The Yamnuska is a limestone uplift on the eastern edge of the Rocky Mountains. It is conveniently located to the north of the Calgary-Banff Highway 50 miles from Calgary and 30 miles from Banff. The south face is plainly visible from the highway. A short gravel road on the old highway a mile east of the connecting road between the new and old highways allows cars to be driven to the foot of the slope leading to the south face. The face is then one hour from this parking place.

The south face of the Yamnuska has now become very popular with local climbers particularly in the spring and fall when, because of its position, it is often in good condition for climbing when other peaks are not.

The climbing is generally very steep, often vertical or overhanging, but this is a characteristic of limestone faces. The face is over a mile in length and reaches a maximum height of 1,200 feet. A considerable variety of routes have been made over the full width of the face, ranging in length from 200 feet to over 1,000 feet. Some caution is advised on account of loose rock, but this is now becoming less of a problem on the more popular climbs.

The possibilities of additional routes are almost unlimited, and at this time there has been no extensive use of artificial aids, though pitons are often used for security or belays. Many of the essential pitons are in place but it is still advisable to carry a small supply on most routes. Because of the many possibilities for additional routes it is expected that this text will soon become outdated; for this reason we have tried to keep it simple and yet show the great variety of the routes on the south face of Yamnuska.

Unnamed Route

Follows a prominent right-left diagonal; length 600 feet. The gully of the diagonal may be followed entirely, or in the lower half the face to the left may be climbed.

Missionaries' Crack

Start as for unnamed route; first 50 feet only.

1. Climb directly the wall to the right to reach an obvious traverse line leading to a crack on the right. Half way along this traverse ascend this wall above 10 feet to a second line which descends directly to the foot of the obvious chimney (50 feet). Belay.

2. Although the chimney gradually widens it goes easily up to a belay at the bottom of a large slab. Belay on this right wall (80 feet).

3. Climb the slab a few feet in the corner then step round the bulge to the wall on the left, step further left then directly up to easier ground ahead. Continue up and left to belay on end of shaly ledges at bottom of easy gully (90 feet).

4. Easily up then left to the chimney system (which is then followed to the top of the face). Continue up the inside corner to a cave belay below a large jammed block. (This whole pitch is 140 to 150 feet long and can be done as two pitches with a belay at the end of the easy section.)

5. Facing out, a running belay may be threaded at the edge of the block on the right. Chimney out as far as possible until it is possible to reach a good jug handle above the block on the left. Facing in, pull up above the block. Good belay above (15 feet).

6. Continue easily to a narrow chimney which is climbed; above still easily to a good belay (70 feet).

7. Climb the crack and wall above, moving left when the crack becomes too much, continue up and back to the main crack; fairly difficult climbing to below a small overhang. Traverse right, immediately below the overhang, until it is possible to climb the corner above. Continue to a large chockstone (anchor), a good place to belay from on left (90 feet).

8. Layback the steep corner above to a small ledge at the foot of a chimney (15 feet). Enter the chimney (awkward), and continue to the top (20 feet). Belay.

9. Climb the continuation to the left, easier, belay on cheval.

10. Descend to the left and climb the easy gully to the top (80 feet).



Glen Boles

Sketch Of Mt. Yamnuska, Showing Routes Described

The Belfry

The upper half follows a very prominent corner, topped by a prominent slab (800 feet). Difficult to strenuous. The start is slightly right at the corner and the lower half consists of a

series of easy gullies. A short wall of moderate difficulty must be climbed to reach the foot of the corner.

1. Start at a groove topped at 20 feet by a small overhang; above the overhang is a small ledge. Continue by the steep corner which soon becomes very difficult. The difficult section marked by a chockstone is probably best climbed by using the crack and small holds on the right wall. Continue to the top of the corner to a large comfortable belay spot (90 feet).

2. Follow the ramp above more easily until the steep rock is reached some 60 feet below the prominent overhang. Some ingenuity is required to establish a satisfactory belay (90 feet).

3. Easily in the corner until confronted by two successive small overhangs which must be taken direct (difficult, rock loose). Easily to poor belay, directly below the overhang (50 feet).

4. Climb as high as possible below the overhang, then traverse right to where a short awkward step puts one at the base of a corner. This is loose but not too difficult; from its top move to the left then up to a good ledge and belay (60 feet).

5. Climb the next short chimney then a difficult move round the corner to the left (no holds, loose rock) then follow the corner above to the foot of the exit slab (very nice climbing) (80 feet).

6. Easily out over the slab (100 feet).

Not recommended in wet weather and when snow covers the exit slab, as in these conditions a fair amount of water runs out on the more difficult pitches.

The Calgary Route

A prominent right-left diagonal (1000 feet).

Easily up the gully (loose rock). At a steeper point (pitons—fairly difficult) an easier alternative is to traverse out to the left and climb a groove returning to the original line above, to follow a narrow chimney. At the final step of the face two alternatives again appear: (a) keeping to the gully a very narrow chimney sloping a little to the left, or (b) on the wall to the left a difficult pitch to the vertical chimney which completes the climb.

Direttissima

1200 feet. Difficult

Below the summit at the foot of the face is a large triangular outcrop, the top of which can be reached by easy scrambling from either side. The direct route starts from the top of this outcrop.

1. Below an obvious corner traverse left on a large ledge to a stance below and to the left of the bottom of the corner (100 feet).

2. Then up an overhang and make an awkward step right into the corner. Ascend the corner, which becomes progressively harder, to a large comfortable ledge (100 feet).

3. A little to the left climb to a prominent overhang which is passed on the right (piton). When just below the next overhang, make an awkward step around to the left then easily up 10 feet to a small stance (60 feet).

4. Easily up for 30 feet then a move to the right to enter a corner. Ascend here to an adequate belay after a total of 120 feet from the previous stance.

5. Climb 15 feet higher to a line of small holds (pitons) which crosses the slab to the right. At the end of the slab traverse to a second upward line which is climbed to the bottom of a corner; large jammed block, belay.

6. Some 40 feet to the right is a rock rib with a small overhang about 30 feet higher. Climb the corner above the belay until it is possible to go to the right, then continue the traverse in a descending line to a small slab which is crossed to reach the pillar. Climb the pillar to the small overhang; belay, small stance. Care must be taken not to climb too high above the belay as a too-high traverse line, while possible, is much more difficult.

An alternative line to the right is possible to this point from the belay at the beginning of pitch 4.

7. Hand traverse 6 feet right until possible to climb to a slab — right foot in corner and using small holds on the slab to a small ledge with a bulge above. Use sling to climb the bulge and then continue 20 feet to a good belay.

8. Easily up to the right to a good stance 30 feet below the large overhanging roof which is a prominent feature of the route.

Alternative:

7a. After hand traverse, continue to right to a large ledge.

8a. Climb directly to stance below roof.

9. Traverse horizontally left by a narrow ledge until possible to climb up again; move left around the corner at a level just below the roof. Belay on shaly ledge.

10. Climb up and around to the right, then easily up 100 feet.

11. Continue straight up to a belay in a cave below a large jammed block. A difficult portion 40 feet below cave.

12. Cave pitch, climb either by bridging (wide) or on the left side until good holds can be reached above the jammed block.

13. Easily, but a little tight at first to a final little wall.

Chockstone Corner

Difficult

At the bottom right corner of the triangular buttress from the top of which the Direttissima route starts there is a small scale bay; to the right of this slabs slope upwards to the right.

1. Start at a point about halfway up these slabs and over easy but very loose rock climb to a good stance at the bottom of an open chimney or corner.

2. Climb the corner to the top then move to the right to belay from a small slab.

3. Still going right, step across to a second slab and continue up this until it is possible to climb the wall above; climb for 20 feet, then moving to the right, continue climbing up to a large comfortable ledge.

4. Traverse to the right of the ledge and going around the corner descend 20 feet. Continue to traverse passing behind a large detached pinnacle. Climb up to a chockstone between the pinnacle and the face.

5. From the top of the pinnacle step across and climb the steep crack, difficult 15 feet (etrier may be needed). Continue until able to make a belay.

6. By a small (8-foot) chimney, then over a difficult bulging rock, the easier climbing, continue to a comfortable belay.

7. Continue still easily to a belt of easy-angle slabs which are followed to the right almost to the end.

8. Climb the wall above small holds, then traverse to the right; a balance move puts one on a pulpit. Belay.

9. Ascend the crack above (15 feet difficult) then moving to the right climb easily to a large belay ledge.

10. Move right to the bottom of a steep crack (difficult move to start off crack — sling or etrier useful). Climb the crack jamming with holds to the right to the bottom of the final chimneys.

11. Climb the chimney (narrow in places) until it opens almost to a corner (chockstone corner). Using the chockstones climb the corner until possible to stand comfortably, then move onto the ribs to the right. This becomes a steep little wall which is climbed to a comfortable belay point.

12. Climb straight up for 20 feet (steep).

Red Shirt

1. Climb to the side of the crack until the angle eases. Then traverse left to a small pillar (or rib), climb this, awkward. Move to get on top, cross left to the corner which is climbed to a good belay (80 feet).

2. Over cracked blocks, then easily up to the foot of a flared chimney (50 feet). Belay.

3. Climb the chimney until it is possible to move out onto the containing rib which is climbed, continue tending left to a good belay (100 feet).

4. Step down to the right and on good holds pull over into corner on the right. This is climbed to a belay point in a short chimney; short steep wall before belay (80 feet).

5. From the chimney climb onto the rib and make a descending traverse to the left to a small ledge and piton belay (30 feet). This pitch can be protected by a piton 15 feet above the previous belay.

6. Climb the next corner (pitons) and traverse left as soon as possible; poor stance (30 feet).

7. Down slightly to the left, round a corner, to traverse (25 feet left.) Then up 15 feet is a good belay (50 feet).

8. A short step into a large bowl. Then follow a steep narrow chimney on the left, to a good ledge (70 feet).

9. Climb the corner above to a large ledge and block belay (70 feet).

10. Moving traverse diagonally, left up the wall above round the corner to the left continue easily up by a series of grooves and ledges. Poor stance and belay (110 feet).

11. Either climb the bulge above to slightly right, or traverse below the bulge and then up 35 feet. Do not start this pitch to the left.

12. Cross the slab to the right to the bottom of a corner.

Pangolin

100 feet west of Gollum Grooves, the top half of the climb is marked by a prominent chimney. The climb (350 to 400 feet) is mainly artificial on the lower half. Start below and to the left of Gollum Grooves where broken rocks lead easily up and to left to a good belay point.

1. Step across to the left and then climb to a small corner overhung at the bottom, climb this 15 feet until it is possible to move left out of the corner. Belay on a small stance (45 feet).

2. Climb the crack above to a fair ledge (25 feet).

3. Continue by the corner above and by the crack past a small overhang. Once this has been passed the climbing becomes easier; 20 feet above this bulge a belay may be made, or continue

up 15 feet by a diagonal crack to a ledge which is traversed around a corner on the left to a good ledge and belay (95 feet.)

4. Climb the corner and shallow chimney above to a large ledge (good belay) or continue by the corner moving onto the left wall, artificial climbing. Then move more easily to a belay below the final chimney (90 feet).

5. Climb the chimney belay on jammed blocks at the top (65 feet).

6. Traverse easily left, then climb out (30 feet).

Pitons required: 3-4, 2 angles or wedges and assorted smaller pitons.

Traverse Of The Lake Louise Horseshoe

Charlie Locke

On Tuesday, August 17, 1965, Don Gardner and myself began our 'grands travers' of the Great Divide between Moraine Lake and Lake Louise. In 6 1/2 days we traversed Mt. Babel, the Ten Peaks, Hungabee, Ringrose, Glacier, Lefroy, Collier, and Popes Peak. In all we stood on at least 22 major summits.¹⁰

The previous winter when Don presented this idea to me I indeed looked at him askance. The possibility of the traverse actually at that time seemed quite remote. A number of questions occurred to me. What places would be technically difficult? What if the weather turned bad? Were there adequate escape routes? How long would it take? Could we make the packs light enough to move with speed over the 20-mile route? With a little thought, the absurdity of our plans seemed to disappear. By the time spring came, we were quite convinced that, if the weather spared us, the trip would be feasible.

As I ran my eyes over the monstrous heap of equipment, I wondered how we could be expected to carry it over such a long and formidable route. The next day answered the question. Into each pack went just over 30 pounds, and a 25-pound cache was assembled to be left at Wenkchemna Pass.

At 6:30 p.m. on August 16 we left Calgary and by 9 p.m. we had arrived at the Moraine Lake Campground. There we talked with Don's brother Jim and arranged with him to leave our cache at Wenkchemna Pass by the 19th, the day we expected to arrive there. Then we went into a Camp Kitchen, set our alarm for 3 a.m., lay our sleeping bags on the table, and went to sleep.

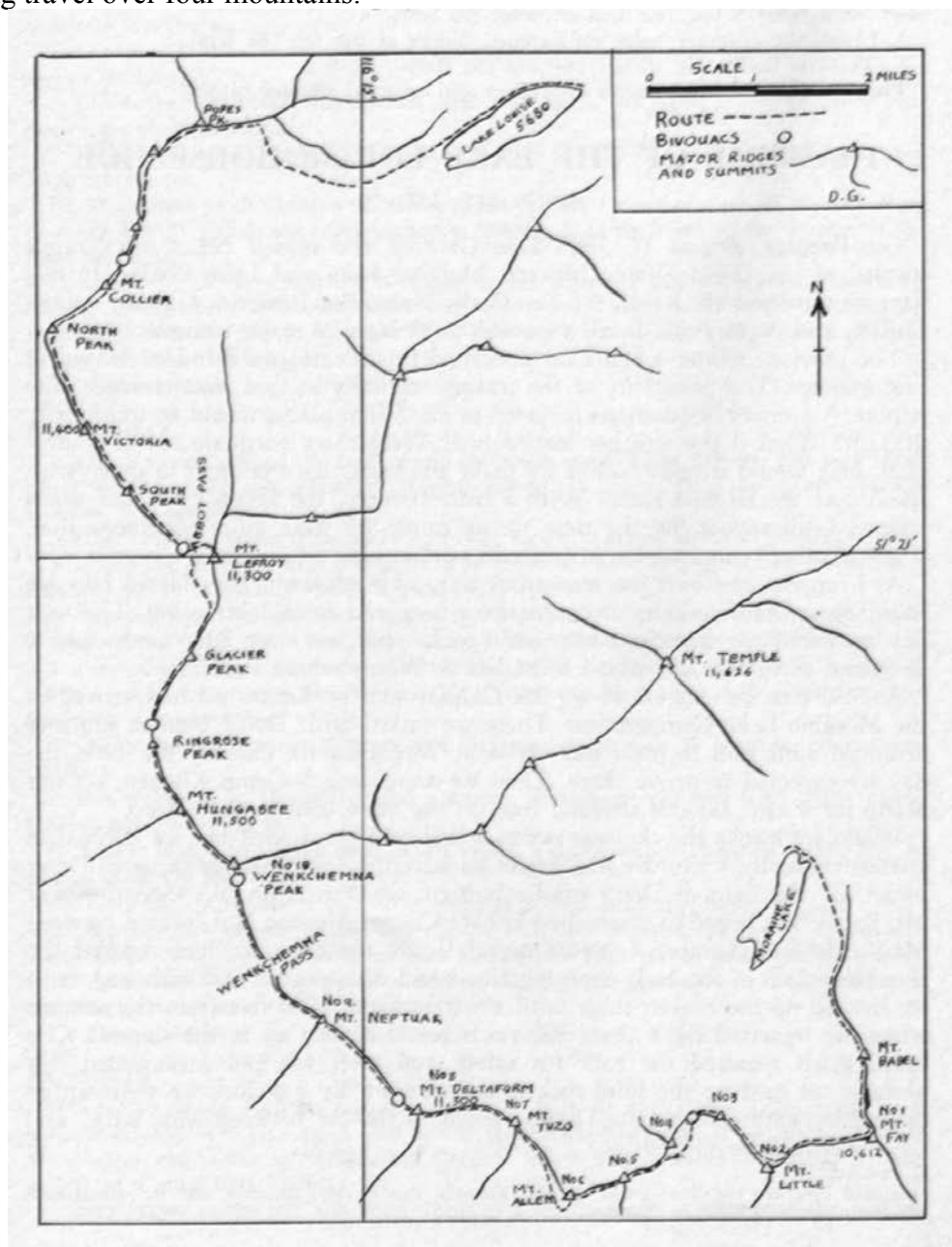
When we awoke the sky was overcast and rain threatened but we decided to start anyhow. By 4 a.m. we had begun an adventure that neither of us will ever forget. By the light of Don's candle lantern, we started up the scree slopes of Mt. Babel. We hoped to reach the Graham Cooper Bivouac Hut located between Mt. Little and Number 4 before nightfall. By the time we had reached the shoulder much of the early morning cloud had disappeared and with new hope we headed up the broken ridge until we were about 1000 feet from the summit where we traversed right about 100 yards before cutting up to the summit. One small pitch required the rope for safety and after we had surmounted this obstacle we sped up the solid rock to the summit. By 9 o'clock we were sitting on the top eating breakfast. The jog down to the col between Mts. Babel and Fay presented no difficulties.

Mount Fay was quite straightforward. We climbed up the ridge together except for one

¹⁰ Included here are the three peaks of Mt. Victoria, two of Mt. Ringrose and the penultimate mountain climbed, which is unnamed.

pitch where steepness combined with rotten rock necessitated the use of the rope. Before too long we were sitting on the summit eating lunch and feasting our eyes upon a host of peaks which jutted their heads into the sky. After a prolonged rest we wandered along the summit platform and then began our descent down the long west ridge, complicated by minor summits and numerous steep gullies. An hour brought us down to the col.

Mount Little indeed lived up to its name. We climbed it very quickly up an easy ridge that led straight to the summit. By this time it was obvious that we would reach our destination for the day as it was still early afternoon and only one mountain separated us from the Cooper Hut. So we slackened our pace to a lethargic walk. The traverse of Mt. Bowlen was very easy and it wasn't long before we were resting in the Cooper Hut. Thus our first day was ended—12 hours of exhausting travel over four mountains.



Sketch of Lake Louise Horseshoe Traverse

Soon after dark we used the flashlight to signal down to Moraine Lake where Don's brother and his wife Loreen were waiting to 'hear' from us. The faint flickering in the depths of the dark valley communicated a secure and even warm feeling to us. So with this warm glow in our hearts we lay down our weary bodies on the bunks and drifted off to sleep.

After a good sleep and a hurried breakfast, we were off to the mountain simply called Number 4. Since this peak is of minor altitude and offered very little in the way of climbing we circumvented it on the left and continued on to Number 5. We felt that the time thus saved would be extremely valuable later on in the day when we would be pitting our skills against giant and formidable-looking Deltaform.



Don Gardner

One of Many Rappels

It did not take us long to crampon up the sparkling snow slopes of Number 5 where, once we were on top, we enjoyed an inspiring view of the Valley of the Ten Peaks. To the east, dark clouds were making their way through the passes but since Don's barometer held steady during the night we were confident that the weather would behave. Soon after we started up Mt. Allen we were enveloped in a mist that seemed to follow us as we ascended. It was interesting to peer into the 4000-foot abyss on the right and watch the mist form as the damp air rose. This dampened my confidence in Don's barometer but as we neared the summit we left the clouds behind. The climbing up Mt. Allen was steep in a few places but the rock was surprisingly solid and we were able to climb unroped. In this manner we soon reached the summit to be greeted by an awe-

inspiring sight. Below us the sea of mist which girded the bodies of the multitude of mountains in our sight was pierced only by the heads of the higher alps.

Deltaform still looked a long way off so we curtailed our sunbathing and set off on the descent. Before us the face dropped away threateningly and there was no question of descending this sheer precipice. We went south a hundred yards and there found a feasible-looking route which, although it looked 'hairy', appeared as if it would go. The rock was quite rotten and every so often one of us would set off a cascade of boulders that would sweep the gullies below. By taking a nebulous route through gullies and over ribs we managed to persevere our way through the maze of cliffs. Soon we arrived on a steep ice slope which was crossed using crampons. During this crossing we had to hurry because of the rockfalls from above.

The east ridge of Mt. Tuzo is long and tiring because of the many scree slopes. These were broken in one place by a small band of cliffs composed of brittle rock. On reaching the summit we found it was time for lunch and as there was no snow handy to alleviate our excruciating thirst we continued down the west ridge to a convenient snow patch. Soon we had running water with the aid of a few slabs and the warm sun. Our little picnic place was perfect as on one side we looked down upon Kaufmann Lake in Prospector's Valley and on the other side we could look down a sheer precipice upon the sparkling lakes and lush meadows of Larch Valley. After this restful interlude we felt well fortified for the coming problem.

We descended the west slopes of Tuzo and started up Deltaform, which we knew involves 2000 feet of steep climbing. A series of four gendarmes guarded the mountain but only the second offered any resistance. It took two rope lengths to circumvent this tooth. The latter stretch was difficult in places as it entailed the making of several awkward moves on brittle rock to bring us back to the ridge. After this obstacle was surmounted we were able to climb unroped right to the summit on fairly stable rock. We reached the top in quite an exhausted state but the view of the chain of mountains climbed in the past two days brought our strength and confidence back. A deep gap separated us from a pseudo summit. This problem was solved by a rappel followed by a steep climb up the other side. Farther below an ice patch blocked the normal route. Rather than spend time cutting ice steps down this we did a 60-foot rappel directly down the ridge. A little further down we did a 120-foot rappel which landed us on a ledge where we spent our second night. It would be possible to climb down this last rope length if one did not have a heavy pack but we were quite tired and sloppy in our movements so it was much safer to sacrifice a piton and do the rappel. We made a flat place on the ledge, then watched the last remnant of red disappear from the sky as water melted for tea and back bacon fried. We then put on our sleeping equipment—down jacket, down-filled booties and our empty packs pulled up over our legs—and crawled into our bivouac sac. Both the illustrious glow of the "aurora borealis" and the cold gave up an impression of an arctic night.

As dawn arrived we hurriedly gathered our gear and, as was to become a habit during the remainder of the traverse, left without breakfast, intending to eat when it was warmer and our bodies were hot from exertion.

A thick layer of frost covered the rocks as we made the easy descent to the col between Deltaform and Neptuak. We ate here before making the easy 20-minute walk up to the multiple summit of Neptuak.

The 3000-foot descent to Wenkchemna Pass turned out to be more difficult than we expected but during the ensuing 3 hours we slowly persevered our way down. A final 120-foot rappel landed us on the scree slopes of the pass ahead of our cache which would arrive with the two ostensibly

imperceptible dots—Don's brother and his wife Loreen—toiling up the path towards us. Don, being in far superior physical condition than myself, emptied his pack and ran down to help them carry our equipment while I lethargically melted water in an effort to alleviate our thirst.

A short while later Don and our "sherpas" arrived and within minutes we were drinking Coke and raw eggs and were feasting on fruit, nuts, sardines, and other goodies. Soon we were joined by Wayne Smith and two of his friends from Edmonton.

After a prolonged rest our group began to disperse. Jim and Loreen headed down into Prospector's Valley, Wayne headed up Wenkchemna, and his friends headed back to their campsite in Larch Valley.

Don and I sat in silence for a while until, with our appetite satiated, we repacked and headed slowly up Wenkchemna. We passed Wayne as he descended and after roping up for one pitch we prepared for our third night, about 300 feet below the summit. We had our usual dinner of fried bacon, tea, and bread before signaling Jim, now at Eagle Eyrie, and settling down for the night.



Don Gardner

**A Few Of The Peaks Climbed, Including Allen, Tuzo, Deltaform, Neptuak, Wenkchemna
And Hungabee, From Lefroy**

During the night we thought we were doomed. Dark ominous clouds had encircled us and rain was imminent. We therefore brought most of our climbing paraphernalia into the sac with us and once again drifted off to sleep.

Morning came with a cloud-dotted sky. As it was cold and miserable when we awoke we collected our gear hurriedly and set off immediately; but soon we were sitting in the brilliant sunshine which bathed the summit of Wenkchemna, gobbling our breakfast. Our thirst had now mitigated as a result of salt pills we had begun to take.

Above us, Hungabee reared its ugly head into the sky. The ridge we were about to climb had been done only once previously, by Dick Lofthouse and Walter Schroeth. We roped up to climb

down the gap separating us from this giant. The pitch out of this gap proved to be difficult. From the diminutive col we traversed right about 30 feet. Here, Don took off his pack and ascended a near-vertical break. The stability of the rock was questionable but he managed to drive in a piton for protection. He led the pitch admirably and after bringing me up we had a well earned rest. While walking across the flats to the next obstacle we passed the bivouac site of Lofthouse and Schroeth. At the end of this platform a 30-foot wall with water pouring off the top proved to be the crux of the climb. Don again took the lead and again he did it justice. The wet, brittle, slanting holds made the pitch difficult, even without our packs. We rested briefly before crossing another set of flats which ended at the foot of a 200-foot buttress. We worked over to the left and by a rappel into a gully we managed to outflank the main part of the buttress. An easy climb up the west face and a trudge up the narrow ridge brought us to the summit. There was far less snow now than when I was here 3 weeks earlier.

The descent of the north ridge was not difficult and we soon were climbing up Ringrose, which presented us with the last difficult pitch of the traverse, a short 15-foot wall composed of brittle rock. About 6 p.m. we reached the south summit and 35 minutes later we reached the north one. It was still too early to call it a day so we struck out for the third and lowest of the three peaks. The sun was just setting as we reached this summit so we looked for a place to bivouac. There was no place flat enough to lie down on so we literally tore the summit off this peak to rectify the situation. We also lacked snow for tea and cooking porridge, so Don climbed down about 60 feet and carried some up in the nylon shell for his jacket. Supper over, shortly after dark we once again exchanged signals with Jim who now was in the Lake O'Hara campground.

Saturday was a slack day. To descend Ringrose we had to use many rappels. During one of these we knocked down a rock which in an unfriendly like manner sliced our rope. After swearing for a few minutes and tying it we continued rappelling until we reached the col.

Glacier Peak was an easy walk and by noon we were sitting on the summit drinking our cherished Tang. The register was quite interesting and contained the names of the party which did the first ascent as well as the elite of the climbing pioneers. We then traversed across the glacier to the base of Lefroy. The ridge of Lefroy looked as if it would take too long so we traversed across the west face, planning to double back and climb it by the normal route. It was now quite hot and numerous streams of pebbles were continuously pouring down the numerous gullies. We could hear them coming however, so they posed no threat. When we reached the Abbot Hut side we started up the ridge intending to traverse over to the large couloirs composing the normal route. Suddenly a large block about the size of a railway boxcar, followed by a multitude of smaller chunks, cascaded down one of these couloirs. This "psyched" us out so we decided to descend to Abbot Hut. We reached it in the middle of the afternoon and for the remainder of the day we relaxed and leisurely and satisfyingly prepared a real supper on the large gas stove. A sense of well being and blissful serenity overwhelmed us as we sat in the doorway of the hut and watched the fading light leave the rugged mountains where we had struggled for the last few days.

Warm soft beds are hard to leave when the air has that certain chill that tends to seduce one into lingering longer in bed than he should. A sense of guilt overwhelmed us when we finally arose as the sun was already high in the sky.

Before breakfast we walked up Lefroy. Along the summit ridge we witnessed a Spectre of the Brocken: clouds were forming on the leeward side of the ridge and the sun cast our shadows upon them; surrounding our shadows were rainbows. From the summit it took us about an hour to trot back to the hut for breakfast.

About 11 a.m. we left the hut and walked up a veritable trail to the south peak of Mt. Victoria, arriving there in about an hour and a half. We rested here and ate some more lunch. It was another 3 1/2 hours before we had Victoria behind us and were sitting on the col between it and Mt. Collier. The traverse from the main peak to the north peak of Mt. Victoria is nebulous in places and required caution for its entire length.

As the shadows lengthened we climbed the steep but solid rock of Collier and on the other side we prepared for our last bivouac. As we were settling down we watched a frightening display of lightning far off to the north. We hoped it would spare us, for in an electrical storm our ridge position would be both uncomfortable and precarious.

Monday morning we awoke early to a grey landscape of driving mists and inhuman and grotesque rock structures. We broke camp in record time and after eating most of the remaining food we ran over an unnamed peak and then headed up our last mountain, Popes Peak. We topped this after a short scree walk. The rising sun had dissipated most of the early morning clouds, and as we sat on this last summit, we looked through the disappearing mists and picked out the distant mountain where we began our traverse 6 1/2 days earlier. A 300-foot cliff band caused some trouble on the descent. We used our last piton to rappel down to the col. From the col we cut down a gully and when our feet delivered us once again on solid ground we felt greatly relieved. We sat down, drank our fill of cool water, ate a few wild strawberries and our remaining candies, and dreamed of the milkshakes which would soon quench our thirst.

It was a simple joy we felt as we marched down the smooth trail to Lake Louise. What we had sought and found during the previous week was the pure and unbounded joy that seemed to explode in our hearts and penetrate every fibre of our beings when after long days of skirting fatal dangers we could again hug life to us with all our strength.

This traverse is possible only if one has both strong muscles and a strong mind; if one is given a spell of fair weather; if one has the best of partners

That night as we drove back to Calgary, Lake Louise had a violent storm which brought an end to the summer's climbing in the high mountains.

New Route On Windtower (Lougheed Tower)

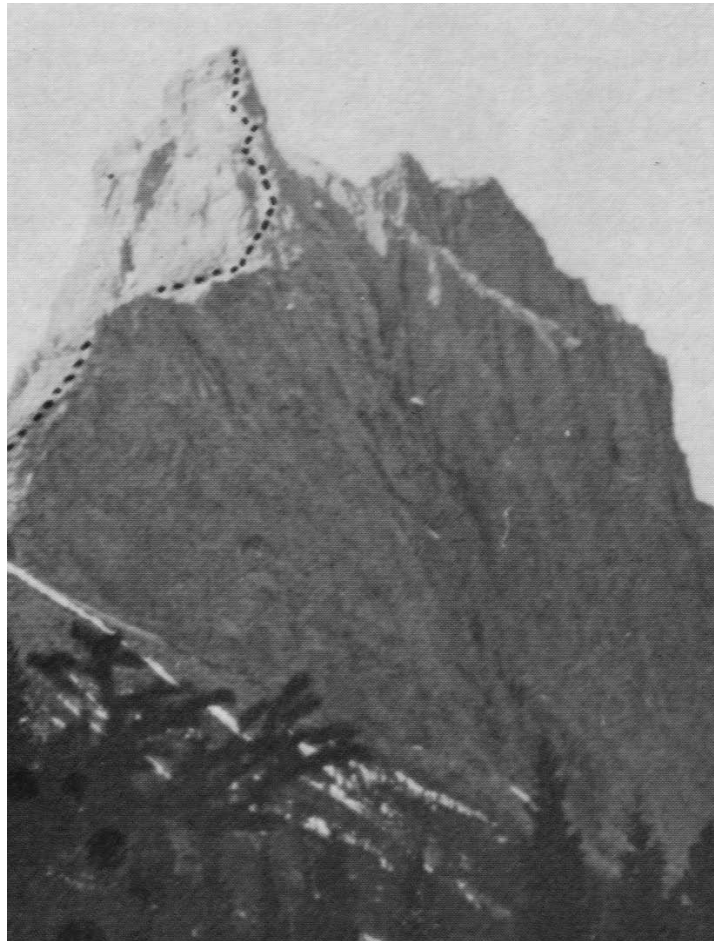
Klaus Hahn

Looking south from the Grizzly-Bar Campground on the Trans-Canada Highway near Exshaw, the eye is attracted by a striking peak with a smooth vertical northwest face towering above the valley: The Windtower (8,400 feet)

The summit had been reached easily from the south side of the mountain' from the Spray Lake Valley, and in 1957 Heinz Kahl pioneered a route up a chimney on the southeast side of the mountain. For years I had been considering a route up the northwest ridge of the Tower.

On July 1, 1965, Heinz Gude, Barbara Corbeau, Gordon Crocker and myself drove up an old fireroad branching off the Trans-Canada Highway across the Grizzly-Bar Campground. After about 2 miles the road becomes impassable for a car. We continued on foot and followed the road which crosses a creek several times. When the by now washed-out road ends, we followed a system of game trails through the underbrush heading for the northwest ridge of the mountain. About 3 hours from the car we reached the rocks of the ridge. A long scree slope brought us to the beginning of our climb on the ridge near the edge of the northwest face.

We stayed on the right of an obvious gully and moved about 150 feet over easy terrain. A 20-foot rising ledge to the left brought us to a crack in the face where we roped up. The next pitch was considered the hardest of the climb as the route led straight up on exposed rock for 75 feet to a rising ledge on the left which, after 30 feet, offers a belay point in a gully. Moving up in the corner of the gully for 15 feet and over loose rock for 20 feet we reached another belay point at a chockstone. The next 50 feet consist of an easy move on a rising traverse to the left to a plateau. The following few rope lengths lead over broken easy rock to the base of the final summit tower. The right-hand gully was ascended for 70 feet into a 100-foot chimney which, with its solid rock, offered an enjoyable pitch. The chimney widens half way up into a gully. An easy walk leads to the north summit (register in cairn).



Klaus Hahn

New Northwest Ridge Route on Windtower

From the north summit an easy scramble down to a col leads to the slightly higher south summit of the peak. A quick descent over a scree slope brought us to the shoulder between Windtower and Mt. Lougheed. We descended several scree-filled gullies, and followed a goat trail along the southeast side of the mountain. Here we had the alternative of returning to the valley the way we had come or following the creek that drains the basin. We decided on the latter and

glissaded down several snow-covered slopes to the head of the creek. We had to cross the creek several times to avoid cliffs on either side. Further down we followed game trails until we reached the old fireroad and at 7 p.m. returned to our cars.

I can recommend this climb which settles as a Grade 4. The superb view from the summit over the Bow Valley, the east side of the Three Sisters, and Spray Lake rewards the climbers for all the bushwhacking in the valley of this seldom-visited area.

Fairy Meadow Cabin

William Putnam

Fairy Meadow in the Mount Adamant area of the Selkirks was first visited in 1946 by a party under the leadership of Sterling Hendricks. Subsequent visits were made by Ben Ferris, Andy Kauffman and myself, together in 1948, and with various others in 1950, 1951, 1953, and 1963. Many people have found this area attractive, because of the excellent granitic peaks and the expansive snowfields.

The idea of a cabin was first brought up at a Harvard Mountaineering Club gathering in 1953, at which time a vast number of drainage ditches were dug to alleviate some of the mosquito problems which afflict the better campsites. Plans were not completed for real work until last winter when the Alpine Club of Canada agreed to put up the funds for this hut if the prime contractors would agree to buy half the materials. The prime contractors in this project were Ben Ferris and myself, assisted by Don Sprecker, Graham Matthews, my niece Carol, Ben's daughters Margie and Katherine, Rob Wallace and Moses Goddard. As in the case of all prime contractors we sublet most of the difficult jobs. Don Sprecker, for example was assigned to the privy. Harry McDade helped meet our financial commitments but at the last minute was unable to join the chain gang.

We began showing up in Calgary on July 11, 1965. On the 14th, a truck with a Pan-Abode house, another with lots of other stuff from Golden, and two cars, went down to the Forest Service camp at Bush River, where we were met by the helicopter early that afternoon. Ben and I went in for a preliminary check of the Great Cairn Cabin and then over to Fairy Meadow to spot the location. This went very rapidly, although the weather flying over the Gothics Glacier wasn't ideal. Having spotted the location, we started bringing in the party and supplies. By that evening, all but Rob Wallace, who was assigned the loading subcontract down below, were happily lodged in the traditional campsite at Fairy Meadow. We even had the foundations partly cleared of dirt and trees.

It took another 3 days to complete the hauling, but during that time we finished the foundations and got the floor started. The Pan-Abode people provided more than enough of everything, and the job went up without a hitch. A little rain periodically dampened our ardor; but within one week we had taken up residence in the Club's newest emporium. The details and furnishings were really leisure time jobs after the place was made tight. We even took time out for a few days of climbing.

One day while Ben took the tourist group up the usual route to Sentinel, I took the hot rocks up the north ridge of Quadrant, a first ascent, although not a very difficult one. Another day, Ben took his girl friends and Moses up the usual route on Colossal, while I took the hot rocks and Margie up the north ridge of Unicorn. Our final climb was made by Don Sprecker with Margie and Moe. They made a first ascent of Outpost, the most easterly high point of the Quadrant massif. It

SPECIAL NOTE FOR THE CAJ DIGITAL EDITION

**An oversized map of the North Selkirk Range was included in the
hardcopy version of the 1966 Canadian Alpine Journal.**

It is not included in this digital version due to size restrictions.

was a very easy ascent via the north cirque up Quadrant and a prominent scree gully.

Meantime, back at the cabin, running water was installed, though for optimum results one should use the sand filtering box built for the purpose. The hose runs from the cabin over a minor bump down to the old campsite where it can drain. When water is needed the hose should be tied up into the box at the top of the waterfall. It gives good head and clear, cool water. Twelve bunks were installed in two 8 X 8-foot bunkrooms of six bunks each. Shelves and tables were built, although some furniture was brought in having been donated by John Rowell of the Tunbridge Table Company in Vermont. Likewise a goodly supply of cookware was promoted from ALCOA. I even made a chess table from wood which grew on the site. The stove functions well and adequate wood is all around. The privy is found to the north and down hill from the cabin. It has sliding windows and a bilingual sign "Occupe . . . Occupied" courtesy of Air Canada. The cabin has a front porch and a woodshed which is filled with good lumber as well as firewood. We made shutters for the more exposed windows so that they can be protected from winter damage.

From the 16-foot-square living room, with its warm southern exposure, a visitor can view the Rockies through the east window, the Gothics out the front window and the more forbidding summits of the Adamants to the west. It is a tight, beautiful cabin in a magnificent location and should suffice for decades to come.

"Ramosé Peaks"

Chilko Lake Area, B.C. Coast Mountains

Steve Knutson

A group of 12 Mazamas hikers and climbers visited the Chilko Lake area from August 12 to 27, 1965. Base camp was near the mouth of Edmond Creek at the south end of the lake. The weather was generally good until Tuesday of the second week. Four climbers, Mike Templeton, Don Housley, Skip King and myself, all from Portland, Oregon, spent 6 days on a traverse which included climbing the two peaks (ca. 8,300 feet) around the head of the Ramosé Glacier. These we refer to as the "Ramosé Peaks-". The traverse route went up Edmond Creek to the foot of the ridge between Ramosé Creek and Cyr Creek (the first creek entering Edmond Creek from the south); this ridge was followed south to the edge of the Ramosé Glacier. The high point of the ridge was climbed from the north (class 3) and was named "Cornice Mtn." (ca. 8,300 feet).

The Ramosé Glacier was heavily crevassed in areas but the Ramosé Peaks climb was otherwise not difficult. The traverse continued west and north back into the drainage of Chilko Lake and to a final camp on the east ridge of Chilko Mtn., at about 6,000 feet. That night bad weather set in and a climb of Chilko Mtn., was abandoned. The road from Chilko Lake Lodge (at the north end of the lake) to Alexis Creek became nearly impassable in the wet weather.

The Witch's Tooth, Tantalus Range B.C.

Coast Mountains

Andrew Gruft

The Witch's Tooth stands at about 8,400 feet in the narrow gap between Mt. Tantalus and Dione, and was first admired and photographed as early as 1911 when the first party to climb Mt.



Andrew Graft

The Final Tower of the Witch's Tooth

Tantalus passed its base en route¹¹. Undoubtedly part of the reason why it was still unclimbed was its relative inaccessibility though it is so prominently visible. We had been on the Tooth before, but had run out of time. Several other unsuccessful attempts had been made recently and it had become a prime objective of many B.C. climbers. So when Eric Bjornstad not-so-casually mentioned it at his coffee house in Seattle in early June 1965, I realized that time was getting short.

But things don't always work out as smoothly as expected—at 3 p.m. on June 30, 1965, about the time Larry Hewitt (our third man from Bellingham) should have been arriving in Vancouver, he phoned to say he was having car trouble and would be late. As a helicopter was to pick us up at Brackendale at 5 p.m., Gordon Coots and I decided to go on ahead without him, and try to talk the pilot into waiting as long as possible. We reached our pickup spot at about 5:30 and were very relieved to find the pilot had another flight, so all was not yet lost. Larry arrived in a cloud of dust at about 6:30 p.m.

Thus it was that late that evening we were deposited on the Serratus—Dione col, with what seemed like several tons of ironmongery. Our cache from the previous year was still intact, so we ate well. We pitched our tent on a rocky knoll, protected from the wind, and enjoyed a beautiful sunset over the distant peaks.

Late next morning, July 1, we set off across the deceptively short-looking snowfield on the left of the southeast ridge of Dione. The snow was still in good condition and we made steady progress. We passed the minor buttress that forms a small cirque at the end of the snowfield, and took the most obvious gully leading up to the crest of the southeast ridge. (The previous year it had been clogged with ice, forcing us to gain the ridge earlier and waste more time traversing it.) It was now fairly warm, and we set off a minor avalanche climbing a steep snow slope onto the little dome before the main peak of Dione. We continued along the ridge to just below the summit pyramid, and then traversed the steep snow slope on the northeast side of it onto a stance on the north ridge of Dione, to the accompaniment of large sections of cornice crashing down the northeast face onto the huge glaciers below.

From this stance a rickety knife-edge (class 3) leads into the Dione—Tooth gap. From the gap, two rope lengths (class 3—4) up and around the Tooth lead to a series of small platforms on its north side, overlooking the steep gully that separates it from Tantalus. This was our furthest point on the previous attempt.

After we had eaten, we left our packs on the platform and traversed into the Tooth—Tantalus gap, and then about 50 feet up onto the east ridge of Tantalus, to get a better view of the final tower. We had previously tried directly above the platforms, but knew this ran out into what looked like a lot of artificial climbing. From our stance on the east ridge, however, we could see a thin chimney splitting the Tooth a short way below the summit. It was blocked in two places by loose groups of chockstones, but seemed to be the only way. By now, a stiff breeze had sprung up, and small clouds were scudding across the sky. We hurriedly climbed back down to the chimney, and soon had a good belay point at its base.

It proved less difficult than it looked, as it was possible to climb diagonally out and to the right of the first clump of chockstones, but re-entering the chimney at the second group of loose blocks was somewhat delicate, as those below were in the line of fire (100 feet of class 5—two pitons for protection). Squirring through a narrow gap at the top, we found ourselves on a comfortable stance on the south side and in the sunshine again. The summit bulged a short distance

11 See This Journal, 1964, p. 80

above our heads. A traverse out to the right led up to a sharp edge which overhangs the north face, and an awkward traverse back to the left, followed by two really airy bulges on the west corner, and we were on the summit block. (60 feet of class 5—three pitons for protection.) The whole peak vibrated as the belay piton was placed, and as it was not the most spacious of summits, the three of us decided to occupy it only two at a time.

At 5:30 p.m., we started rappelling off. The return journey was as rapid as safety would allow, but nevertheless we were caught by darkness just below the summit pyramid of Dione, and only managed to stumble into camp by the fading glow of our flashlight at 1 a.m. At 5 a.m. we were rudely wakened by an anxious voice asking “Did you make it”? It was our arch-rival, Vince Bauer and Gary Kozell, who had come up the previous day to try the Tooth. In spite of their disappointment they proceeded with their plans and managed to climb not only the Tooth, but Dione and Tantalus as well, all in that day. Our party spent the day lazing around in the sun, and the following day we all started down to Lake Lovely Water and back home.

Guidebook Afterthoughts

J. Monroe Thorington

Forty-five years of up-dating A Climber’s Guide to the Rocky Mountains of Canada, it may be of interest to know, have left the author still puzzled as to its exact use. No one, to our knowledge, carries a copy on a climb. We have never beheld a mountaineer cutting a step or placing a piton while riveting his eyes on a page for the next foothold. One simply does not have enough hands for such procedure, and it would be useless, certainly impossible, to hold the book in one’s teeth. There are stories of alpine mishaps arising from this dilemma; one, well-known, that of a climbing party in a serious accident due to a leaf being missing from the guidebook. We are under the impression that such books are read before or after, but rarely during, an ascent. Surely it is best to have the information in advance and proper directions in mind so that one can look at the mountain itself without further attention to the printed page.

A proper guidebook is a social register, in the sense that it indicates who did what and when; a record of team success, guided or guideless, and sometimes of solitary attainment. Its references to literature are the key to fuller insight as to the history and sequence of mountaineering activity. Even in the span of time encompassed by this guidebook effort one has seen extraordinary changes: the transportation of boulders, the retreat or even disappearance of glaciers, the formation of lakes.

During the Golden Age of climbing before World War II so many peaks were new; even if the wrong one was climbed by mistake, it was still a first ascent. Now one must search carefully for a summit uncrowned by a cairn. In the old days one awaited with excitement the successive appearance of maps of the Interprovincial Boundary Survey, revealing as they did unsuspected goals. The packtrain, with its leisurely tempo, has vanished, and the valley trench between Lake Louise and Jasper has lost its forest peace forever. Cars, planes and helicopters have superseded as transportation methods, making climbers less aware of the beauties below the snowline.

Forty years ago one heard little of special equipment. Crampons were seldom used. Tricounis succeeded hobnails, and rubber soles of the tennis court were displaced by Vibrams. Blue-jeans did away with knickerbockers, hallmark of the Victorian climber. Until recently one heard little of pitons or expansion bolts, but we are now entering a period when hardware can no longer be

ignored as an unworthy adjunct. Peaks were once of three kinds: easy, very hard, or impossible; now they must be graded, and the NCC and other systems are available to the computer-minded. Even topography fluctuates with altitude changes of new maps: Mt. Alberta rises to fifth place; Mt. Forbes drops to seventh. More 11,000-foot peaks are discovered, or are created by new surveys.

The present, sixth edition of the guidebook records about 1,000 summits and 850 routes, but there are still surprises. The careful reader will discover that there are almost 60 unclimbed summits exceeding 10,000 feet in elevation. Eleven are south of the C.P.R., 45 between the railroads; none north of the C.N.R. The Murchison-Cline group contains the largest number of these (15), with the Maligne Lake group close behind (11). Most of these, as one might expect, are in remote locations. The highest, however, would seem to be Queens Peak (10,990 feet), the north peak of Mt. Alexandra, not far from the highway. This is a brief summing up of our endeavor. The climber of the future, having fewer virgin summits to choose from, will rightly decide that the conquest of a great ridge or face of an important peak far outweighs a first ascent of a less worthy objective.

Availability Of Canadian National Topographic Map Sheets

Neal M. Carter

It has been suggested that readers of this Journal might find useful an annual review of recently available Government Map Sheets of alpine interest, and of what additional new such map sheets may shortly become available.

To facilitate initiating such a review, permission has been obtained to reproduce herewith portions of certain Federal and British Columbia Map Indexes (Figures 1, 2, 3 and 4) to illustrate the method of designating map sheets issued under the National Topographic System of Mapping, which is as follows (the example refers to a portion of southern British Columbia):

National Topographic System of Mapping

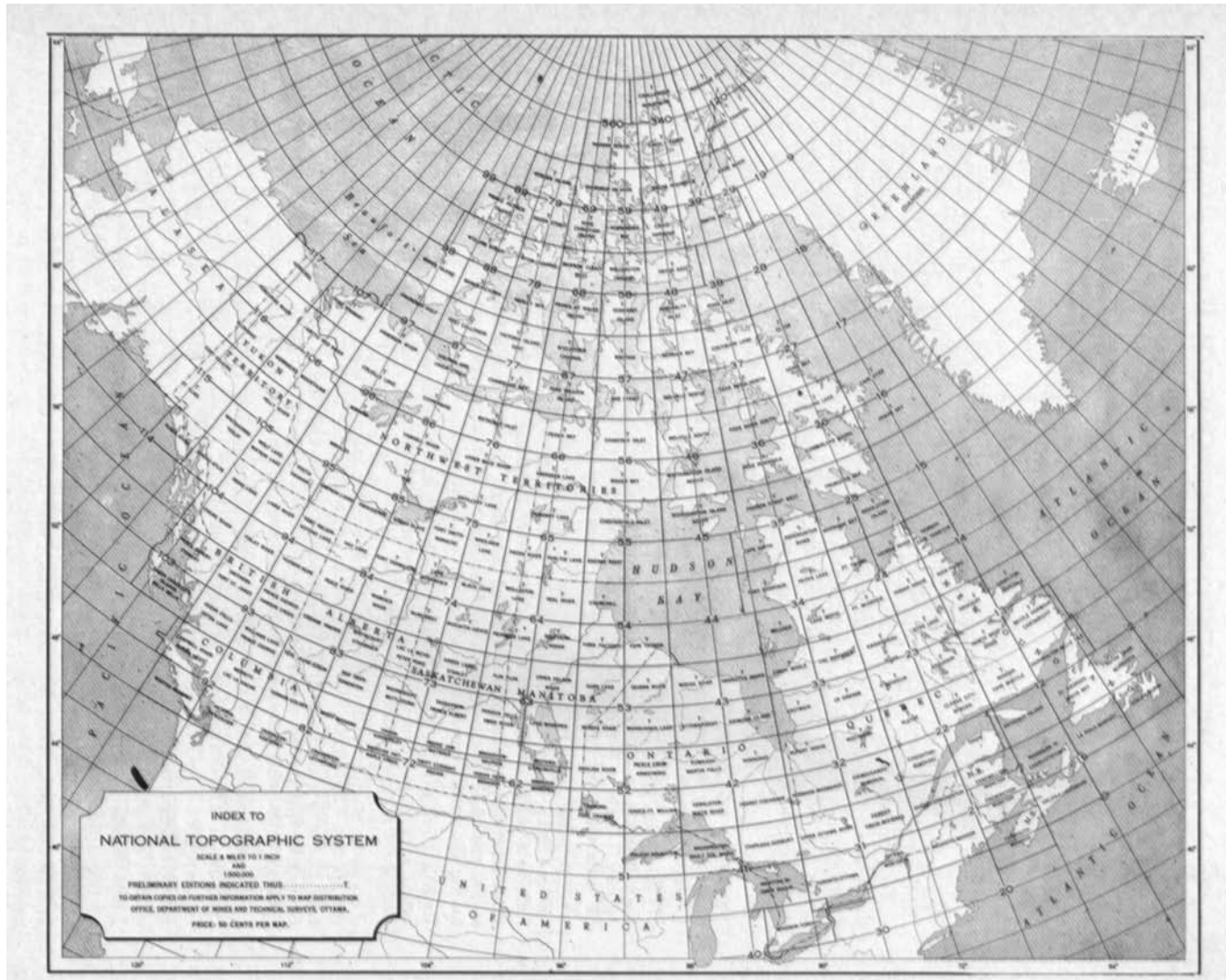
The whole of Canada is divided into primary map quadrangles each 4° latitude by 8° longitude, originally designed as map sheets of the Carte du Monde au Millionieme (1/1,000,000 or approx. 1 inch to 16 miles). The sheet numbers are shown on the index thus.....92

Each primary quadrangle is quartered into maps of the 1/500,000 (or approx. 1 inch to 8 miles) series, named respectively NW, NE, SW and SE with the sheet numbers taking the form thus92 NW

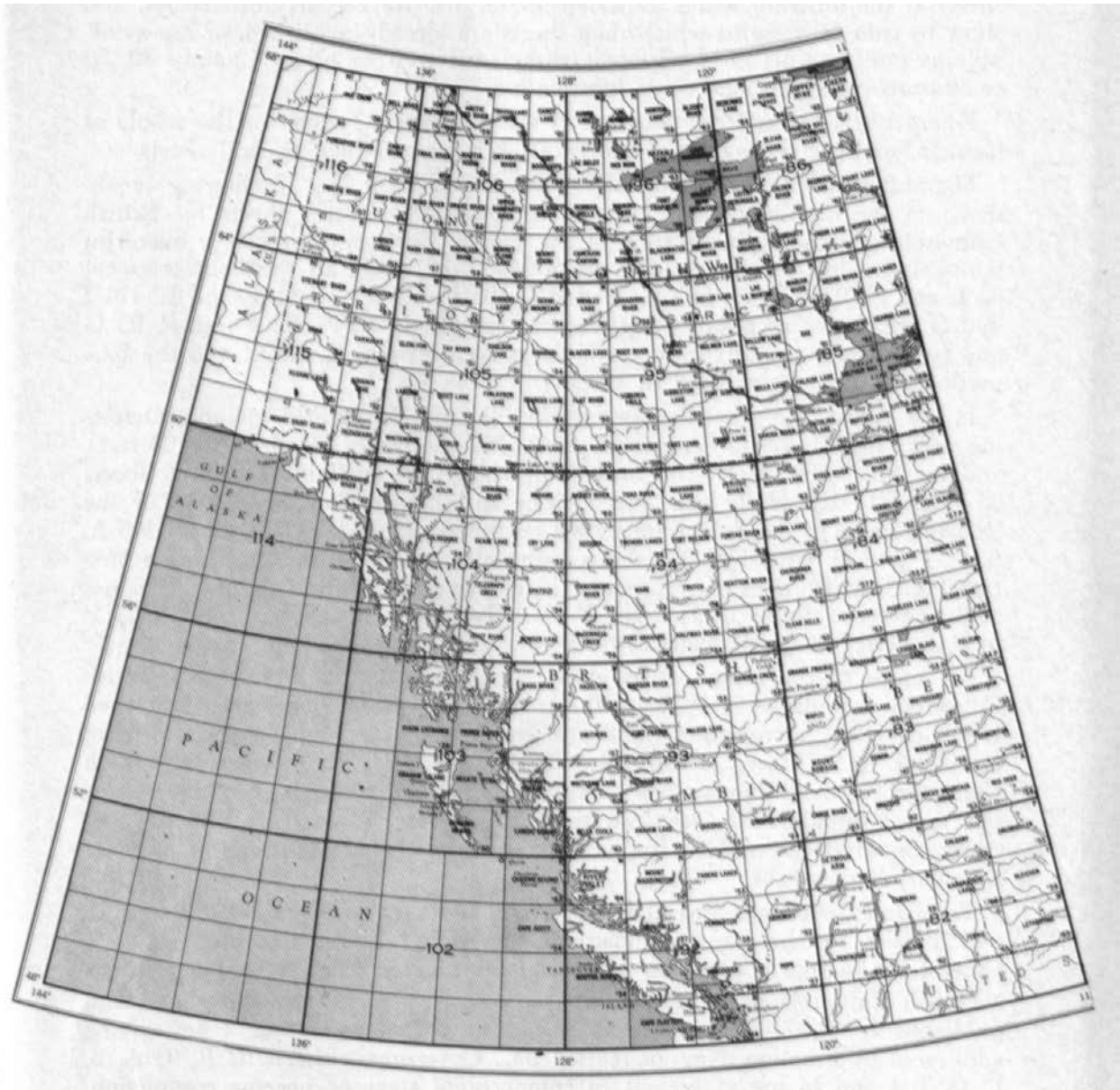
The primary quadrangle is further subdivided into sixteen maps, lettered from A to P denoting sheets of the 1/250,000 (or approx. 1 inch to 4 miles) series with each sheet number taking the form thus.....92 G

Each lettered quadrangle is quartered into maps of the 1-inch-to-2-mile series, named respectively NW, NE, SW, and SE with the sheet numbers taking the form thus92 G/SE

Each lettered quadrangle is further subdivided into sixteen maps numbered from 1 to 16 denoting sheets of the 1-inch-to-1-mile series with each sheet number taking the form thus92 G/6

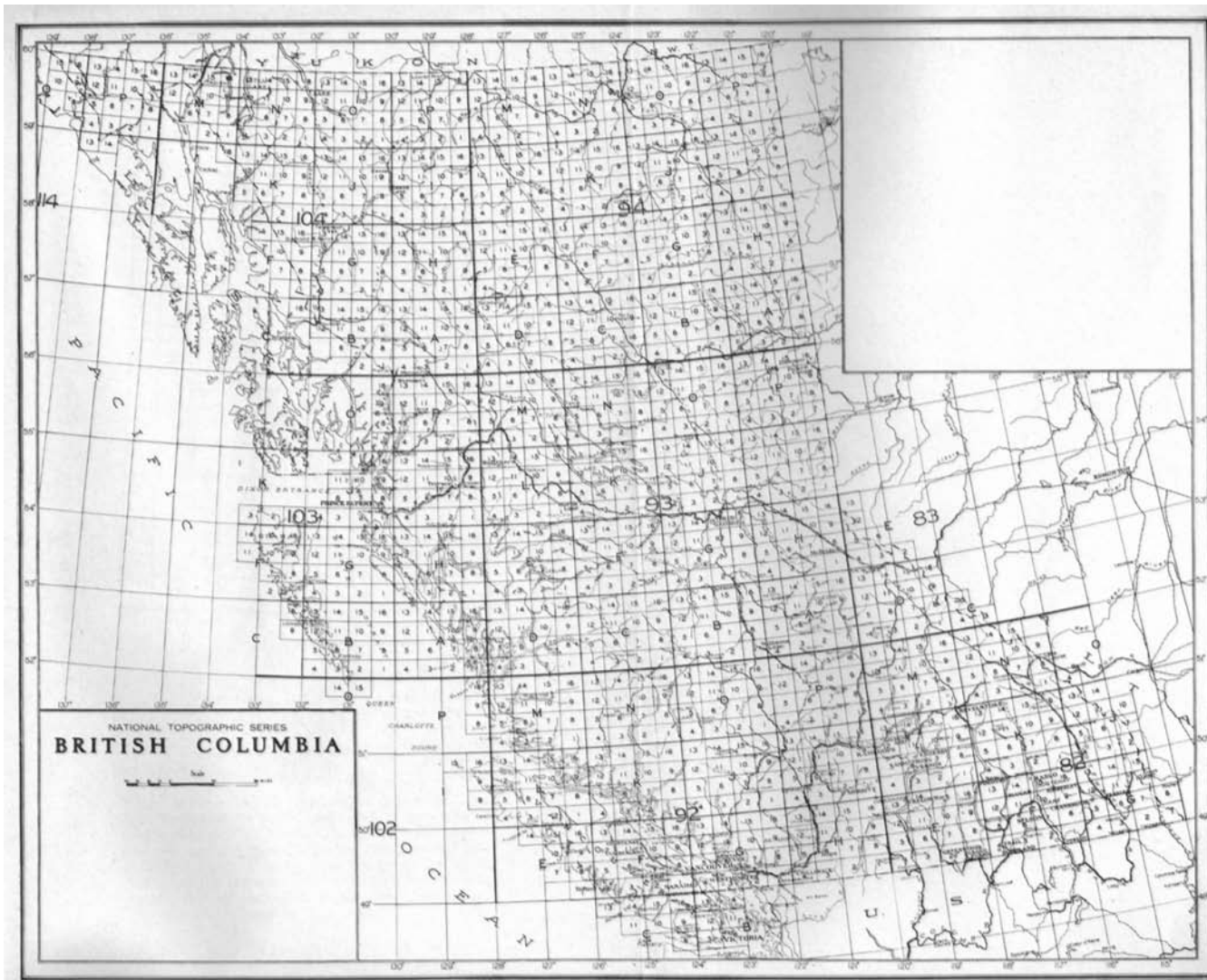


Reproduction (Reduced) Of Map Sheet Numbering System

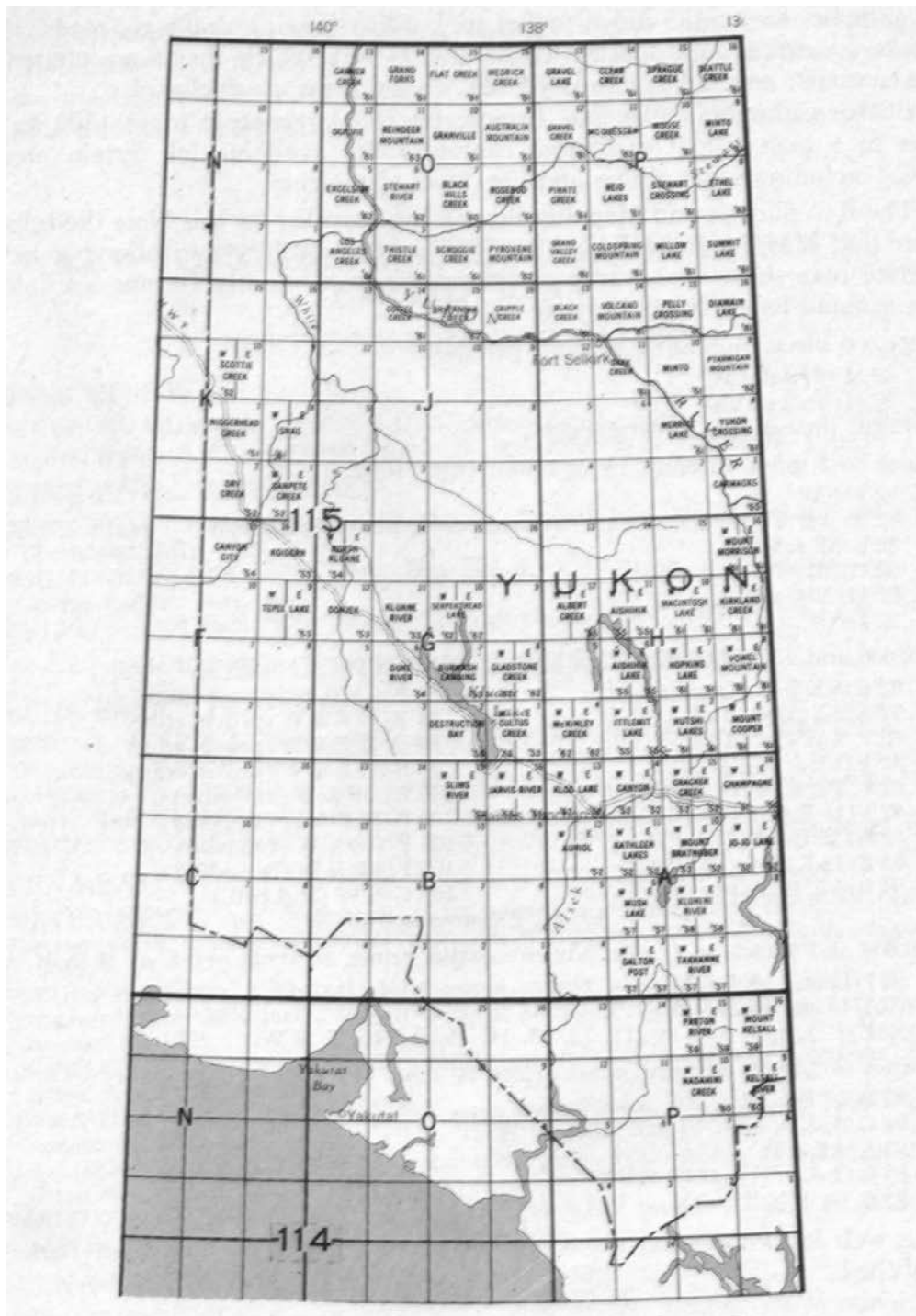


Reproduction (Reduced) Of Portion Of Canadian Federal Map Sheet Index

No. 19 for 1/250,000 sheets published to March 31, 1965 for British Columbia and part of Yukon and the Northwest Territories. (Original indicates published sheets in green, but these can be distinguished in this reproduction by the inserted name. Refer to text concerning British Columbia Map Index No. 11 for similar B.C. Map Sheets, including some not shown as published in the Federal Series for B.C.)



Reproduction of British Columbia Index No. 4 to Map Sheets
(originals show in red the sheets that are available)



Reproduction (Reduced) Of Portion Of Canadian Federal Map Sheet Index
 No. 6 for 1/50,000 sheets published to March 31, 1965 for SW Yukon and NW tip of British Columbia. (Original indicates published sheets in green, but these can be distinguished in the reproduction by the naming and additional numerals indicating publication date of each E and W half sheet.)

This sheet number is halved (East and West) for maps of the 1/50,000 (or approx. 1.25 inches to 1 mile) series which take the form thus92 G/6E

Each one-mile quadrangle is further subdivided into eight maps lettered from a to h denoting sheets of the 1/25,000 (or approx. 2.5 inches to 1 mile) series with each sheet number taking the form thus92 G/6a

The various Indexes to Published Maps (including those of the Yukon and Northwest Territories and the Canadian Arctic Islands) issued by the Federal Government are available free upon request from the Surveys and Mapping Branch, Department of Mines and Technical Surveys, Ottawa, and from local offices of the Geological Survey of Canada. The various Indexes to Published Maps issued by the Provincial Governments are available free from the offices of the appropriate Provincial Government Department in the capital of each Province (e.g. Surveys and Mapping Branch, Department of Lands, Forests, and Water Resources, Victoria, B.C.) and from local offices of those Departments.

(Indexes to published maps of the United States are available free from the U.S. Geological Survey, Denver 25, Colorado, or Washington 25, D.C.)

The various Canadian Indexes to Published Maps are for the series of map sheets at the different scales indicated above, also for certain other scales, and show by colour overprint which map sheets are already published, or are available as ozalid prints of provisional editions, as well as prices (mainly 30, 50 or 60 cents per sheet) and other information.

Figure 1 is a reduced reproduction of the numbering system for the whole of Canada, showing the names of individual 8-miles-to-1-inch Federal sheets.

Figure 2 is a reduced portion of Federal Index Sheet No. 19 showing breakdown to the numbering and naming of 1/250,000 Federal sheets for British Columbia and the alpine portion of the Yukon Territory. The colour overprint is not shown in this reproduction. As of March 31, 1965, all these sheets except 82 L and N, 92 F and P, 93 G, H and I, 103 I and O, 104 C, F and L, 114 I and O are shown as published. (Of these exceptions, 82 N, 92 F and P, 93 G and I (interim), and 103 I are available as B.C. Provincial sheets, and the B.C. portion of 103 O is included in 103 P.)

In the Yukon, the granite masses of the Nahanni River area include interesting peaks such as Keele Peak (9750 feet), Mt. Sir James MacBrien (9100 feet) and Itsi Mts. (8500 feet), this area being shown on available 1/250,000 sheets 95 E and L, 105 H, I, J, O and P. The still higher Canadian peaks of the Icefield Ranges of the Yukon are shown on the available 1/250,000 sheets 115 A, B, C, F and G, with 1/50,000 sheets being also available for some of the area (see Fig. 3, which does not reproduce the colour overprint, but shows the names of the sheets available in East and West halves, as well as five sheets of 114 P in B.C. northeast of Mt. Fairweather).

For maps of the alpine areas along the Alaska—Yukon and Alaska—British Columbia boundaries, American sheets available from the above-mentioned U.S. Geological Survey source and also from the Army Map Service, Corps of Engineers, U.S. Army, Washington 25, D.C., cover certain areas for which Canadian National Topographic Map Sheets are not yet published. For example, as yet unpublished Canadian sheet 104 F (Fig. 2) is represented by the Alaska Sumdum Sheet. Also, special map sheets of the Alaska-British Columbia Boundary Survey exist.

The Arctic mountain area of Baffin Island is shown principally on Sheets 16 and 26 (Fig. 1); the map accompanying the Baffin Island Camp article in this issue of the Journal is based on additional information from preliminary sheets.

British Columbia Map Index No. 11 indicates both Federal and Provincial published 1/250,000 contoured map sheets, numbered as in Fig. 2 and giving additional information. New or revised B.C. Government sheets 92 P, 93 A, B, E, G, I, J and M are at present in colour proof stage or nearing completion. This apparently leaves only sheets 82 L, 104 C, F, L, and 114 I and O still unavailable as either Federal or Provincial 1/250,000 contoured sheets.

It is not feasible within the compass of this note to reproduce the various Map Indexes of alpine sections of British Columbia and other areas to indicate availability of the many larger-scale maps, contoured or not, showing greater detail. British Columbia Indexes 4 and 14, for example, show that maps of much of the alpine area of B.C. are available (contoured) on scales of 1 inch to 1 mile, 1 1/4 inches to 1 mile, and 2 inches to 1 mile. Figure 4 shows the numbering system; most of the sheets are available in East and West halves (e.g., Prince Rupert is on Sheet 103 J/8 W4).

British Columbia Indexes 5 and 7 indicate interim planimetric maps on scales of 2 inches to 1 mile and 4 inches to 1 mile, showing drainage, roads, ridges, peaks, heights of land, centres of air photos from which they were plotted, but no contours; many, but not as yet all, alpine areas are included.

British Columbia Index No. 6 indicates still-larger-scale maps (100 to 1320 feet to 1 inch, 5-foot to 50-foot contours) are available for certain areas of B.C., including some alpine areas or their approaches.

The B.C. Surveys and Mapping Branch has supplied for this Note the information that after its Index Maps for 1965 were published the following new or revised map sheets or advance ozalid prints, have recently become available or are in hand for early publication:

1/250,000 sheets, published, 60 cents per sheet:

82 M (first status)
 92 H (first status)
 92 L (first edition, Federal series) .

1 inch to 2 miles, in hand, or in colour proof stage:

82J/NW
 82 K/NE & NW (NE sheet in colour proof; shows Bugaboos)
 82 L/SE & SW
 92 G/SE 92 H/NW
 92 I/NW.

1/50,000 and 1 inch to 1 mile, published, 60 cents per E or W half sheet:

32 E/8 E & W (1st edit.)	94 B/6 E & W (provis. edit.)
82 F/2 E (2nd edit.)	94 B/11 E & W (provis. edit.)
82 F/2 W (1st edit.)	94 B/12 E & W (provis. edit.)
82 F/5 E & W (1st edit.)	94 B/14 E & W (provis. edit.)
82 F/8 E & W (1st edit.)	103 B/3 E & W (2nd edit.)
82F/11 E &W (1st edit.)	103 B/12 E &W (2nd edit.)
82 N/12 E & W (1st edit.)	103 F/1 E & W (2nd edit.)
83 E/12 E & W (1st edit.)	103 F/8 E & W (2nd edit.)
94 B/5 E & W (provis. edit.)	103 G/5 W (2nd edit.)
103 1/2 E (1st revised edit.)	

1/50,000 and 1 inch to 1 mile, advance ozalid prints, 30 cents per E or W half sheet:

92 1/12 and 13, E & W

92 T/15 and 16, E&W

92P/2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15 and 16, E & W.

2 inches to 1 mile, advance ozalid prints, 60 cents per E or W half sheet:

92B/12 E&W

92 0/3,4, 5, 6, 7, 10 and 12, E & W

93 A/4 E&W

93 G/3,4,5,11 and 12, E & W

93 G/6 (W half only).

As is well known, special maps of Federal and Provincial Canadian Parks are published.

NOTE RE: SUBMITTING FOR OFFICIAL ADOPTION SUGGESTED NEW NAMES FOR MOUNTAINS AND OTHER GEOGRAPHICAL FEATURES — On pages 124-129 of the 1964 Canadian Alpine Journal this subject was discussed, and guiding principles for choosing names were set forth. The Canadian Permanent Committee on Geographical Names, Ottawa, is the body that makes the final decisions concerning official adoption of suggested new names. However, the names must also be acceptable to the Province concerned, and suggestions can perhaps be expedited by being submitted first to the Provincial Representative on that Committee, who would then forward them to the Committee for a final decision. The present British Columbia representative on the Committee is the Chief of the Geographic Division, Surveys and Mapping Branch, Department of Lands, Forests, and Water Resources, Victoria, B.C.

New (Canadian) Ascents And Various Expeditions Northern British Columbia

Haines Highway

Three Guardsmen Mountain (Clave Peak) (Ca. 6250 Feet) , North And Central Summits.
First Ascents. George W. And Frances C. Whitmore. July 10, 1965.

Stikine-Anuk River Area

“Tent Peak” (Ca. 8700 Feet) . First Ascent. Dave Wessel, Derek Fabian And Eddie Thompson. July, 1965.

Mount Burkett (9750 Feet) . First Ascent. Ken Bryan, Norman Harthill, And George Liddle.
July, 1965. “Pulpit” (8300 Feet) . First Ascent (?) . Dave Wessel. July, 1965.

West Central British Columbia

Skeena-East, Thomlinson Group

“Mount Sterritt” (Ca. 7500 Feet) . First Ascent. George W. And Frances C. Whitmore. July 24, 1965. (Unnamed) (Ca. 7200 Feet) , One-Half Mile Ne Of Mt. Sterritt. First Ascent. Above Party. July 24, 1965.

Mount Thomlinson (Ca. 8000 Feet) . First Ascent. Above Party. July 25, 1965.

Skeena-East, Atna Range

“Raven Ridge” (Ca. 6000 Feet) . First Ascent; Apparently First Occupied By Helicopter Party. George W. And Frances C. Whitmore, David Bradford. August 6, 1965.

Shedin Peak (Ca. 8500 Feet) . First Ascent. Above Party. August 9, 1965.

(Unnamed) (Ca. 7500 Feet) , 2½ Miles Se Of Shedin Peak. First Ascent. Above Party.
August 13, 1965.

“Osprey Peaks” (Ca. 7500 Feet) ; North, Middle, And South. First Ascents. Above Party.
August 14, 1965.

“Pyramidal Peak” (Ca. 7500 Feet; Map Shows 8000). First Ascent. Above Party. August
16, 1965.

“Golden Eagle Mountain” (Ca. 8000 Feet) . First Ascent. G. Whitmore And Bradford.
August 17, 1965.

“Bald Eagle Mountain” (Ca. 8000 Feet). First Ascent. G. And F. Whitmore And D. Bradford.
August 18, 1965.

Skeena-East, Sicintine Range

“Moose Mountain” (Ca. 7500 Feet) . First Ascent. George W. Whitmore And David
Bradford. August 25, 1965.

Coast Mountains¹²

Tantalus Area

“Witch’s Tooth” (Ca. 8400) . First Ascent. Gordon Coots, Andrew Gruft, And Larry Hewitt.
July 1, 1965.

Howe Sound Area

Papoose Rock (450 Feet) . New Direct Route. Eric Bjornstad And Fred Beckey. 1965

Nightmare Rock (Murrin Park) . Direct Route. Leif Patterson, Eric Bjornstad And Fred
Beckey.

Waddington Area

Mount Stiletto (10,000 Feet) . Tiedemann Glacier Area. New Route By Leif Patterson And
Fred Beckey. August, 1965.

Mount Waddington (13,104 Feet) . New Route From Tiedemann Glacier To Spearman
Col Thence Usual Route To Summit. Jerry Fuller, Leif Patterson And Don Liska.
August, 1965.

Bella Coola Area (Climbs From B.C. Mountaineering Club Summer Camp At Ape Lake)

“Icarus”. First Ascent. M. Kafer And Party Of Thirteen. July 20, 1965.

“Daedalus”. First Ascent. M. Kafer And Party Of Six. July 20, 1965.

Hyperion (Ca. 8200 Feet) . First Ascent. M. Kafer And Party Of Eight. July 21, 1965.

“Utan” (Ca. 8700 Feet) . First Ascent. M. Kafer And Party. July 22, 1965.

“Chimpanzee” (8850 Feet) . First Ascent. Esther Kafer And Party. July 22, 1965.

“Throwback” (7800 Feet) . First Ascent. M. Kafer And Party. July 24, 1965.

¹² Editor’s Note—In the first two items under CHILKO LAKE AREA in the list of new ascents under COAST RANGE on page 163 of the 1965 issue of this Journal (Vol. 48) the name MT. OTRANTO should read MT. MARSTON; “MT. LEIPZIG” is correct as named by the party; and “MT. SCHARNHORST” should read OTRANTO MTN. The information in such lists of New Ascents and Various Expeditions is compiled from galley proofs of the Journal contents, and the compiler in this case was unaware of certain last-minute corrections made in the article on pages 43—51 of that issue to have the names of peaks mentioned conform to the official names that had just been confirmed by the Canadian Permanent Committee on Geographical Names as indicated by the Editor’s Note at the foot of page 45 of that article. The peak names in the article and on its map are correct. We would also draw attention to the incorrect spelling “Mt. Marsden” for Mt. Marston on pages 191, 300, and accompanying map, of “A Climber’s Guide to the Coastal Ranges of British Columbia” published by the Alpine Club of Canada in 1965, in which the above-mentioned peak names are otherwise correctly assigned.

- “Blackfly” (Ca. 8000 Feet) . First Ascent. M. Kafer And Party Of Four. July 25, 1965.
 “Eskimo” (Ca. 8950 Feet) , First Ascent. Same Party. July 25, 1965.
 “Seal Peak” (Ca. 9100 Feet) . First Ascent. Same Party. July 28, 1965.
 “Walrus Tusks” (Ca. 9250 Feet) . First Ascent. Same Party. July 28, 1965.
 Mount Belial (8000 Feet) . First Ascent. Esther Kafer And Party. July 27, 1965.
 “The Queen” (Ca. 10,600 Feet) . 2nd Ascent Via West Ridge. Martin And Esther Kafer And David Boyd. August 29, 1965.
 “The Serf” (Ca. 9500 Feet) . East Of “The Throne”. 1st Ascent. Same Party. August 31, 1965.
 “Concubine Peak” South (Ca. 10,100 Feet) . 2nd Ascent. Same Party.

Selkirk Mountains

Adamant Area

- Quadrant (9700 Feet) . First Ascent. William Putnam. July, 1965.
 Outpost (9500 Feet). First Ascent. Don Sprecker, Margie Ferris And Moses Goddard. July, 1965.

Rogers Pass Area

- Mount Macdonald (9492 Feet) . First Ascent Of North Face. Jerry Fuller And Fred Beckey. July, 1965.
 Mount Tupper (9239 Feet) . First Ascent Of South Face. Jerry Fuller And Fred Beckey. July, 1965.
 Rogers Peak (10,546 Feet) . New Route On West Ridge. R. Kruszyna, C. Fay And Leigh Andrews. August, 1965.
 Mount Bonney (10,194 Feet) . New Route North Face. R. Kruszyna, Jack Taylor, And Charlie Fay. August, 1965.

Rocky Mountains From Glacier Lake A.C.C. Camp

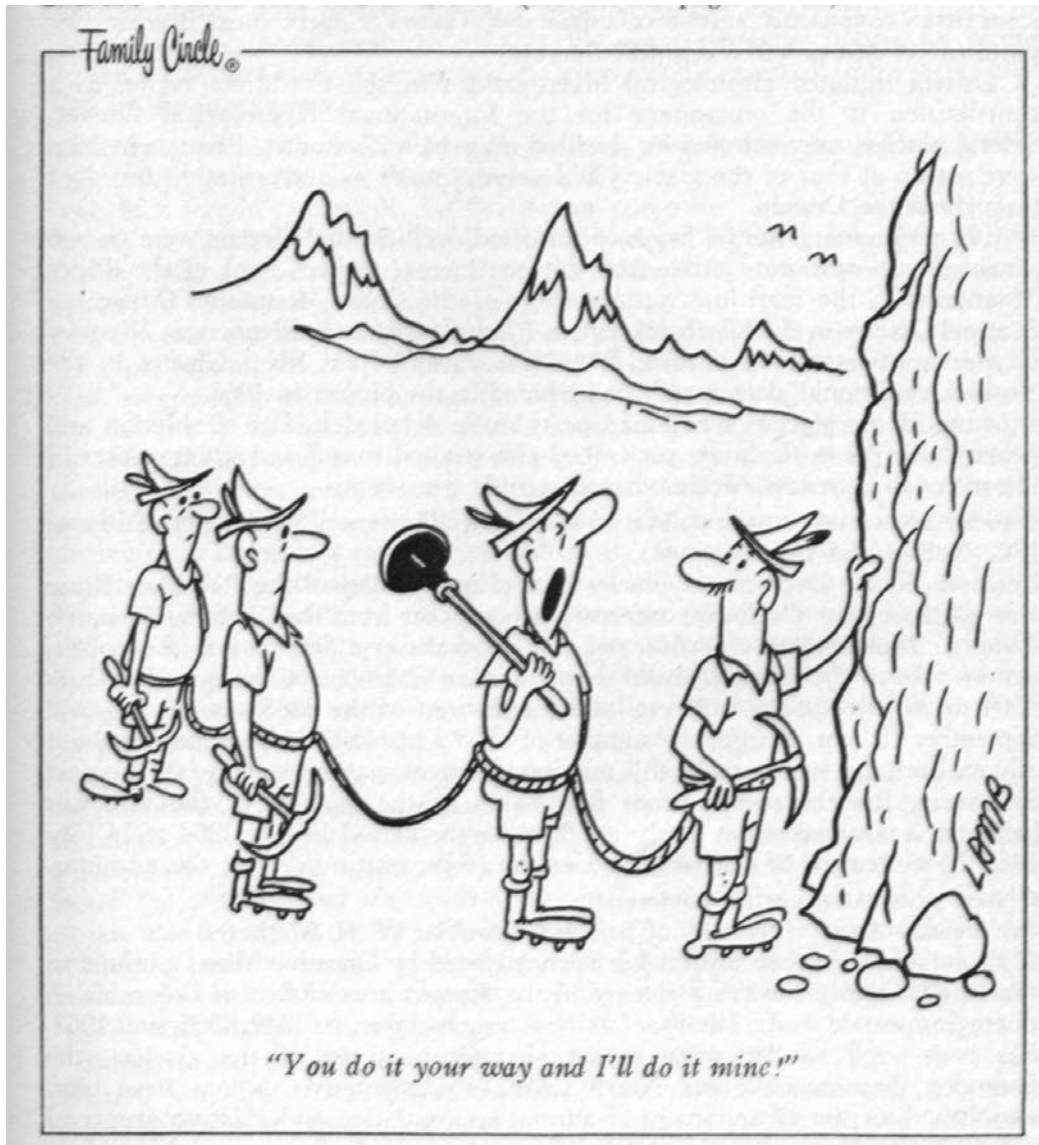
- F2 (Forbes) (9600 Feet) . New Route Via West Ridge. R. Kruszyna And Party. July, 1965.
 F4 (Forbes) (10,400 Feet) . First Ascent. R. Scholes And Party Of Eight. July 29, 1965.
 Mons (10,114 Feet). Via South Ridge, Probably A First Ascent. B. Fraser And Party. July, 1965.

Other Areas In Rockies

- Windtower (8400 Feet) . New Route. Hans Gude, Barbara Crobeau, Gordon Crocker And Klaus Hahn. July 1, 1965. Mount Redoubt (9520 Feet) .
 Amethyst Lake Area. New Route On East Face. Fred Beckey And Jerry Fuller. August, 1965.
 Mount Blackhorn (9800 Feet) . Astoria Creek. New Route On North Face. Jerry Fuller And Fred Beckey. August, 1965.
 Bastion Peak (9812 Feet) . New Route On East Face. Jerry Fuller And Fred Beckey. 1965.
 Mount Ball (10,865 Feet) . Vermillion Pass. New Route From Shadow Lake. Jerry Fuller And Fred Beckey.

Baffin Island

- Climbs From 1965 A.C.C. Camp (See List On Pages 33-34).



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"You do it your way, and I'll do it mine!"

SCIENTIFIC SECTION

Glacier Research In Canada, 1965

J.O. Wheeler

The following is abstracted from the annual report of the National Research Council subcommittee on Glaciers, edited by G. Hattersley-Smith. The account presented here emphasizes in greater detail glacier studies in Western Canada—the region best known to A.C.C. members—with briefer mention of studies in the Canadian Arctic.

WESTERN CANADA

1. Southern Cordillera, British Columbia And Alberta (Geographical Branch, Department of Mines and Technical Surveys).

G. Ostrem initiated glaciological investigations in the Cordillera region as a contribution to the programme for the International Hydrological Decade. Several glaciers were selected for detailed mass balance studies. Permanent huts were set up at four of the glaciers and surveys made as a preparation for work throughout the Decade.

After preliminary studies five medium-sized, well-defined glaciers were chosen along an east-west cross profile from the continental western flank of the Rocky Mountains to the maritime western slope of the Coast Mountains. These are Sentinel Glacier in the Garibaldi region, Place Glacier near Pemberton, Woolsey Glacier northeast of Revelstoke, Peyto Glacier and Ram River Glacier in the Rockies. Additional glaciers will be included in the project in 1966.

At two of the glaciers a two-man party made detailed studies of ablation and density changes in the snow pack; they also studied runoff and silt transport in the meltwater streams. Meteorological records were kept.

2. Rocky Mountains, Alberta, Drummond Glacier (University of Alberta, Calgary: J. G. Nelson and I. Y. Ashwell).

Research on the Drummond Glacier in the upper valley of the Red Deer River was continued for the fourth summer with support from the National Research Council. Measurements at five stakes in a transverse line across the southeastern lobe of the glacier showed that the mean ablation for the period 16 July 1964 to 26 July 1965 was 98 cm. and for the rest of the 1965 summer up to 2 September 150 cm. During the summer of 1965 a bedrock bridge appeared about 800 m. from the terminus; in this area rapid retreat may be expected in the next few years. Remeasurement from five stakes in the vicinity of the terminus indicated a mean recession of about 7.3 m. for the period 15 July 1964 to 14 July 1965. Measurement of discharge and erosion were continued near the terminus.

3. Coast Mountains, British Columbia

(a) Stewart Area (University of British Columbia: W. H. Mathews) A glaciological research project has been initiated by Granduc Mines Limited to evaluate changes in existing glaciers in the Stewart area of British Columbia. A photogrammetric study, based on air photographs taken in 1949, 1956, and 1963, has been used to determine recent changes in three of the glaciers—the Berendon, Frankmackie, and North Leduc. Representative stations have been established for the measurement of annual accumulation and ablation at several different elevations. Annual surface movements are to be measured on these three glaciers, and seasonal movements at several sites on the Berendon and Salmon glaciers. A computer program is to be undertaken to provide a forecast of the speed of kinematic waves on the Berendon Glacier, (b) Mount Edziza (Geological Survey of Canada: J. G. Souther) A detailed study of the Mount Edziza volcanic complex in north-central British Columbia was begun in 1965. The symmetrical, 2,700-m. central cone is covered by a small névé from which a radial system of valley glaciers and flat ice-lobes extends down to elevations of 1,700 to 2,000 m. The positions of several of these glaciers during the last episode of volcanic eruptions have been determined from the distribution of ash and cinder beds. Ash that fell on the lower parts of the glaciers has been largely removed by surface meltwater, whereas ash that fell

beyond the ice is undisturbed. Carbon-14 dates, obtained on charred stems from below the ash, are expected to provide a basis for calculating the rates of recession and ablation of the local valley glaciers. An attempt is also being made to identify the same ash layer in the ice of the central névé, and thus to determine the corresponding rate of snow accumulation in the source area.

4. Icefield Ranges, Y.T. Icefield Ranges Research Project (American Geographical Society; Arctic Institute of North America).

The fifth season's work of the IRRP was completed under the direction of Walter A. Wood and the field leadership of Richard H. Ragle, who with C. Bull (Ohio State University) and Melvin G. Marcus (University of Michigan) supervised the broad glaciological programme.

A traverse was made across the glaciers of the Icefield Ranges to determine the gross accumulation. Test pits at a vertical interval of about 150 m. extended from an elevation of 1,200 m. on the Seward Glacier across the upper basin of the Seward to the hydrological divide between the Hubbard and Kaskawulsh glaciers, and down to an elevation of 1,600 m. on the Kaskawulsh. Preliminary results show that precipitation increases orographically from the western maritime region up to an elevation of 1,800 to 1,900 m., above which it decreases, so that at 2,520 m. it is only 35 per cent of its maximum value. Pit studies and accumulation measurements were continued near the divide (2,700 m.) and Seward (1,860 m.) stations, englacial temperatures being measured to a depth of 14.5 m. Snow temperatures at the divide station were more strongly negative than in any year since 1961. Measurements were made of the dielectric constant of snow in order to gain knowledge of radio wave propagation in snow at temperatures above -10° C.

At the Kaskawulsh station petrographic studies of ice cores and strain rate measurements were made, and water samples were obtained for tritium analysis. A number of exploratory descents of 20 to 25 m. were made into moulins. Preliminary results of seismic work showed a steep, down-glacier bedrock slope below the confluence of the north and central arms of the Kaskawulsh Glacier, in an area of strong ice crystal orientation. A detailed gravity network was established on the medial moraine immediately below the glacier confluence. Stream development on the surface of the north and central arms of the Kaskawulsh Glacier was mapped and studied in detail.

Synoptic and pibal observations were made on a 24-hour schedule at the Kluane, Kaskawulsh and divide stations. Three coded reports each day from these stations were passed to Whitehorse weather station, Department of Transport. Data from all stations were entered in IBM cards for subsequent computer reduction. At the Seward station micro-meteorological, mass balance and energy exchange measurements were continued and intensified. The data now available from 1965 and previous years will allow a comprehensive assessment of climate from the Pacific Coast across the mountains to the continental interior.

In the laboratory at the University of Alberta, D. S. Macpherson completed an analysis of 83 measurements of O18/O16 ratios in ice samples obtained from the Hubbard and Kaskawulsh glaciers. The variations indicated an enrichment of the O16 isotope by 1.8 to 2.9% correlating with annual meteorological trends and elevation of the accumulation area. The percolation of summer melt-water produces a homogenization of the O18/O16 ratio which is diluted significantly. Samples along a transverse section show less enrichment of O16 at the centre of an ice stream. This supports the idea that the central ice comes from a lower altitude in the accumulation area than the ice at the sides. The laboratory work was supported by the Arctic Institute of North America and the Canadian National advisory Committee on the Geological Sciences.

5. Logan Mountain, Y.T.: Measurements On A Rock Glacier (Geological Survey of Canada; O. L. Hughes: Geografiska Institutionen, University of Uppsala, Sweden; A. Rapp)

A rock glacier near Canada Tungsten mine on which S. Blusson initiated observations in 1963 was re-examined in 1965. In two years the snout of the 2.5-km. long glacier has advanced up to 2.5 m. into forest. Points along transverse lines 400 m. from the snout have moved as much as 6.5 m. Minor collapse features on the surface of the glacier suggest that it may have a melting ice core, and hence may be a debris-covered glacier rather than a true rock glacier in which ice is only present interstitially.

6. Western Canada: Glacier Photography (Water Resources Division, United States Geological Survey: Austin S. Post).

Vertical and oblique aerial photographs of a few glaciers in British Columbia and the Yukon Territories were taken in August on flights between the Western United States and Alaska. Terminal areas of the glaciers were photographed vertically; in most cases oblique photographs were obtained which show the terminus, transient snow line and accumulation basins. The following glaciers in the Coast Mountains were covered: Stave, Warren, Squamish, Toba, Bishop, Stanley Smith, Jewakwa, Waddington, Bear Pass, Salmon, Leduc, a glacier in the Babine Range, and a glacier near the Cambria Icefield. Several glaciers in the Asek and Icefield ranges were also covered, including the Kluane, Donjek, and Steele.

CANADIAN ARCTIC

7. Southern Baffin Island: Recent Glacier Fluctuations (Geological Survey of Canada: W. Blake, Jr.).

Observations were made of marginal variations of numerous small ice caps and valley glaciers.

8. South Central Baffin Island: Penny Ice Cap (Observatories Branch; Topographical Survey, Department of Mines and Technical Surveys: J. R. Webber and K. C. Arnold).

Geophysical and glaciological work begun in 1962 was continued. Movement of a line of poles across the crest of the ice cap was 18 m. at the southwest end and the spread of two centre poles was 3 m. over a period of three years. The flow rate of a major outlet glacier in 1965 was 44 per cent greater than in 1962.

9. Central Baffin Island (Geographical Branch, Department of Mines and Technical Surveys).

A large party under O. H. Løken continued glaciological, glacial geomorphological and related studies on Barnes Ice Cap, Lewis Glacier, and Inugsuin Glacier. The southern part of the ice cap shows much heavier accumulation than the northern part.

10. Devon Island (Arctic Institute of North America).

A small party continued mass balance measurements, started in 1961, on the Devon Island ice cap and three of its outlet glaciers.

11. Melville Island And Meighen Island (Polar Continental Shelf Project: W. S. B. Paterson).

Routine mass balance measurements were continued on the four ice caps on Melville Island and on the one on Meighen Island. A bore hole was drilled through the latter ice cap. Bedrock was reached at 121 m.

12. Axel Heiberg Island (McGill University: R. Müller).

Mass balance studies were continued on the White and Baby Glaciers. In addition englacial temperatures were studied and movement measurements made on White Glacier. Snout surveys were made of the Thompson, White, and Crusoe Glaciers.

Besides establishing automatic weather stations on the island geomorphological and aerial snow and ice cover studies were carried out.

13. Northern Ellesmere Island (Defence Research Board; University of New Brunswick; Topographical Survey, Department of Mines and Technical Surveys).

Mass balance studies were continued on the Per Ardua Glacier at the head of Tanquary Fiord under G. Hattersley-Smith. These indicate a slight net gain for 1964-65. Movement at 500-m. level was determined at 18 to 22 m/year. Strain rate measurements were continued on Ward Hunt Ice Shelf.

14. Symposium On Glacier Mapping

This symposium was held September 20 to 22, 1965 at the National Research Council, Ottawa. A total of 22 papers was presented which will be published in the Canadian Journal of Earth Sciences late in 1966.

Glacial History Of The Bow River Valley

Banff Area, Alberta

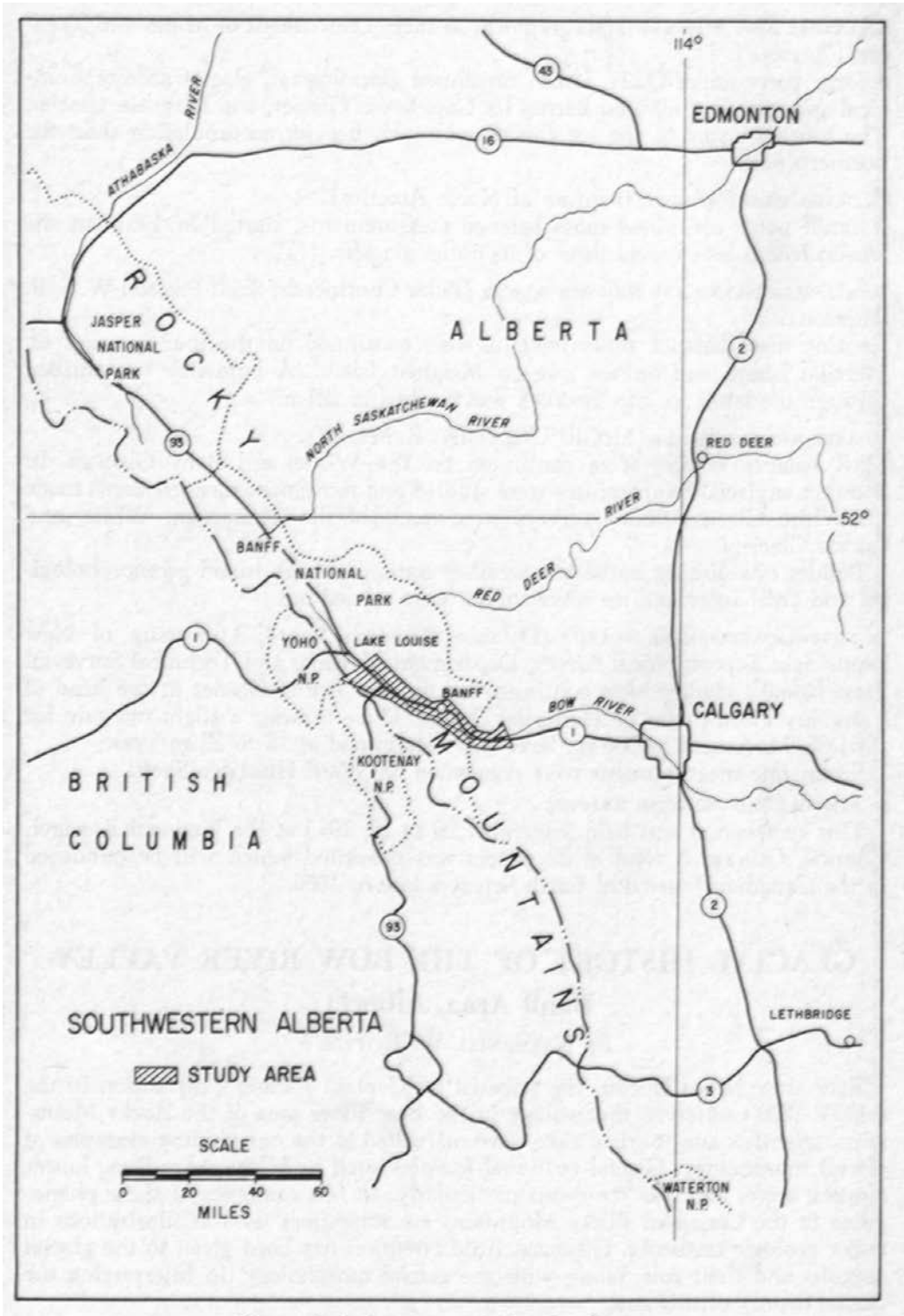
*Nathaniel W. Rutter*¹³

Ever since James Hector, the scientist on Captain Palliser's expedition in the middle 1800's observed the geology in the Bow River area of the Rocky Mountains, scientists and tourists alike have marvelled at the outstanding examples of glacial morphology. Glacial erosional features such as U-shaped valleys, horns, cirques, arêtes and cols stand out particularly. In fact examples of these phenomena in the Canadian Rocky Mountains are sometimes used as illustrations in major geologic textbooks. However, little attention has been given to the glacial deposits and their role, along with the glacial morphology, in interpreting the glacial history of this area.

During the past three field seasons the writer has studied the glacial morphology and deposits of the Bow River valley from Moraine Creek to the Kananaskis River, and certain tributaries of the Bow. (Figures 1 and 2). The purpose of this paper is to present an interpretation of the most important glacial events as determined from geologic evidence uncovered in this area. It should be emphasized that this interpretation is made from available evidence and that in time it may change as new evidence becomes available and old evidence proves invalid.

A glossary of glacial geological terms for the convenience of the reader is presented at the end of this report.

¹³ Geological Survey of Canada. This study was supported by the Dominion Dept. of Forestry, as part of the East Slopes (Alberta) Watershed Research Program (Project A-802). The writer thanks Dr. R. W. Klassen, Geological Survey of Canada, for critically reviewing the manuscript.



Index Map of the Banff Area



Royal Canadian Air Force Photo

Plate I. The Bow River Valley, Banff National Park

Displaying a broad U-shape caused by glaciation. View toward the northwest. Mt. Eisenhower is in the background near the central part of the photograph.



Plate II. Johnston Canyon

A typical canyon formed in post-glacial time extending from the lip of a hanging valley to the floodplain of the lower valley

Glacial Morphology and Deposits

The glacial morphology of the Bow River valley area will not be discussed in detail, since most readers are probably familiar with it. However, the author does not want to minimize the importance of these phenomena in deciphering the glacial events of the past.

The topography of the Bow River valley area is controlled principally by the structure and differential preglacial erosion of the bedrock, which has been modified by glacial erosion and deposition. Part of the result of the glacial erosion is a broad, U-shaped valley (Plate I) covered by relatively thick glacial and non-glacial unconsolidated deposits in the valley floor and progressively thinner deposits ascending the walls. Tributary valleys often “hang” above the Bow River valley with deep canyons extending from the lip of the tributary to the Bow River floodplain (Plate II). In the higher reaches of the area, cirques, arêtes, cols and horns dominate the landscape.



Plate III. Till Deposited During The Time Of The Eisenhower Junction Advance.

Located along Route 1A between Lake Louise and Eisenhower Junction



Plate IV. Ice-Contact Stratified Drift

Located in a gravel pit about 1 mile southwest of Eisenhower Junction off Route 93. Dip of the beds toward southeast. (51 15' 40" N. latitude; 115 56' 40" W. longitude)

The entire Bow River valley floor is covered with a blanket of till and glacio-fluvial deposits except for the floodplain and a few small areas. From Moraine Creek to just northwest of Eisenhower Junction till is the dominant glacial deposit and forms the prominent bluffs along Route 1A (Plate



Plate V. Till (A) Overlying Non-Ice-Contact Stratified Drift (B)

About 1/2 mile southwest of the Banff Powerhouse on the southwest side of the Cascade River. View toward west-southwest (51° 11' 40" N. latitude; 115° 31' 00" W. longitude.)

III; Figure 2). Near Eisenhower Junction, the till grades mainly into ice-contact stratified drift, good outcrops of which are observed in a gravel pit near the south side of Route 93 west of Eisenhower Junction (Figure 2; Plate IV). Southeast of Eisenhower Junction, till again is the principal deposit as far as about the confluence of the Bow and Cascade Rivers, 4 miles east of Banff townsite. The most widespread and thickest outcrops are located in this latter area. Examples are the precipitous bluffs on either side of the Trans-Canada Highway (Plate V) and along the northwest side of the Bow River (Figure 2). The upper parts of the famed "Hoodoos", located in the same general area, consist of till (Plate VI).

Downstream from the area mentioned above to about Exshaw, till and other unconsolidated deposits are present, but the most spectacular outcrops are thick deposits of non-ice-contact stratified drift, consisting mainly of gravel and sand, located principally on the northeast side of the Bow River valley. Good exposures are seen along Route 1A, as illustrated in Plate VII (Figure 2). From Exshaw to the Kananaskis River the Bow River valley widens into relatively flat plain with low, irregular mounds, ridges, and terraces (Figure 2). This is a kame moraine made up of kames, eskers and possibly crevasse fillings which consist mainly of gravel dipping steeply in a wide range of directions (Plate VIII).

With the exception of the kame moraine area the surfaces of most of the glacial deposits in

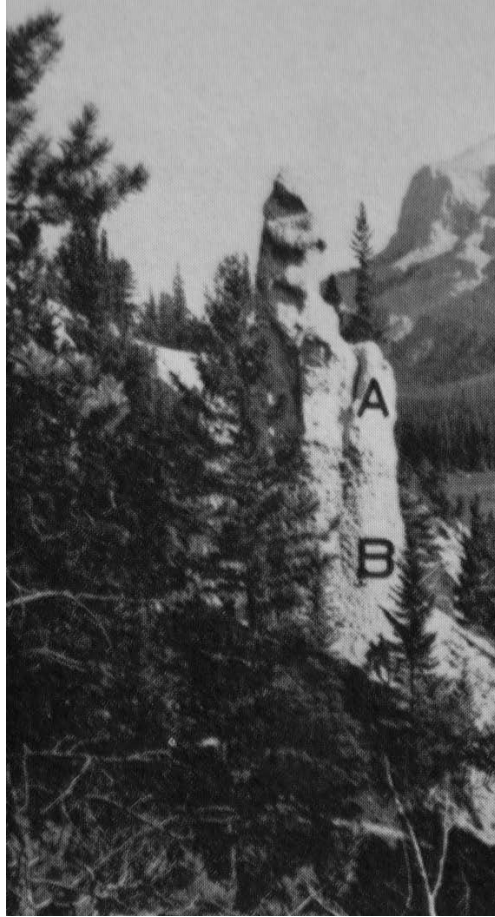


Plate VI. Hoodoos Consisting Of Non-Ice-Contact Stratified Drift (B) In The Lower Part And Till (A) In The Upper Part.

These are located near the Tunnel Mountain Campground just east of the Banff townsite.

the Bow River valley are marked by erosional ridges and depressions parallel to the trend of the valley. These are “drumlin-like” features, formed under a moving glacier, although they are longer and have lower relief than drumlins.

Preglacial Drainage and Topography

Earlier workers (Dawson, 1886; Ogilvie, 1904; Sherzer, 1907; Warren, 1927; and Allan, 1943) suggested that the Bow River may have flowed east through the valley of Lake Minnewanka in preglacial time (Figure 2) instead of along its present drainage course southeast of Banff townsite. This change of course is attributed to glacial diversion. The writer believes that the entire present drainage course of the Bow River in the Banff area is in much the same position as it was in preglacial time, simply because the Bow River today occupies a more mature valley than the valley of Lake Minnewanka. Both ideas are more speculation than fact. There is evidence, however, that at least once during glacial time the drainage in Lake Minnewanka was to the east and not to the west as it is today. Figure 2 illustrates the more obvious preglacial drainage courses in the Banff area which changed during glacial time.

The mountains in the Banff area were probably more subdued with gentler slopes prior



**Plate VII. Non-Ice-Contact Stratified Drift Exposed Along The Northeast Side Of Route 1a
About 3 Miles Southeast Of Canmore.**

View toward north. (51° 04' 10" N. latitude; 115° 17' 50" W. longitude.)

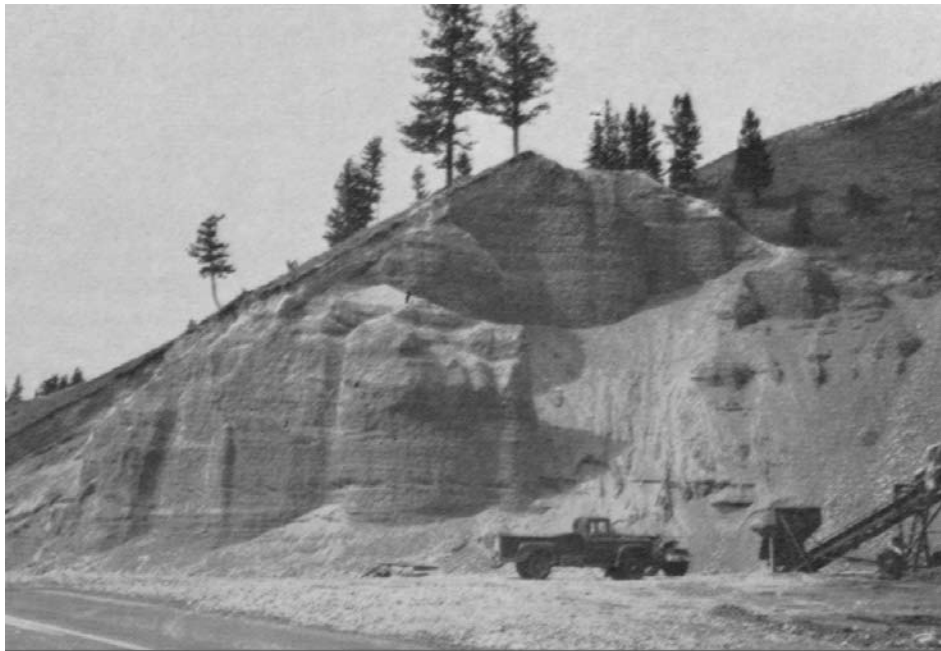


Plate VIII. Kame Deposits Near Loder's Lime Ltd.

North of Route 1A. View toward east. (51° 04' 10" N. Latitude; 115° 07' 20" W. Longitude.)

to glaciation than they are today. The major valleys were V-shaped, relatively narrow, with steep gradients and more restricted floodplains. Preglacial erosion proceeded at a more rapid rate in zones of less resistant rocks and carved large valleys where weak material such as sandstone and shale occur. The mountain ranges consist principally of more resistant limestone, dolomite and sandstone. The local relief today is similar to preglacial relief—possibly a little greater now due to glacial scouring.

Glacial Advances

The number of glaciations or glacial advances that took place in the Banff area prior to those to be discussed is difficult to estimate. Geochronological control and the presence of well preserved glacial sediments in an area of high erosion suggest that all recognized glacial advances are relatively young, probably having occurred less than about 45,000 years ago. This is very recent in view of the fact that the entire Ice Age is now believed to have lasted over 1,000,000 years. It is therefore likely that advances took place prior to the oldest recognizable advance, but the obvious evidence has been erased by erosion or masked by deposits of subsequent advances.

Field and laboratory analyses of the till suggest that the glaciers that advanced through the Banff area originated in the area of the Continental Divide and in the higher reaches of areas near by. This is based on the fact that no “exotic” material has been found in the till, that is, no material that could not have been derived from the local area. Had glaciers from the mountains of interior British Columbia reached the Banff area a variety of rocks characteristic of the former area would probably be found in the Banff area till.

Pre-Bow Valley Advance

Non-ice-contact stratified drift consisting mainly of gravel is found underlying till that is believed to be the oldest till in the Banff area. This is the till-stratified drift sequence referred to previously, located near Banff townsite and illustrated in Plates V and VI. The stratified drift was apparently laid down during the ablation of the Bow River valley glacier. As a glacier retreats, melt-water may deposit debris derived from the ice as well as sorting and redepositing pre-existing material such as till. This results in a deposit of fairly well-sorted material much different from till, which is directly deposited from the ice and is therefore essentially unsorted. If this assumption is correct, the till overlying the non-ice-contact stratified drift was probably deposited by the next glacial advance. As the till is believed to be the oldest in the area, the stratified drift is therefore related to a yet older advance called here the Pre-Bow Valley advance, the oldest recorded.

An alternative hypothesis is that the stratified drift and overlying till was laid down during a single glacial advance. This would have been possible had more severe climatic conditions made available enough meltwater to deposit the great amount of stratified drift present in the area as the glacier advanced. This hypothesis is not as likely as the former, since a more critical set of conditions would have to be met.

The position of the Spray River may have changed from Sundance Creek valley to approximately its present course during the deglaciation of the Pre-Bow Valley advance. Figure 2 shows that the gap about 6 miles south of Banff townsite through which the Spray River flows at the present time, was not originally its natural course. It previously flowed all the way down Sundance Creek valley into the Bow River. The initial gap through Sulphur Mountain was probably caused by a side glacial stream flowing over a saddle in the crest of Sulphur Mountain when the ice reached nearly to the summit. As deglaciation took place, erosion of the gap kept pace with the

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An oversized map (“Figure 2”) was included in the hardcopy version of the 1966 Canadian Alpine Journal.

It is not included in this digital version due to size restrictions.

lowering of the ice, and eventually the gap was lowered to the level of the surrounding valley floor. The only reason for placing the development of the gap during the deglaciation of the Pre-Bow Valley advance is that it appears to have been glaciated, most likely by the next advance—the Bow Valley—the most extensive recorded.

The evidence for the Pre-Bow Valley advance is admittedly weak, but suggests that if the advance took place, and at the time postulated, it must have been quite extensive. The ice thickness in the Spray River valley must have been over 1,500 feet, because the initial erosion of the gap was at an elevation of over 7,000 feet, or approximately the elevation of the ice and about 1,500 feet above the valley floor.

Bow Valley Advance

The most extensive glacial advance in the Banff area for which clear cut evidence is available is named the Bow Valley advance. Most of the till present on the surface of the Bow River valley southeast of Eisenhower Junction was probably deposited during the time of this advance. The best place to inspect this till is in the bluffs 4 miles east of Banff townsite (Plates V and VI). There it overlies the stratified drift of the Pre-Bow Valley advance mentioned in the last section. It also appears on the northeast side of the Trans-Canada Highway in the same area. Ascending the valley walls, till deposits assigned to the Bow Valley advance become more and more modified by slope washing and masking by eroded material from above so that in the upper reaches of the valley only a few scattered glacial erratics mark the upper limit of the glacier ice. Erratics found in the Banff townsite area indicate that the ice at this time was never over 8,000 feet high.

Other evidence for this advance includes linear breaks in slope parallel to the valley, high on valley walls and averaging one or two miles in length. Well-developed breaks resemble a bench or step, or in places a protruding ridge. These form by glacial scouring below the break and side glacial stream erosion above it. When a glacier remains for a relatively long time at about the same elevation, side glacial streams may erode a canyon or modify the bedrock. When the glacier recedes, a break in slope is left on the valley wall indicating the upper limits of a glacier at a certain time. Examples of such breaks that correspond to the Bow Valley advance are located in the area of the Valley of the Ten Peaks, Panorama Ridge, and Baker Creek valley (Figure 2). The maximum elevation at which any of these indicators is found is 8,200 feet. This information and the height at which glacial erratics are found in the Banff townsite area make it possible in a general way to determine the height of the glaciers in the entire Bow River valley during the Bow Valley advance. It appears that glaciers never reached much above 8,000 feet elevation, and therefore many of the higher mountains, such as Temple, Eisenhower, Pilot, and Cascade were ice-free and formed islands or “nunataks”, displaying a reticulated pattern controlled by the trend of the valleys and mountain ranges. By subtracting the elevation of the Bow River valley floor from the elevation of a break in slope above, an approximate maximum ice thickness of 2,600 feet is obtained for the valley northwest of Eisenhower Junction.

There is no evidence of a terminal moraine related to this advance within the Bow River valley in the Banff area. It is believed, therefore, that the ice extended well into the Foothills. During deglaciation, there is evidence that the Bow River valley glacier paused at least twice during its recession up the valley. In other words as the glacier advanced ablation kept pace with it, resulting for a time in little or no change in the position of the ice front. The principal evidence for these pauses or equilibrium phases is the presence near Canmore and near the confluence of the Bow and Cascade Rivers of ice-contact stratified drift consisting mainly of poorly sorted gravel



Plate IX. Ice-Contact Stratified Drift Located Near The Northeast Side Of The Trans-Canada Highway About 4 Miles East Of Banff Townsite.

View toward northeast. (51 10' 20" N. latitude; 115 28' 30" W. longitude.)

dipping steeply in a wide range of directions (Plate IX; Figure 2).

These deposits, when related to certain other kinds of glacial deposits—as in the latter case—a gradation into till upstream and non-ice-contact stratified drift downstream, represent a typical sequence indicative of a pause in an overall retreat. A rapid production of meltwater from an advancing, yet “stationary” glacier can result in the deposition of a considerable amount of debris derived from the ice. The melting of ice blocks buried by sediment coupled with a short distance of transport for all the sediments produce the characteristic ice-contact deposits. The non-ice-contact stratified drift found downstream is better sorted, and has a fairly uniform attitude because meltwater had more time to sort the material with deposition well beyond the ice margin.

Bow Valley Re-advance

When the Bow River valley glacier of the Bow Valley advance retreated to the vicinity of Banff townsite, a change in climatic conditions resulted in a glacial re-advance named the Bow Valley re-advance. No doubt other glaciers throughout the area were affected by this climatic change, but evidence for the re-advance at the present time is restricted to the Bow River valley southeast of Banff townsite. As mentioned in the last section, an indication of a pause in the retreat of the glacier of the Bow Valley advance was found near Banff townsite (Plate IX). This probably represents the spot where the re-advance occurred. The glacier therefore appears to have retreated, paused, and then advanced once again.

Downvalley from this location, on the southwest side of the Bow River valley, is a series of breaks in slope that originated in the same way as those of the Bow Valley advance (Figure 2). These occur along a discontinuous line at a maximum elevation of 5,300 feet, much too low to have been caused by the Bow Valley advance, for evidence presented previously suggests ice of the Bow Valley advance reached about 8,000 feet in the Banff area.

Discontinuous patches of thin, surficial till overlying outwash laid down during the deglaciation following the Bow Valley advance is the most convincing evidence for this re-advance. The outwash referred to is the same ice-contact and non-ice-contact stratified drift mentioned in the last section found southeast of Banff townsite. Therefore till overlying these deposits must be younger than the outwash found below, most likely deposited by the Bow Valley re-advance.

The evidence for this re-advance then is the ice-contact stratified drift located near Banff townsite and the breaks in slope and patches of till overlying outwash found southeast of Banff townsite.

The extent of the re-advance is not well understood, but it seems likely that the glacier within the Bow River valley flowed into the Foothills. The maximum extent of the Bow Valley re-advance in the southeast part of the study area reconstructed from available evidence is illustrated in Figure 3.

The kame moraine (Figure 2) found in the plain near the eastern boundary of the area probably was formed during deglaciation following this re-advance. As deglaciation continued up the Bow River Valley, an ice slab may have been left behind in the plain (Figure 2). As the slab melted, typical stagnant ice features formed such as kames, eskers and possibly crevasse fillings which consist of steeply dipping, poorly sorted gravel (Plate VIII). Exposures of the gravel can be seen throughout the nearly completed Bow River Provincial Park near the Kananaskis River off the Trans-Canada Highway. The present course of the Bow River was later cut across the kame moraine region (Figure 2), and the Kananaskis River was diverted to its present drainage course from a path east through Lake Chinike (out of study area). Glacial drift probably dammed the older course of the Kananaskis River.

As deglaciation of the Bow River Valley continued, several important drainage changes are believed to have taken place in the Banff townsite area mainly as a result of ice damming (Figure 2). The details will not be presented here, but the principal evidence for such drainage changes is that the positions of the new drainage courses are not natural ones. Changes include the diversion of the Bow River around the south side of Tunnel Mountain, the change of the Cascade River to the northeast side of the Cascade River Valley from a path along the central portion, and the reversal of the western drainage of the valley of Lake Minnewanka, which eventually reverted back to its original path.

Now the problem is not whether changes took place, but if they took place during the deglaciation of the Bow Valley re-advance. The changes are assigned to this deglaciation because the evidence is well preserved and this was probably the last time glaciers affected this part of the Banff area. Had earlier changes taken place, they would more than likely have occurred prior to the Bow Valley advance because this area was not completely deglaciated in the interval between the Bow Valley advance and re-advance. However, some of the changes may have been initiated during this interval. Evidence for diversion before the Bow Valley advance would probably not be as well preserved as the evidence present. Thus, it seems most likely that they occurred during the deglaciation of the Bow Valley re-advance although there are obvious pitfalls in the argument.

The Eisenhower Junction Advance

This advance is probably the best documented in the area under investigation essentially because it is the latest, and therefore the evidence is best preserved. The Bow River Valley glacier advanced as far as about Eisenhower Junction and so is named the Eisenhower Junction advance. Tributary glaciers of the Bow supplied ice to the major glacier northwest of Eisenhower Junction,

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An oversized map (“Figure 3”) was included in the hardcopy version of the 1966 Canadian Alpine Journal.

It is not included in this digital version due to size restrictions.

but southeast of there evidence suggests that the tributary valleys were ice-free or that glaciers that may have been present never reached the Bow River Valley.

Evidence supporting the occurrence of the Eisenhower Junction advance is the prominent lateral moraines in the Valley of Ten Peaks (Plate X; Figure 2) and Consolation Valley and breaks in slope common on the Bow River Valley walls northwest of Eisenhower Junction. These moraines and breaks are located at a maximum elevation of 7,500 feet in tributary valleys and 6,750 feet in the Bow River Valley, lower than the breaks used as evidence for the Bow Valley advance. The maximum ice thickness in the Bow River Valley during the Eisenhower Junction advance was about 1,900 feet. The down-valley extent of the Bow River Valley glacier is indicated by a terminal moraine near Eisenhower Junction consisting mainly of ice-contact stratified drift. Good exposures of the drift can be seen in the gravel pit just south of Route 93 mentioned previously (Plate IV). The origin of these deposits is the same as that postulated for the deposits representing the pauses or equilibrium phases discussed in the section on the Bow Valley advance. Other evidence suggesting that this advance terminated in the area of Eisenhower Junction is the concentration of fresh cirques, youthful nature of the Bow River and its floodplain, and the poor development of alluvial fans at the mouth of tributary creeks of the Bow River in the vicinity of or northwest of Eisenhower Junction. Thus comparison of these phenomena and their relative states of development with the same phenomena southeast of Eisenhower Junction suggest that the northwest area has been more recently glaciated.

A reconstruction of the Eisenhower Junction advance during its maximum extent is illustrated in Figure 4.

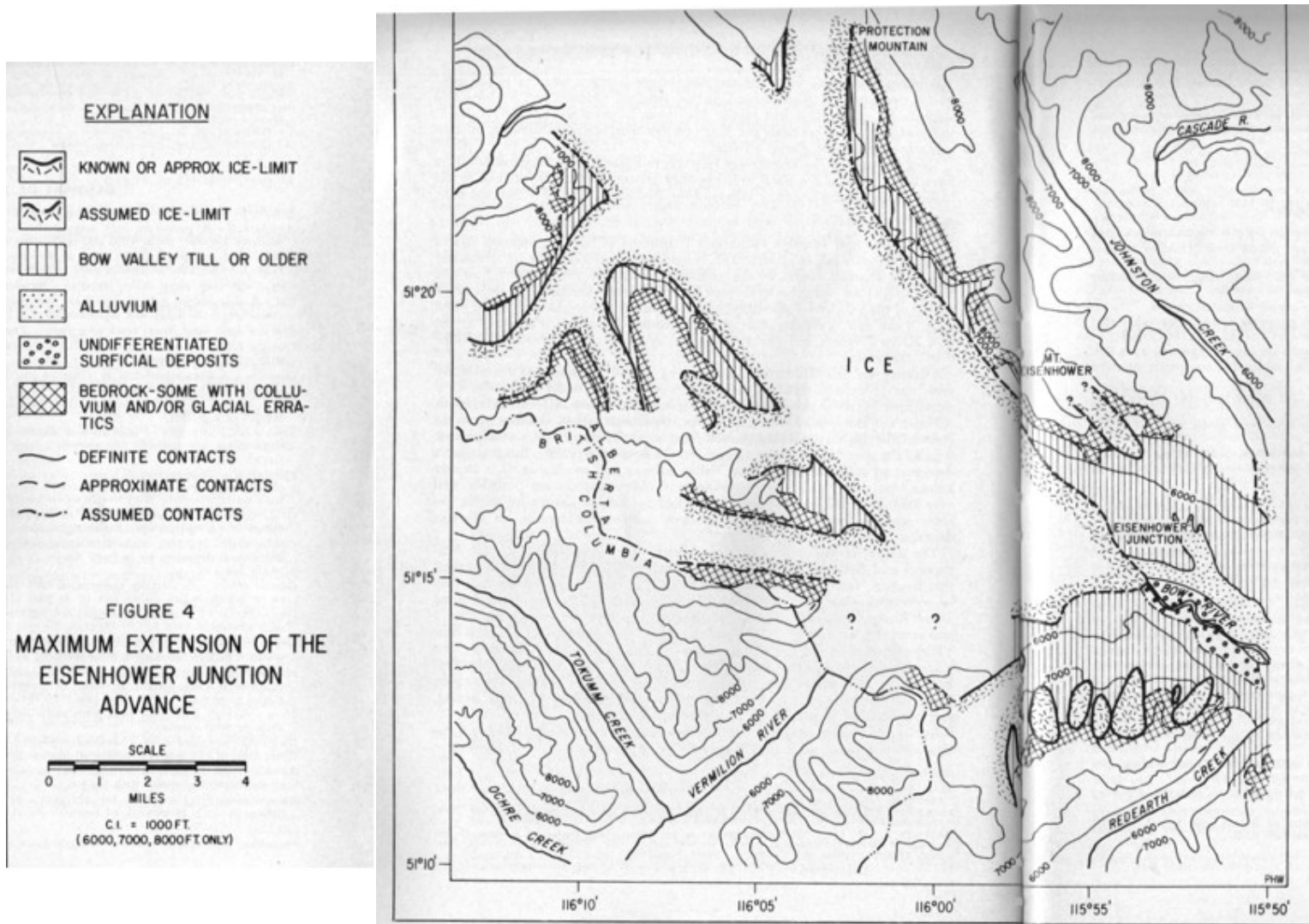
A minor re-advance following the Eisenhower Junction advance is suggested by till overlying the Eisenhower Junction terminal moraine and by breaks in slope below those attributed to the Eisenhower Junction advance. The down-valley extension was probably not much further than the main advance, as some evidence suggests less glacial activity.

Since the time of the Eisenhower Junction re-advance, less extensive advances have taken place in the Banff area but they are confined to cirques and to the higher reaches of the tributary valleys of the Bow and will not be discussed here.

Age

The Eisenhower Junction re-advance is believed to have a minimum age of about 9,000 years before present. This is based on correlation with a radiocarbon date from charcoal found in the youngest glacial sequence present near the headwaters of the North Saskatchewan River, a location similar to the geographic setting of the area under discussion and therefore probably glaciated at the same time. If the date is reliable and the interpretation is correct, it means that the Bow River advances and the Pre-Bow Valley advance are substantially older than 9,000 years.

Evidence for the Altithermal, a warming period between 4,000 and 6,500 years ago (Richmond 1965, p. 227) occurs in the area under discussion. It is represented by wind-blown sand and volcanic ash (Plate XI) correlated with volcanic ash and wind-blown deposits in other areas where absolute dates are known. The ash was probably derived from an early eruption of a volcano that is today the site of Crater Lake, Oregon. In the Bow River Valley, this material is deposited on sediments of the Bow Valley advance and re-advance. It is already known that the Bow Valley re-advance and older advances are probably well over 9,000 years old, so this information does not help too much for dating the older advances but it does give important stratigraphic control for younger deposits.



Maximum extension of the Eisenhower Junction Advance



Royal Canadian Air Force Photo

Plate X. Valley Of The Ten Peaks Displaying A Well Developed Lateral Moraine (A)

Believed to have been formed during the time of the Eisenhower Junction advance. Moraine Lake in background. View toward southwest.



Plate XI. Volcanic Ash Layer (A) In Wind Blown Sand And Lake Deposits Located Near The Banff Town Dump.

View toward north. (51 12' 00" N. latitude; 115 31' 40" W. longitude.)

The dating control presented above along with the evidence for the Altithermal and well preserved evidence for three major glacial advances suggest that the Bow Valley advance, re-advance and Eisenhower Junction advance may be correlative with the three stades of the Pinedale Glaciation of the United States Rocky Mountains. If this is the case, the Bow Valley advance has a maximum age of about 25,000 years. The logical correlation of the Pre-Bow Valley advance is with the late stage of the Bull Lake Glaciation, the glaciation prior to the Pinedale of the U.S. Rockies. This means that the Pre-Bow Valley is in the neighbourhood of 45,000 years old or perhaps a bit older. Thus all advances discussed in this paper are probably relatively young, representing a small part of the total time of the Ice Age.

Evidence for older advances and new information that refines or changes the interpretation presented here will only be found by more detailed field work.

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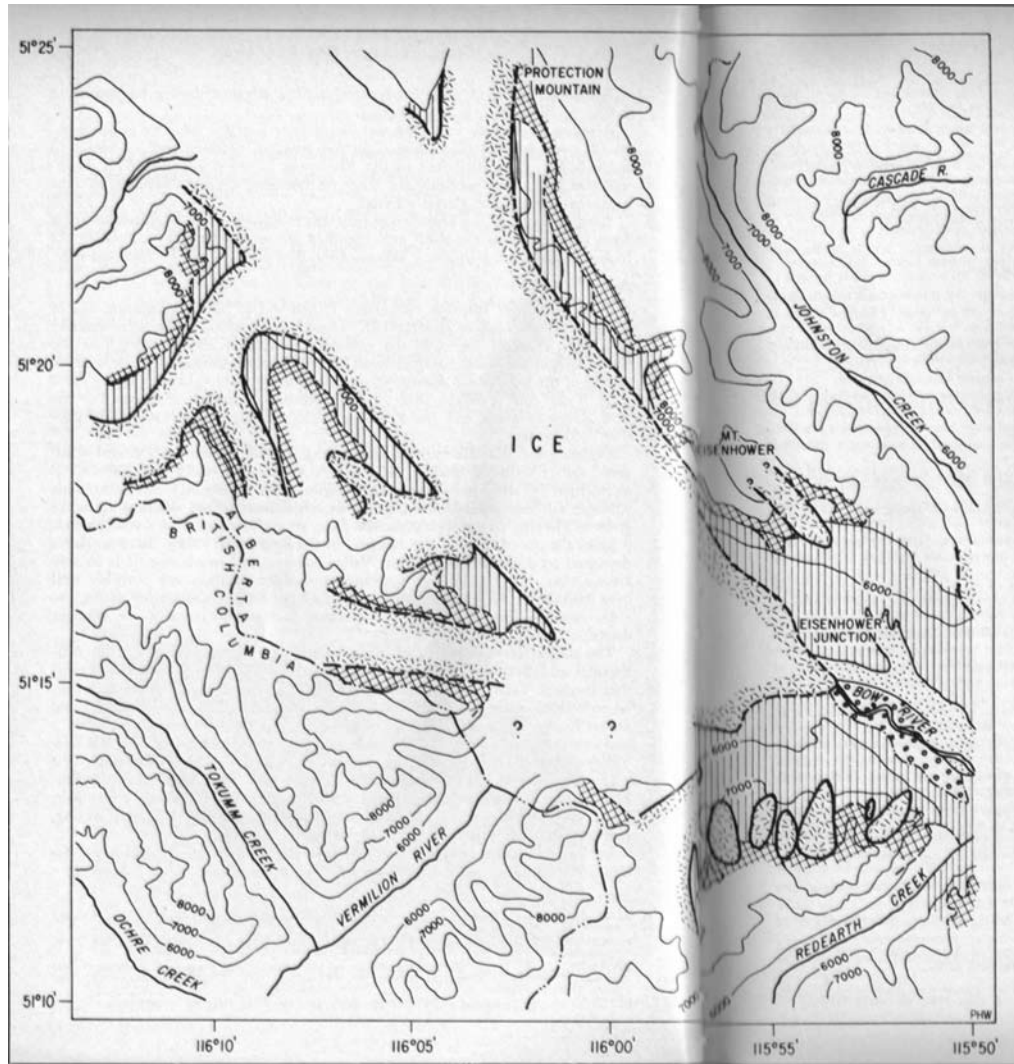
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Glossary Of Terms¹⁴

- Ablation - Refers to the wastage of glaciers, principally by melting and evaporation.
- Altithermal - A period of high temperature in post-glacial time. Thought to have occurred between about 4,000 and 6,500 years ago.
- Arête - A sharp, sawtooth-like ridge at the crest of a mountain range, or a subsidiary ridge between two mountains such as that between two cirques.
- Cirque - A deep, steep-walled recess in a mountain caused by glacial erosion.
- Col - A sharp-edged gap produced by two cirques enlarging toward each other that cut through the ridge that separates them.
- Crevasse - An open linear crack in a glacier. The walls are usually separated a few feet.
- Crevasse filling - A short ridge left after deglaciation composed of ice-contact stratified drift which was deposited in an ice crevasse.
- Drumlin - A streamlined hill or ridge of glacial drift whose long axis parallels the direction of flow of a former glacier.
- End moraine - A ridge like accumulation of glacial drift built along any part of the margin of a glacier.
- Esker - Sinuous ridges of assorted and somewhat stratified sand and gravel left after deglaciation and believed to represent fillings of superglacial, englacial or subglacial stream channels.
- Floodplain - That portion of a river valley adjacent to the river channel which is built of sediments deposited during the present regimen of the stream and which is covered with water when the river overflows its banks at flood stage.
- Geochronology - The study of time in relationship to the history of the earth or a system of dating developed for this purpose.
- Glacial drift - All rock material, such as till, gravel, sand, or clay, transported by a glacier and deposited by or from the ice or by or in water derived from the melting of the ice.
- Glacial erratic - A glacially transported rock fragment different from the bedrock in or on which it lies, either free or as part of the sediment.
- Glacio-fluvial - Pertaining to streams flowing from glaciers or to the deposits made by such streams.
- Ground moraine - The material deposited from a glacier on the ground surface over which a glacier has moved. It is bordered by lateral and/or end moraines.
- Hanging valley - A valley whose floor is notably higher than the level of the valley to which it leads; usually the result of deepening or widening of the main valley by glacial erosion at

¹⁴ Definitions modified from American Geological Institute 1962, Flint 1957, Thornbury 1954.



Maximum Extension Of The Eisenhower Junction Advance

- a more rapid rate than the rate at which the tributary valley is cut.
- Horn - A high pyramidal peak with steep sides formed by the intersecting walls of three or more cirques.
- Ice-contact stratified drift - Material deposited by meltwater in contact with glacier ice. Most of the material is derived from debris in the melting ice.
- Kame - A mound like hill of ice-contact stratified drift formed by material deposited by meltwater in contact with the ice.
- Kame moraine - Used here for a region consisting of kames, eskers and crevasse fillings (?) in a framework of non-ice-contact stratified drift.
- Lateral moraine - An end moraine built along the lateral margin of any glacier occupying a valley.
- Non-ice-contact stratified drift - Material deposited by glacial meltwater, usually in front of the ice margin but not in contact with the ice. The material deposited can be derived from the ice itself or from pre-existing deposits.
- Nunatak - An isolated hill or peak which projects through the surface of a glacier.
- Outwash - Referred to here as any stratified drift deposited by glacial meltwater.
- Radiocarbon dating - The determination of the age of a material by measuring the proportion of the isotope C14 (radiocarbon) in the carbon it contains.
- Reticulated - A pattern displaying a netted appearance.
- Side glacial stream - A meltwater stream located at or near the margin of a glacier in a valley. Its channel may be cut entirely in ice or bedrock, or the stream may be flowing along the contact of the ice and valley wall.
- Stade - A stade is a climatic episode within a glaciation during which a secondary advance of glaciers took place.
- Terminal moraine - An end moraine built along the downstream or terminal margin of a glacier lobe occupying a valley.
- Till - Unsorted, non-stratified sediment carried or deposited by a glacier.

Geomorphic Studies In The Alpine Zone

*J. Gardner*¹⁵

While considerable attention has been paid to the study of the geology, the glaciers, the flora and the fauna of the Canadian Rocky Mountains, little attention has been paid the study of the landforms and the physical processes producing them. The following discussion constitutes a brief summary of a study on geomorphic forms and processes in the alpine zone. The study was carried out during the months of July and August, 1965 in the Lake Louise district of the Canadian Rocky Mountains.

The overall purpose of the investigation was to gain some understanding of the physical processes of weathering and erosion, the rates at which they are altering the present mountain landscape, and the landforms they are producing. Since an ambitious objective such as this is necessarily a long-term undertaking, the past field season was a preliminary survey to ascertain just what the main landforms are, to directly observe the processes producing them, and to initiate a program of long-term measurement of the rates and amounts of movement of material on the

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mountain slopes.

The Lake Louise district was chosen as the study area for a number of reasons. Of primary importance was the accessibility of the area at all seasons of the year, the excellent topographic map and air photograph coverage that exists for the area, as well as the abundance of information dealing with the history, climate and geology of the area. In using the term "Lake Louise district" to denote the study area, the valleys of Consolation Lake, Moraine Lake, Paradise Creek, Lake Louise, Lake O'Hara and the head of Tokumm Creek are being considered along with the intervening mountain groups.

At this point a brief summary of the background of the study is probably of some use. One of the recent trends in geomorphological research (i.e. the study of the form of the land and the physical processes producing it) has been the quest for exact measurements relating to the rates and amounts of erosion and deposition in different natural environments. If we consider that there be such a thing as an "alpine environment", the final outcome of the study described here will be in this vein. This study is not unique in its entirety but is roughly modelled after studies of geomorphic processes carried out in the arctic and subarctic environments of Spitzbergen and Swedish Lapland.

The 1965 field season commenced at the beginning of July with a brief investigation in the Lake O'Hara area. For the remainder of the summer the major portion of the work was carried out from a base at Moraine Lake. A thermograph was installed at the Plain of Six Glaciers Teahouse (altitude ca. 7,000 feet) and functioned there for a period of eight weeks under the care of Mrs. Joy Smith, proprietress of the Teahouse. The thermograph pointed up some interesting relationships between the temperature regime at this particular site as compared with temperatures at Moraine Lake (altitude ca. 6,100 feet) and at Lake Louise station (altitude ca. 5,000 feet). It might be stated generally that the temperatures at the Teahouse were warmer than had previously been suspected, the daily minimum rarely dropping below 40°F and only once dropping below 32°F, that being on August 29. In comparing the Teahouse temperatures with those at Moraine Lake and Lake Louise station, it was found that the daily minimums at the Teahouse were 1 to 2 F. degrees warmer but that the maximums were up to 5 F. degrees cooler. While the collection of meteorological data was an interesting sidelight to the past summer's program, it promises to be a much more important factor if the study is to be expanded in the future.

The major portion of the summer's work involved the mapping of deposits produced by mass movement of material on the mountain slopes and investigating some of the features in detail with regards form, slope angle, component material, vegetation cover, etc. Of the deposits examined the most numerous and widespread group will here be referred to as scree or talus slopes. These terms are in common usage amongst the mountaineering fraternity and the landforms themselves are a somewhat notorious feature of the Canadian Rockies. Nevertheless, in the course of the study it was found that if one were to adhere to the definition of a scree or talus as an accumulation of coarse rock debris mantling a mountain slope (Glossary of Geology and Related Sciences), the features commonly referred to as scree in this area need some qualification.

Firstly, on the basis of form, four scree or talus features may be distinguished in the area. There are the cone-shaped forms that are fed by a distinct rockfall funnel or chute in a cliff or free face above, and fan out downslope from this apex with little interference from neighboring scree bodies. A good example of such a form may be found on the southeast shore of Moraine Lake at the base of the northwest slopes of Mt. Babel. At the opposite extreme to the cone scree are the sheet scree that constitute a fairly continuous apron of material at the base of a free face. This

form of scree is not found to any extent in the area under consideration. However, an intermediate form, here distinguished as a scalloped apron or sheet, may be seen in the area. These are generally made up of a number of coalescing cones giving a scalloped feature along the base of the free face. The scalloped apron or sheet is the most common form observed in the area and small but well-developed examples may be seen on the lower slopes of Mt. Temple, Pinnacle Peak, and Eiffel Mtn. in Larch Valley as well as along the north side of Wenkchemna Valley above Eiffel Lake. Finally a fourth group may be considered on the basis of form. This is an amorphous feature characterized by an abundance of loose rock lying on a mountain slope as a veneer over the bedrock and is not necessarily associated with a free face or cliff. This type of slope deposit is characteristic in zones of easily weathered rock types and is found to be most widespread on the upper mountain slopes as a "mountain-top detritus".

The features discussed under the general heading of screes and differentiated on the basis of form may be further differentiated on the basis of component material. Firstly there are the screes or taluses by definition, made up of coarse and angular rock debris. Generally these are not as widespread in the area as might be supposed. The scalloped aprons or sheets at the southwest base of Mt. Temple are of this type. By far the greatest majority of the slope deposits in the area are made up of a combination of fine material and coarse angular material with a particularly high proportion of the fines in the upper part of the slope. Such slopes usually support a sporadic vegetation cover made up of grass clumps and low bushes. These slopes showed a marked gradation in particle size from the top to the bottom with the upper slope being made up of a hard surface of cemented fines with a few large blocks embedded, whereas lower on the slope these conditions merged into a zone of blocky material, here termed the "zone of deposition" (see illustration). The base of most of these slopes exhibited a chaotic collection of large blocks up to several feet in diameter and covered with a little-disturbed layer of crustose lichen indicating recent stability. The hard cemented fines surfaces, with measured angles ranging between about 30° and 36° , are generally steeper than the true screes. The hard nature of the surface and the resulting difficulty of footing tends to lead one to over-estimate the angle of these slopes considerably. The best examples of this type of slope may be seen in the Consolation Valley at the base of the east face of Mt. Babel, on the shores of Moraine Lake below the northwest slopes of Mt. Babel, and at the southwest end of Moraine Lake below Mt. Bowlen. While such slopes provide easy access to some of the peaks in the area, during the course of the study they were found to be exposed to numerous rockfalls from the cliffs above and potentially very dangerous above the "zone of deposition". On true screes, rocks falling from above generally remain stationary after striking the slope while on slopes of the cemented fines, falling rocks tend to move down the slope at considerable velocity and in great bounds to come to rest in the "zone of deposition". For example, in studying the large debris slopes below the east face of Mt. Babel on August 14 between the hours of 1200 and 1500, 12 such rockfalls were recorded, while on August 17 at the same place between 1200 and 1500, 16 such rockfalls were observed. While some of these rockfalls were represented by a few small pebbles, the majority involved boulders and platy fragments of several inches to about one foot in diameter.

These slopes composed of fines are also of interest from the geomorphologist's point of view because on them are etched the effects of numerous minor processes of erosion. The most striking examples observed were in the form of leveed channels produced by mudflows or the channelled movement of fine debris highly charged with water. These small mudflows seem to be most active in the period of spring melt as well as after heavy rains during the summer.



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A Typical Debris (Scree) Slope In The Study Area

Another type of slope deposit observed during the study are here referred to as “avalanche debris slopes”. The features are recognized as perennial avalanche slopes with a generally longer and flatter profile than the screes, and with a chute or large catchment area above rather than a free face as in the case of the screes. Much of the earth material transported on these slopes is thought to be the work of snow avalanches, particularly the late-spring or “terminating” avalanches that invariably make contact with the ground. The slopes are characterized by the unsorted nature of the component material and by the pieces of vegetation and turf scattered over them. It is thought that such material is incorporated within the avalanches and accumulates with the mass of snow at the base of the slope. As this snow proceeds to melt, big and small rocks, branches, twigs, and turf are lowered onto the ground surface as one chaotic deposit. Examples of such slope deposits were observed along the east side of Consolation Valley, within the large gully behind the Plain of Six Glaciers Teahouse, and on the south slopes of Eiffel Mtn. en route to Eiffel Lake.

A third group of slope deposits found in the area are classed as rockfall or “landslide” deposits. These are distinct from the screes in that they do not form distinct slope elements but are found as a chaotic accumulation of large angular blocks in which Eiffel Lake is situated and which is sometimes referred to as the cases observed in the study area an undisturbed crustose lichen cover was seen on most of the individual blocks, giving some evidence that the deposit has been in situ for some time. The best examples seen in the area are: the so-called “moraine” at the northeast end of Moraine Lake, the accumulation of blocks at the base of a slope or, in some cases, on a valley bottom. In most of “Bearden moraine”¹⁶, the large deposit on the northeast slopes of Pinnacle Peak through which the Sentinel Pass trail makes its way, and a small deposit situated in the middle of the valley between the Victoria Glacier and Lake Louise.

A fourth type of slope deposit to be observed in the area was found to be incorporated within other deposits in several cases but was distinguished by the fact that the component material was made up of sub-angular or slightly rounded rock fragments. This characteristic would seem to give some indication that water action played an important role in the formation of such a deposit. The explanation of these features may lie in a rapid spring runoff sluicing considerable quantities of weathered rock material down the slopes and/or the movement of such material on the slopes by slush avalanches in the late-spring. The best examples of this type of deposit observed in the area were on the northwest shoulder of Mt. Temple above the Lake Annette trail, and on the southwest slope of Eiffel Mtn. at Wastach Pass.

During the period spent in the field an inventory of all directly observed movements such as icefalls, avalanches and rockfalls, contributing to mass wasting of material on the mountain slopes, was kept. The results were rather startling when it is taken into consideration that the inventory only represents the movements in one part of the study area at any one time, that many small movements were probably overlooked, and that the observation technique was rather casual. Nevertheless, in a period of 30 recording days a total of 290 movements on mountain slopes were directly observed.

One of the more interesting mass movements of material occurred on August 24 when a flow of mud and rocks highly charged with water swept down the slopes of Mt. Whyte severing the trail to the Plain of Six Glaciers, the upper Glacier trail, and the connecting trail. This movement of material was probably initiated by the heavy rains which started in the late afternoon of August 23 and continued through August 25. During this period 1.65 inches of precipitation were recorded at

16 Wilcox, W.D., 1916, *The Rockies of Canada*, Putnam & Sons, New York.

the Plain of Six Glaciers. The result of the movement was a leveed channel 20 to 50 feet in width and up to 6 feet deep down the southeast slope of Mt. Whyte. As the flow reached the bottom of the slope it split into four branches and deposited an estimated 300 cu. yds. of debris in the form of several small lobes.

It is hoped that over a period of several field seasons some idea as to the amounts and distances of material movements on mountain slopes in the area can be obtained along with a further understanding of the environmental factors affecting and influencing the movements. It should be noted that included amongst the environmental factors to be considered are the effects of man. As part of the program various methods of measurement of material movement were set up on a few of the slopes studied. Burlap sheets of about 1 square yard were set out at various points on the debris slopes to catch material falling onto the slopes from above along with material moving down the debris slopes themselves. On other slopes, lines of different colors were painted across the scree between fixed bedrock termini to gain some idea of the amount of surface movement of material. Periodic photography of selected slopes from fixed stations was attempted in an effort to record any large-scale changes on the slope. The main value of this technique in its very crude form lies in a year to year photographic analysis. In the course of the past field season, five photographs dating from the 1890's and taken in the area by W. D. Wilcox were relocated and rephotographed. At the date of writing, a detailed comparison between the 1890 and 1965 photos had not yet been completed. It is hoped to expand this particular part of the program in the future using somewhat more recent photos taken in the area. Another method by which an estimate of the amount of material wasting from cliffs may be obtained is the counting of rock fragments on semi-permanent snow patches at the base of the cliffs. This method was attempted but the very abundance of rock debris observed on the snow-patches attested to the extreme exposure that they enjoy with regards to rockfall, a fact that may rule out the advisability of using this method extensively in the future.

In conclusion, it is hoped that the study might be continued for a few years to come with the main objective being the accumulation of quantitative data regarding the movement of earth material on the mountain slopes and the relationships between this movement and environmental factors in the alpine zone. Of some practical significance to mountaineers is the study of rockfalls and the factors producing them.

Exposure - Notes On Recognition Of Symptoms And On Treatment¹⁷

Jack Longland

President, British Mountaineering Council

A Joint Circular Issued by the British Mountaineering Council and Association of Scottish Climbing Clubs

Introduction

These notes on exposure formed an appendix to the report of a working-party set up by the Outward Bound Trust to enquire into the conduct of expeditions at one of their Schools. The members of the working-party were Mr. D. G. Duff, M.B.E., M.C., F.R.C.S., formerly surgical consultant to the Fort William Hospital and organizer of mountain rescue services in that area; Dr J. S. Berkeley, the present organizer of mountain rescue in the same area and a well known

¹⁷ Reproduced by permission of British Mountaineering Council.

mountaineer; Mr. W. H. Murray, mountaineering-author, and now President of the Scottish Mountaineering Club; Mr. Ralph Blain, Chief Instructor at the Outward Bound Mountain School, Ullswater (upon whose earlier paper the notes were based); Dr. O. Edholm, M.B., B.S., Head of the Department of Human Physiology, Medical Research Council, and an expert on the effects of exposure to cold; and myself as Chairman.

Definition Of Exposure

This is not a strict medical term but in general usage it describes the serious effects which may result from exposure to climatic hazards. It is, in general, limited to the effects of cold environments, phrases frequently used including 'suffering from exposure', 'death from exposure', 'risk of exposure'. The essential feature of conditions described in this way is a reduction in the heat content of the body. This becomes serious when the body temperature begins to fall. So, a definition of exposure to meet the current use of the term is: Severe chilling of the body surface leading to a progressive fall of body temperature with the risk of death from hypothermia.

Dangers Of Exposure

There appears to be an increasing number of cases of exposure amongst people engaged in outdoor activities in the mountains or at sea. This is probably due both to the increasing numbers who are at risk, and to improved knowledge leading to recognition of its symptoms. Ignorance on the part of helpers and rescuers has often led to dangerously incorrect treatment being given to those suffering from exposure. It is one main purpose of these notes to increase the knowledge and understanding of the signs, symptoms and correct treatment of exposure among those who may be called upon to deal with people suffering from this condition. We try to set out here the basic facts, in the hope that they may assist in a greater understanding of this condition, which has been the cause of far too many unnecessary deaths. But we emphasise that the question is a complicated one, that in these notes we have been able to give only brief and, to that extent, superficial, answers, and that continuing and detailed research is needed.

It is the combination of fatigue, cold, anxiety or mental stress which is specially dangerous. The elements in this combination will vary greatly with the individual, as will the individual's susceptibility to some or all of these factors. In considering exposure to cold, it is well to bear in mind what has been written by Mr. D. G. Duff, F.R.C.S., himself a mountaineer and rescuer of long experience. "It is, I consider, the additional factor of physical exhaustion over and above cold which kills quickly. Death has overtaken whole parties who, thinking they must keep moving at all costs, have 'bashed on' instead of resting in some shelter before exhaustion supervened. The essential is always to preserve a sufficient reserve of energy in severe conditions of cold and high wind."

As a rider it may be added that, with an injured and immobilised climber in the mountains, it is clear that cold may kill a person who is not, as such, physically exhausted, but in such cases death will not normally occur so rapidly, and it should be possible to put in hand rescue operations before a casualty dies of cold. But in general we wish to emphasise that the risk of death from exposure is a real, and often unrecognised danger among those, particularly the young, undertaking mountain expeditions in bad weather conditions.

Signs And Symptoms

It is not always easy to decide early enough that you have a mild case of exposure on your

hands. It is very important to do so, since it may be possible to avoid a crisis if at the outset you are aware of the symptoms and can begin to treat them. The following are among the most usual symptoms:—

(a) Unexpected and apparently unreasonable behaviour, often accompanied by complaints of coldness and tiredness.

(b) Physical and mental lethargy, including failure to respond to or to understand questions and directions.

(c) Failure of, or abnormality in vision. It should be noted that some failure of vision is a very usual symptom, and when this does occur, the condition should be regarded with extreme seriousness.

(d) Some slurring of speech. There is not necessarily early failure of speech, and the victim may speak quite strongly until shortly before collapse.

(e) Sudden shivering fits.

(f) Violent outbursts of unexpected energy—possible physical resistance to succour—violent language.

(g) Falling.

N.B.—It should be stressed that not all of these symptoms may be noticed, nor necessarily in this order. Other symptoms which may sometimes be observed are muscle cramp, extreme ashen pallor, light-headedness, occasionally a fainting fit.

General

In normal conditions the inner 'core' (trunk and brain) of the body remains constant at 37°C. (98.4°F.); the temperature of the outer shell is always below this. This outer shell consists of the skin, underlying fat and muscle, and extremities (arms and legs, ears, nose), and comprises almost half of the body.

What is vital is the preservation of the deep core temperature. A shift in this leads directly to mental deterioration and loss of muscular co-ordination, and eventually to unconsciousness, heart and respiratory failure and death.

The body itself acts to maintain core circulation and temperature by restricting the flow to the exposed periphery so that core blood is not cooled at the surface.

In any treatment therefore, the importance must be realised of not increasing peripheral circulation unless there is minimal loss of heat at the skin surface; further heat loss from the core must at all costs be avoided. Sudden surface warming therefore is wrong.

When once the symptoms are clearly established, any further exertion, such as forcing the victim to go on walking, even downhill, must be avoided. The party must stop, and proceed to treatment. It is impossible to overstress the importance of this.

Methods Of Treatment

(A) Immediate Treatment in the Field

As already indicated, the risk of precipitating a sudden surge of circulation to the surface, such as may be produced by

(1) Hot Water Bottles

(2) Rubbing or

(3) Alcohol intake should be avoided.

The precipitation of a sudden surge of core blood can be disastrous, as this blood is cooled

by going through the cold outer shell, and is then returned to the heart. Unexpected deaths of raft survivors are often due to this.

The essential and immediate treatment is to prevent further heat loss by insulating the body.

Methods will vary according to conditions and the equipment immediately available. An outline of what should be done, if at all possible is:—

(a) Get the victim into a sleeping sack, or if this is impracticable wrap him in sleeping sacks to provide insulation below as well as above his body.

(b) Put a fit companion into the sleeping sack alongside him, to give him bodily warmth, or lying close beside him if he cannot get into the same sack.

(c) There should be a windproof and waterproof covering (e.g. polythene) around the sack and the victim, and the insulation between him and the ground is the most important of all.

(d) Try to provide some shelter as windbreak.

(e) Meanwhile, get the rest of the party to pitch a tent over the victim to provide fuller shelter. If the tent has a sewn-in-groundsheets, carry him inside the tent.

(f) If the victim can still take food, sugar in easily digestible form (e.g. condensed milk) may be given.

(g) If respiration ceases, perform artificial respiration continuously by mouth to mouth method until the patient breathes normally himself or until a doctor arrives and tells you to stop.

There will then normally ensue a period, perhaps of some hours duration before the rescue party with stretcher that has been summoned can arrive. Even if, during this period, the patient apparently recovers, and even if he insists that he is quite fit, he must still be treated as a stretcher-case, however unwilling or ashamed he may be, and the full normal rescue drill must be enforced.

During this waiting period, once the patient has been insulated, a brew-up should be started, and hot beverages and food should be given to him, according to what he can take. Food and hot drinks should be taken also by those members of the party who have remained with him, and whom it is safer to regard as themselves suffering in some degree from shock and exhaustion.

The stretcher party, when it arrives, should of course preserve all the insulation around the patient, during the carry, with which he has been protected during the waiting period. It is important that his face and mouth should be protected, to minimise heat-loss, without interfering with ventilation and ease of breathing.

If a case of exposure occurs in a very distant and isolated spot, and the delay before the arrival of the rescue party is likely to be inordinately long, the instructor or leader may face the very difficult decision as to whether to start removing the casualty towards the rescuers and safety. But before any such attempt is made, all the measures of immediate treatment in the field, as outlined above, should be taken. And only if considerations of time, distance, and bad weather then clearly make it less of a risk to carry the patient towards safety, than to keep him, insulated and cared for, where he is, should the risk of transporting him be accepted.

This emphasises the real need for all instructors and leaders in charge of a party to be trained not only in up-to-date First Aid methods, including mouth to mouth resuscitation, but also to be expert in the safest carrying techniques that may be attempted without a proper stretcher. It should be obvious that all instructors should be fully conversant with the "Mountain Rescue" Handbook. And it is clearly necessary that the techniques and methods which we have outlined should be practised in dummy exercises at all Outward Bound Schools and mountain training centres, just as

the more obvious First Aid and Stretcher drills are. (B) Treatment Advised on Reaching Base

If it can be done, rapid re-warming by total immersion in a hot bath (not to exceed 45°C. (113°F.)) is a proved lifesaver. A bath thermometer is a useful thing to have available, otherwise judge the safe heat as being the hottest temperature in which an immersed elbow can be kept. Subsequently, after body temperature has returned to normal, the patient should be placed in a warm room at 68°—70 °F. The point of time at which to make this transfer may be roughly judged as being the same time as that at which the patient in the bath begins to sweat.

It is assumed that a doctor will usually be available at Base, and any further treatment will be directed by him.

Conclusion

We emphasise that it is far better to take what steps you can to avoid cases of exposure than to have to treat them. In conditions of cold on the mountains, especially if there are strong winds as well, instructors or leaders should keep a sharp watch for signs of exhaustion in any of their party.

Experts differ on the degree to which individuals or peoples can become genuinely acclimatised to cold. For those undertaking mountain courses, such as at Outward Bound Schools, a programme of habituation to cold conditions can be very useful. Many of the boys attending these courses will never have been exposed to similar conditions before, and many of them too lead sheltered and 'centrally-heated' lives. So even if the degree of physiological acclimatisation which they may achieve during the course may be very small, habituation to conditions of cold will lessen the degree of fear and apprehension which some may feel when they meet them on a big mountain for the first time. Learning to live normally comfortably in the cold should be the aim.

Instructors should see to it that, in conditions of cold and bad weather, boys put on their waterproof anoraks, and their windproof overtrousers. It is perhaps worth adding that they should also ensure that boys do not wear all their extra clothing when they are in the school or about its grounds. It is almost as important for instructors to make certain that boys have with them and do actually eat a sufficient quantity of carefully balanced foodstuffs during the whole course of an expedition. Bad conditions on the mountain should not cause the party to omit eating small quantities of energy giving food during the mountain day. We commend the practice of the Ullswater School which insists that on any mountain day, however short, each group of six (in bad weather, each group of four) takes in addition to normal equipment and packed lunches:

(a) One Karrimor rucksack containing 1 set of spare clothing, 1 sleeping bag, 1 waterproof groundsheet (plus a tent in winter or bad weather).

(b) One emergency ration, sufficient for a group of 6 in good conditions, 4 in bad, and consisting of:—6 ozs. Sugar, 1 Bar Kendal Mint Cake, 1 Pack of Chocolate, 1 Tube of Cheese Spread, 1 Tube of Condensed Milk, 4 individual packets Instant Coffee, 6 Oxo Cubes, 1 8-oz. Packet Wholemeal Biscuits, and 1 Box Matches, together with Primus Stove, Fuel and some kind of cooking utensil.

It is obvious but it is nevertheless important to ensure that the loads carried by individual boys, particularly on long expeditions, are not too heavy for them. Carrying too heavy a load is a potent cause of early exhaustion. As a rough guide, a boy's load, even when wet, should never exceed one-third of his personal weight. As a rougher guide still, loads in excess of 40-45 lbs. are to be avoided.

We emphasise finally that the detection of incipient exposure is not easy, and that the need

to detect its earliest stages throws a heavy responsibility on instructors. In this, as in so much of the rest of their work, they need to possess an unusual combination of training, skill, and alert awareness to what is happening to their charges.

(Issued with the approval of the Mountain Rescue Committee.)

CLUB CAMPS

1965 A.C.C. Ski Camp-Columbia Icefield

L.W. Kunelius

The 1965 Ski Camp was held during Easter week. Accommodation for the thirty-one members and cook, Ted Lee, was provided in the cabins and camp occupied by the summer crew who operate bombardiers for sight seeing on Athabasca Glacier.

Parties coming via Banff, Lake Louise or Jasper all arrived on Good Friday, a beautiful, sunny day that was to be the brightest one of the entire camp. Skiers came from Calgary, Vancouver, Edmonton, Chicago, Trail, Olds and Ralston, the largest numbers being from the first two centres. A unique feature was that no less than seventeen were at ski camp for their first time. Under such circumstances a professional guide and instructor, which this camp lacked, would have been doubly welcome.

The organization and management of the camp was again under the capable direction of John Dodds of Calgary. He had secured the services of a versatile and amiable cook and now no effort was spared in providing varied, nutritious and generous meals which defied any ideas of controlling calorie intakes. Climbing plans included establishment of a bivouac tent high up on the Saskatchewan Glacier or even on the Columbia Glacier from which climbs of surrounding peaks could be attempted. However inclement weather of the first four days dashed any hope of achieving such plans and caused all to content themselves with less ambitious trips and climbs.

With the aid of our cars we could readily reach various skiing areas adjacent to the highway. Trips were made to Tanglewood Ridge, Wilcox Pass, Nigel basin and the Athabasca Glacier while Parker Ridge with its good, though at times heavy, deep powder skiing was popular with all. When poor visibility prevented other outings the wooded slopes near camp provided much enjoyment. One blizzardy and forbidding morning the majority set out to Marmot Basin resort near Jasper, seventy miles distant, where they were rewarded with sunshine and excellent skiing.

Snow Dome, a tremendous flattened dome which rises to 11,340 feet from the Columbia Icefield above the ice falls of the Athabasca Glacier provides a ski ascent which, while long and somewhat arduous, is not difficult. Hence it was the hope of many to attempt it. On the first day in camp a small party had reached the top of the ice falls where stormy conditions prevented further progress. Finally by Wednesday as the weather began to look promising our spirits rose. Preparations were made that evening for the next day. Nearly all booked either for Snow Dome or to go as far as the third ice fall on the Athabasca Glacier.

Next morning the parties set out early and soon reached the gently sloping tongue of the glacier which provides easy skiing for three miles to the foot of the first ice fall. The advance portion of the party then began the ascent of the heavily crevassed section near the middle of the first fall. They had almost reached the top when tragedy struck. An unsuspected snow bridge gave way and Mrs. Julia Oko fell into a deep crevasse. Rescue operations began immediately as the

leader prepared to descend by rope in search of her. It was most fortunate that just by chance two park wardens were on a ski tour in the area and their help was soon enlisted. They directed the operations. Through the heroic efforts of the leader and the wardens, assisted by several others on the ropes, Mrs. Oko was brought up from a depth of 110 feet. She was rushed by rescue toboggan and ski-do to the highway where a waiting ambulance took her to the hospital in Jasper, suffering from serious back injuries.

A party of ten set out next day, Friday, to attempt the climb again. A different and proven route over the ice falls led safely to the upper snow fields. After what seemed like hours in the vast expanse of snow and blowing snow the party reached the approximate top of the Dome under semi-blizzard conditions. For Ruth and Bill Gibson of Trail it was their graduating climb. A pleasant descent under sunnier conditions ended the last full day in the camp.

Evening entertainment was hampered by the small size of the social room which was the dining area. However sing songs, cards, and chatting, or visiting in the cabins, encouraged fellowship. At the customary camp meeting two significant recommendations were passed: that next ski camp be held in early March in the ever popular Little Yoho and that an effort be made to have a professional leader and instructor at future camps.

Despite the accident and the often unfavourable weather, the 1965 Ski Camp was, on the whole, successful and well enjoyed.

1965 A.C.C. Glacier Lake Camp, Canadian Rockies

Climbs From The Glacier Lake Camp

David R. Fisher

The 1965 Summer Camp was held on the north side of the Glacier River about 2 1/2 miles west of Glacier Lake. At the time of the reconnaissance for the camp site, the old site used in 1940 could not be located. However, the old site was found during this summer's Camp, on the south side of the river about half a mile further down the valley. The site of the Camp was very low, having an elevation of only 4,750 feet.

Access to the Camp was from the Banff—Jasper Highway. The highway was left about one-half mile north of the Bungalow Camp and an excellent trail followed along the north side of the Howse River over the North Saskatchewan River on a magnificent new bridge, along the north shore of Glacier Lake and finally along the north side of the Glacier River to Camp. The distance was advertised conservatively as 12 miles from the highway although it is felt that 10 miles is a truer distance. The elevation of the Main Camp site is the same as the highway at the point where the trail starts. There is a rise of about 700 feet over the shoulder of Survey Peak, then a similar drop to the east end of Glacier Lake. The trip into Camp can be done comfortably in 4 to 5 hours.

Because of the height difference and the distance to the Lyells, a large High Camp was established up a side valley about 1 1/2 miles north of the tongue of the Southeast Lyell Glacier. The site was a very beautiful one on the edge of the timber at an elevation of about 6,800 feet or about 2,000 feet above the Main Camp. The approach route followed the well marked trail through the timber on the north side of the main river until, after about 20 minutes, the timber thinned out. At this point the trail veered to the right and ascended the north lateral moraine of the Southeast Lyell Glacier. The crest of the moraine was followed for about 40 minutes then the trail turned sharply to the north into the steep timber on the side of the valley. The route then climbed

very steeply upwards, and eventually out into a side valley through the thinning timber. The time between Camps with a pack was about 2 1/2 hours. The ascent was made after lunch and the descent made on the next day after the climb.

No other High Camp was used although many people felt that it would have been better if there had been one for Forbes. A good site exists at an elevation of about 6,500 feet on the edge of the timber in the trough immediately west of the Mons Glacier left bank lateral moraine.

The Camp statistics for the climbing expeditions and schools were as follows:

Climbing sheets posted.....	80
Climbs completed	48
Climbs rained out	10
Sheets cancelled due to lack of support	17
Schools completed.....	5

The number of climbs completed was exactly the same as the previous year at the Elk Lake Camp.

The following is a brief description of the routes climbed from Camp. The times given are for a round trip with an average party from Main Camp or High Camp. The first group consisting of the Lyells and Arctomys were on the north side of the main valley and were approached by way of the High Camp.

Arctomys (9,162 feet)

This small rocky peak with a few small patches of snow on its face was climbed from the Main Camp with a regular breakfast. The peak lies about 1 1/2 miles north of the High Camp site and is easily ascended up the face to the west ridge. The more difficult east ridge was also ascended making a pleasant traverse of the mountain (8 hours).

Lyells

From the High Camp the route followed easily up the valley towards Arctomys. A few hundred feet below the summit the face of the mountain was crossed in an ascending line to pass about 200 feet below the small secondary west summit. A short descent was then made crossing over onto the edge of the Lyell Icefield. The route then followed up the north edge of the icefield and later out in the middle. Lyell 1 (11,370 feet) was ascended easily from the 1-2 col after a fairly steep section below the col. Lyell 2 (11,495 feet) was ascended from the same col and also from the 2-3 col, both sides being easy snow slopes. Lyell 3 (11,495 feet) was ascended from the 2-3 col. Lyell 4 (11,260 feet) was not climbed from Camp. The whole east face from Lyell 3 to Lyell 5 was steep ice and rock. The normal route passes to the south of Lyell 5, the 4-5 col being gained from the west side thence up the south ridge. Lyell 5 (11,150 feet) was ascended from the south. (Times were about 6 hours up from High Camp to any peak and the same time down to Main Camp; about 1 hour between peaks 1 and 2 or 2 and 3.)

Sullivan Peak (9,915 feet)

This rather uninteresting easy rock peak was ascended once by a valley just below the Main Camp (9 hours).

Other Peaks:

The other nine peaks climbed from Camp all started up the same route on the south side of the main valley. The trail out of Camp was the same as for the High Camp. At the point where this trail started up the north lateral moraine, the route kept to the left low down near the edge of the first glacial lake. The Southeast Lyell Glacier has now receded so far that it is virtually impossible to cross the foot of the glacier below the ice cliffs and above the emergent river. The only practical approach to the Mons Glacier is by crossing the glacier river between the two glacial lakes. Five log bridges were built across the various streams on the gravel flats. The depth of the deepest branch was about 4 feet. Much hard work was required and trees were pulled half a mile by horse. Once across, the trail ascended up the first deep valley immediately to the west of Mons Creek. A short distance below the terminal wall of the valley, the route returned steeply up the left side on packed scree. The trees were entered at the top and the trail turned back again through the trees for a short way and then out onto the west lateral moraine of the Mons Glacier. The moraine, or the trough behind it, was ascended until it met the steep hillside just above the possible High Camp site mentioned previously. The steep hillside was then ascended for about 300—400 feet on a goat trail and traversed towards the Mons Glacier. The edge of the glacier was reached at an elevation of about 7,000 feet (from Camp 2 1/2 to 3 hours up).

F1 (9,100 feet) (Grid Ref. 030478-Mistaya Lake Sheet)

The glacier was crossed to the east and the edge of the North Forbes Glacier reached over whalebacks and moraine. The south ridge was ascended easily, descent normally being made down the west face (9 to 10 hours).

F2 (9,600 feet) (Grid Ref. 035471-Mistaya Lake Sheet)

The route was the same as for F1 except that the North Forbes Glacier was ascended a bit higher and the southeast ridge climbed easily (10 to 11 hours).

Forbes (11,902 feet)-(11,852 feet on Mistaya Lake Sheet)

The North Forbes Glacier was ascended (near its centre) to about 10,000 feet or 200 feet below the West Col (crevasses quite bad between 8,500 and 9,500 feet—crampons useful). The northwest face was then ascended directly, keeping near the west ridge, on snow over ice. After a short steep section the west ridge was reached at an elevation of 11,500 feet and followed on hard snow ice to the corniced summit (13 to 15 hours). The ascent was made by five parties (28 people). The ascent is over 7,000 feet from Main Camp and should only be made by competent climbers experienced on steep snow and crampons. Only 2 hours separated the fastest and slowest parties from Camp.

F3 (10,700 feet) (Grid Ref. 029458-Mistaya Lake Sheet)

From the point 200 feet below the West Col on Forbes turn west and ascend the broad east ridge on snow and rock (11 to 13 hours). This is the ordinary route ascended in 1940.

By the West Ridge—(First ascent—R. Kruszyna and party): On the last day of Camp, a party led by Bob Kruszyna ascended the West Ridge. From the Mons Glacier, the party ascended scree slopes, then a slab of some technical difficulty to the crest of the ridge. The narrow, exposed ridge, consisting of reasonably solid limestone, offered a series of short steep pitches interspersed with horizontal sections. Near the summit, several exposed gaps were crossed, providing ex-



W.R. Joyce

Bush Mountain And Icefall Peak (In The Center, From Summit Of Mt. Cambrai). St. Julien In Foreground, Right Of Center.

hilarating views down the north face to the North Forbes Glacier. The deep notch just before the summit unexpectedly proved a simple scramble. The party descended via the normal easterly route to the North Forbes Glacier and Camp. The technical difficulty occasionally rose to grade 4 (13 to 15 hours). The route was thought to be one of the best from Camp.

F4 (10,400 feet) (Grid Ref. 028443-Mistaya Lake Sheet)

(First ascent—R. Scholes and party): The West Forbes Glacier was followed to the col between it and the South Forbes Glacier, and the north ridge ascended. Descent was made by the west ridge (11 to 13 hours). For details see account further on by W. R. Joyce.)

Cambrai (10,380 feet)

The Mons Glacier was ascended up the centre and on up the icefield across the foot of the West Forbes Glacier. A rock island was passed keeping close around its south side. The route then kept close to the east edge of the upper icefield below the rocky spur that runs along the edge of it. The flat rocky col was gained immediately to the north of the peak. The snow summit was then ascended up the snow slopes above the col. The true summit (hidden from below) is along a rocky ridge 14 mile further south (12 to 14 hours).

Messines (10,290 feet)

The route was the same as for Cambrai except that the upper Mons Icefield was followed almost to the Cambrai-Messines col. The steep spur descending to the icefield was then ascended on snow and rock (12 to 14 hours).

Mons (10,114 feet)

The ordinary route ascended the Mons Glacier to the icefield keeping fairly close to Division.

The route then crossed the icefield and ascended the north slopes to the final steep pyramid. After crossing the highest of several bergschrunds the northeast ridge was ascended partly on steep snow and partly on rock (11 to 13 hours).

An alternative approach to the final pyramid was made by approaching under the east face and traversing back in a north-westerly direction up a snow ramp.

South Ridge (Probably a first ascent—B. Fraser and party): The Mons Icefield was ascended to the lowest snow col between St. Julien and Mons. The rocky south ridge (one mile long) was then followed to the summit (12 to 14 hours)

Division (9,843 feet)

The mountain has twin summits 1/3 mile apart both with a last contour of 9,800 feet.

It is felt that the west summit probably is slightly higher although the east summit forms the true division point between the Mons and Southeast Lyell Glaciers. Only the east peak was ascended from Camp since the other peak would have required a long traverse around its west side to reach the northwest ridge.

The east peak was ascended by following the Mons Icefield to the “Divide” and then up a subsidiary glacier on the south side of the twin, peaks. A col immediately to the south of the east peak was reached and the rocky ridge followed to the top, the final rocks being very loose (10 to 12 hours).

My Impressions Of Camp.

R. S. Thomson

When the learned Journal Editor caught me in a weak moment one evening at the 1965 Glacier Lake Camp, and volunteered me for the task of composing a small piece about what happened there, she knew little of the risk she took. For I was not one of those educated and fearless mountain types who talked so knowingly at the campfire about hanging in bolts for days on the Eiger or traversing threatening gendarmes on Mummery. In fact, I was so naive that I thought bolts were associated with nuts (perhaps they are) and the suggestion of traversing a gendarme upset my law abiding instincts. You see, I am just a tenderfoot (you have no idea) from Upper Canada who doesn't know a crevasse from a couloir, and who gets out of breath walking up the steps from the Toronto subway. Thus I hope you will bear with me when I attempt, in an amateur way, to recount those memorable days spent with the A.C.C. in the dryas flats on the banks of Glacier River under the shadow of Mount Forbes.

Speaking of Mount Forbes, reaching its summit was considered the ultimate in swank among members at the Camp. Anyone who had mastered this great snow covered pyramid, hung about with glaciers, was allowed to be quite condescending to all the rest of us. We heard how one party had climbed from 4,800 feet at camp to 11,902 feet at the summit and had come back before the tea was brewing in the tea tent. We heard again how a rope of three came completely unstuck on the steep ice slopes near the summit and made an accelerated descent of a few hundred feet into a snowbank. The other rope on the same climb decided that this method of descent looked easier than cramponing down the ice, and so they all jumped off too, and slid across a bergschrund into the bargain. Have you ever slid into a bargain? Try it sometime.



W.R. Joyce

Mt. Cambrai, With Messines Behind To Right (From Summit Of "F-4").

Still on the subject of Forbes, you ask if I can speak first-hand of this mountain. After 10 days of hearing tales of daring do and high adventure on its slopes I noticed one afternoon that no fewer than 26 people had signed the Forbes list for the next day. Here was a glorious opportunity to put my name down for the climb and enjoy, for the next few hours, the heady feeling of telling all who asked (and many who did not) that I was signed up for Forbes in the morning. I did this knowing that I was most unlikely to be included when the demand was so high, and it was with great relief that I read, when the list was reposted, that I had been scratched. This action on the part of the climbing committee gave me a further excellent excuse for not doing any more climbing, since I could exclaim with indignation to anyone who asked (and many who did not) that I was not going to give the committee the opportunity of scratching me again.

But, I am away ahead of myself. I have just read the accounts of annual camps in the last half dozen journals, and it seems that I should be writing a chronological and poetically descriptive piece about the glories of the Rockies, the warmth of old friendships renewed, the nostalgia of the old campground, and that mystic elusive something that draws men to mountains. But, alas, I am neither historian nor poet, and it is difficult to find adjectives which have not been pretty thoroughly worked over by previous authors. So please excuse me as I ramble on.

In a chronology, one begins with the trail. The distance from the highway (just north of the Saskatchewan River Crossing) to the camp was stated to be 12 miles. As we trudged out to civilization David Fisher remarked that this probably was measured in Alberta miles. Whether this was more or less than statute miles I never found out. However, I was told that a member present from Edmonton walked out and back in again in the space of a day. His motive was not clear—perhaps it was to have a bath.

Getting back to the trail—it was a good one. In doing some preliminary map study I

was concerned that it showed no bridge across the North Saskatchewan, and I innocently asked someone at the Clubhouse if we had to cross it on a log. On viewing the river later from a fine new footbridge, I understood the full significance of his reply.

It seems that someone was careless with his cigarette butt many years ago, and evidence of an extensive forest fire flanked the trail for the first few miles. There was a wonderful sweep of river, forest and mountain as the path emerged from the woods on the bluffs above the Howse River. At this point on the inward trip, Wally Joyce had to be physically restrained from racing off to the south, across the Howse and making an attempt on Mount Chephren. He had read in the 1964 Journal that on the way into Eremite Valley Camp someone had climbed Chevron Mountain, and he was not going to pass by Chephren without a similar attempt. There may be a lesson here in why people climb mountains. Perhaps someone can explain it to me.

Apart from a gentle climb and descent over a small shoulder of Survey Peak the trail was virtually level all the way from the highway to the camp, a fact which caused rejoicing until it was realized that this made climbing from the camp to peaks of even modest dimensions, an all day affair.

The main camp was located on the north bank of Glacier River about two miles below the nose of the Southeast Lyell Glacier. The camp was so arranged that the tent lines for the ladies, men, and married couples radiated from a central point where Jack Cade and Cam Ledingham had their tent pitched.

Thus these two watchdogs of propriety were able to keep an eye on what went on and who went where, as well as being closest to the dining tent for the last minute dash to meals.

The mens' tent line ran back into the bush, almost to the foot of the steep slopes of Sullivan Peak which towered over the camp to the north. The ladies, on the other hand, were out on the gravel flats with an uninterrupted view down the valley to Mount Murchison whose distant bulk, picked up by the setting sun, formed an impressive backdrop for the evening campfire. Up the valley to the west loomed the much closer mass of Division Mountain, down whose northern slope tumbled the spectacular Southeast Lyell Icefall, while to the south of the Camp and across the river rose outliers of Forbes. This was a most impressive setting, particularly to a humble Upper Canadian whose experience of heights had been confined to the buildings on Bay St.

Being inexperienced, and in an innocent way wanting to get my money's worth, I had gone into camp on Saturday, the day before the official opening. I had visions of a peaceful Sabbath, idling away the day in quiet mountain meadows, since I had heard that climbing on Sunday was taboo. Possibly this prohibition arose from the deeply ingrained tradition that it is sinful to enjoy oneself on the Sabbath, although at times I found it hard to see how this rule was relevant. In any event, I discovered that although one cannot climb, one is expected to work, and so with a group of others I was detailed to back-pack a few small items up to high camp. Being a new boy, and being a little slow at tying my boots, I was last getting to the supply tent and found that the only small item left to be packed was an 8 x 10 tent. Happily, another Sherpa turned up (curiously wearing a cowboy hat) who, seeing my plight and realizing that my physical condition had been achieved by climbing off and on an elevator, volunteered to spell me off now and then.

The high camp was set up for attacks on the Lyell Peaks. It was reached by crossing the dryas flats, climbing to the ridge of the old lateral moraine of the Southeast Lyell Glacier, and when this met the mountain side, pointing straight up through an impenetrable forest. It almost killed me, although some members of the party claimed they were enjoying it, expressing their joy in a cautious sort of way, seeing that it was Sunday. The high camp, when we finally staggered in,

turned out to be located in a delightful meadow, beside a rushing brook, and with a superb view of Forbes, towering up into the clouds to the south. Although I understood it was frowned upon I sat down and thoroughly enjoyed the panorama of mountain, forest, ice, snow and sky. The trail to high camp improved over the course of the next two weeks, and so, perhaps did my condition, but it was still a pretty severe test for all except the keenest Tigers.

On Monday the camp activity began in earnest. I had a narrow escape first thing, when I heard someone calling for a fourth for bridge. I was on the point of volunteering, and even had my deck of cards dug out, when I discovered that the project was to construct a bridge across Glacier River. Quickly I got into another line, which, it turned out, was leaving for rock school. Later, from the vantage point of the school I watched the bridge laboriously taking shape. It must have been the most complicated structure ever to have been built for an A.C.C. camp. It was located about 1 1/2 miles from camp and crossed the river at the confluence of Mons Creek (which drained the Mons Icefield) and Glacier River (which drained the Southeast Lyell Glacier). The rivers ran in shifting channels through the gravel flats, and the bridge was constructed in several spans with rows of stepping stones in between. An astonishing battery of talent was involved in its design and erection, including prominent consulting engineers, scientists and other specialists from Chicago, Boston, Vancouver, Toronto and Williams Lake, B.C. The mere engineers were required to stand all day up to their waists in the glacial water, while PhD's, by virtue of seniority, carried rocks to the cribs on the shore. The bridge lasted very well, and did not wash out until the middle of the second week. Thereafter all and sundry lined up on the shore to admire the Ladies in Wading. Later on, another bridge was constructed, only a couple of hundred yards upstream from the camp, which provided a considerably less exciting means of crossing over.

While the experts were playing bridge the rest of us were at the rock school. A group of highly qualified members, plus Hans Gmoser our professional guide, carefully explained the fundamentals of rock climbing, pointing out that it was considered bad manners to kick a rock onto the head of the man below, that it was advisable to hold on with both hands to the rappel rope and that if faced with a difficult route and an easy route the difficult should always be taken. It was a beautiful day, and a good time was had by all.

From then on the climbing began in earnest. Parties plodded to the high camp and from there struck out at the crack of dawn for the Lyells. The five peaks of Mount Lyell towered up to the northwest of the high camp, standing at the end of the Lyell Icefield. Getting there (and back) involved a walk of several miles across the icefield, and in the course of the return journey one yearned for a pair of skis which would have cut the time and effort to a fraction of that expended.

Once at the base of the peaks themselves there were various routes taken by different parties, with one or other of the mountains, or combinations of them being climbed. The main peak was about 11,600 feet and I am told that there were superb views from the top. The weather was variable and the day I was there we knew we had reached the summit only by the fact that the snow began to drop the other way. Visibility in the whiteout was about 100 yards. Down below in the col things were a little better. This turned out to be a favourite eating spot, perhaps because it was the last col for lunch.

To the southwest of the base camp stretched the Mons Icefield bounded by a group of mountains named after battlefields of World War I, Cambrai, Messines, St. Julien and Mons itself. On the other side of the Icefield rose the Forbes complex which provided a number of challenging climbs, including what was believed to be a first ascent of the peak lying between the main peak and Cambrai, and called for reference "F-4". There were a number of variations of climbs on these

Forbes outliers, and each evening at the campfire there was a new story to tell of some adventure on their glacier hung slopes.

Forbes itself was the chief attraction and, as recounted previously, its ascent was considered the ultimate in swank. There was one jarring note however. For years (in fact since the boundary survey), Forbes had been shown as 11,902 feet but on the most recent map (published 1963) it had unaccountably shrunk to 11,852 feet. Where did the fifty feet go? All sorts of explanations were proffered—could it have been an extra high cornice in the year of the boundary survey, or perhaps a large cairn? Or maybe someone made a mistake the first or perhaps the second time around. Of these alternatives, the most favoured was that the new figure was wrong, since who would want to admit that he had climbed the 7th highest mountain in the Rockies when in fact he had climbed the 5th highest. (That's the difference the fifty feet makes.)

This camp was indeed well provided with glacier tours. The routes to all the major peaks were across one glacier or another, and this led to a little excitement. No less a personage than the chairman of the climbing committee suffered the indignity of disappearing completely down a crevasse, during a trip to Mount Cambrai. It is said that the second man on his rope, having been tutored by the Honourary Photographic Secretary, was much more concerned with getting a photograph of the event, than in rescuing his leader. However, since it would have upset the camp routine terribly to have left the climbing chairman in the crevasse, a valiant effort was made by other members of the party, and the chairman was retrieved.

Speaking of photographs and photographers, there was evident a remarkably tolerant attitude towards those who wished to pause for a moment to take a snap. This trend was decried by certain traditionalists, who adhered to the rule that taking a photograph came in the category of enjoying oneself, and hence should be discouraged, and besides it might make the party late for tea. But, as observed, there seemed to be a trend (probably inspired by the evil industrialists in the East who make photographic products) to tolerate the snapshooter, and even to encourage him by pausing in poses of daring do. It goes over well in your living room of a winter evening.

The ascent of Mons Peak itself was a favourite for young and old. (I don't put myself in either of these classes.) It could be climbed either from the north or south, the former route being up steep snow, across a considerable bergschrund and up some steeper snow to the summit. This route was used by two parties, the second of which succeeded in caving in the bridge across the schrund which discouraged its further use. The approach from the south was up a long rock ridge with some rather startling precipices on the east side. If you have qualms about scrambling along the brink of a precipice I have a suggestion to offer. I wore a pair of goggles which were so dark that nothing looked real, and it seemed that I was looking at an under-exposed picture rather than an abyss. The moral—keep yourself in the dark.

There was another small exciting incident during the only ascent of Mount Messines made from the camp. The party was led by that redoubtable mountaineer Jack Cade, who, perhaps in the mistaken impression that he was Santa Claus, fell down a chimney. It is not recounted whether he chortled Ho Ho Ho as he descended, nor whether he completed the illusion by having that famous pack of his (which seems to contain everything else) full of toys. Jack's friends will be pleased to hear that he seemed none the worse for the experience.

To keep members on their toes there were a number of challenging standards set by leading personalities. Everyone tried to yodel like Hans Gmoser, run like Bob Hind, blow the bugle like George Wallis and use up film like Wally Joyce. Another favourite pastime was eating, and as usual there was plenty of delectable material to practise on. Particularly the peanut butter sandwiches.

Since the camp was situated within a mile or two of the B.C.—Alberta boundary, a number of the peaks climbed straddled the border. This caused a certain difficulty in protocol, since it would obviously be bad manners to favour one province more than the other. As a result, it was emphasized to newcomers such as myself that in climbing the summit ridge of Cambrai or Mons, if a rock happened to get kicked off into B.C. it was necessary to kick one off the other side into Alberta, just to keep things even. This rule was meticulously observed, and resulted in a number of avalanches.

There were quite a number of people making their graduating climbs during the camp period. A favourite mountain for this was Division, which overlooked the camp from the west. I went one day on a massive assault on this mountain during which about 10 members graduated, and about twice as many more went along to haul them to the top. As usual it was the graduates who hauled the rest of us up, and in fact, some of them showed great promise. The weather had been patchy, cold with rain and fog and an increasingly dense whiteout blown by a chilly wind. In the midst of this, one enthusiastic graduate was heard to declare that he would certainly have the laugh on old X from back home, who had graduated on a lovely, bright, warm, still day at the previous camp. None of that kid stuff for our friend. No sir, this was real mountaineering. Obviously a most promising candidate.

I have been trying for some time to think of a way to finish this piece with a literary flourish. I have had no inspirations, so I'll just quit while I'm ahead.

First Ascent Of "F-4"

Wallace R. Joyce

"F-4" is a handsome mountain of 10,300 feet elevation. Viewed from the Mons Icefield, its long rocky ridge forms an imposing backdrop at the head of the West Forbes Glacier, an arras¹⁸ separating that snow-filled corridor from the deep valley beyond into which the South Glacier empties. It appeared to be the only major peak in the area that was unclimbed, not for any obvious difficulty in ascent, but perhaps because it was hidden behind the high ridge of "F-3" and dwarfed (like everything else in the region) by its towering neighbour, Forbes. We made the normal start from the Glacier Lake Camp on Thursday, July 29, 1965, and followed the usual route from the head of the river to the moraine and cliffs leading to the Mons Glacier, which we reached about 6:30 a.m. Here we roped up, Bob Scholes (the party leader) with Steve Bezruchka and Andrew Wornicki, Denis de Montigny with Arthur Kirn and Jim Caldwell, and myself with Peter Hutchins and Dave Payne.

The bare ice on the lower portion of the Mons Glacier was already familiar and offered no problem, but we had to move carefully, probing for crevasses as we turned the corner past "F-3". The West Glacier seemed honeycombed with cracks, particularly on its north side, which forced us somewhat off course to our right. We were aiming for the high col between Mt. Forbes and the north-east end of our mountain, where the snow would take us to an altitude of nearly 10,000 feet.

As we approached the col we began to break through the crust to knee-deep or better,

¹⁸ ARRAS might be considered a very suitable name for this peak; descriptive in the sense I have used here, and also appropriate because Mt. Cambrai is its immediate neighbour to the south-west. Canadian troops moved from ARRAS to CAMBRAI in one of the critical periods of the 1914-18 War.—W.R.J.



W.R. Joyce

“F-4” Peak (Centre), Mt. Forbes (Left), Looking South From The Mons Glacier

making heavy going, so that the three ropes had to alternate in breaking trail. Near the crest, the footing became firmer, leading to a rim of rock which stood like an outer gateway with a snow moat behind, barring the way to the main ridge.

Bob Scholes started to lead over the top, finding the rock very loose. To save time, I led the other ropes around the side of this barrier, descending and climbing again on steep snow (most of it firm). We reached the other side well behind the first rope, which had crossed the snow “moat” and was finding problems along the side of the next ridge. A route closer to the top looked possible and my rope “played through” and continued along the ridge to a narrow rock col, moving very gingerly, as the rock was very rotten.

Beyond the col rose a very steep shoulder of rock, sheer and precipitous to the east and only slightly better on the right side above the West Glacier. However the broken rock on this side gave good hand-holds and a careful traverse of about 25 feet brought me to an excellent vertical chimney, perhaps 30 feet high which proved the key to the summit ridge. Our rope reached the summit at 1:20 p.m. We built a cairn, sun-bathed, and watched the party on Forbes start down its icy slope. The other ropes arrived together about fifty minutes later, having encountered some difficulty due to the looseness of the rock.

We left the summit about 2:30 p.m., continuing south-westward along the ridge, finding a descent-route near the end down a couple of cliffs (again of very rotten rock), thus avoiding the bergschrund which ran along the north-west face of the mountain. We were down on the West Glacier by 4 p.m., off the Mons Glacier by 5:45 and back in camp by 7:45 p.m., well satisfied with the day. As we had approached the peak it had looked like a mere walk from the glacier along the ridge, but it had proved much more challenging than we had anticipated, providing considerable variety, interest and excitement.

Rosita Ridge.
Harriet Gilman

Our party of four (Bob Kruszyna, Ron Seale, Leigh Andrews, and I) started to try a new route up Rosita after a unique and cozy breakfast in the kitchen tent. We were the only early morning party to climb the last Friday of camp. Our destination was that lovely ridge leading up to Forbes from the Mons Glacier tongue.

We crossed the glacier and climbed up a snowslope just to the west of the northwest rib of the ridge. Unfortunately, the snow slope was not long enough to bypass all of the scree, so we slithered on that until we reached some solid rock ribs of strata which led us up upon the ridge itself. The final pitch onto the ridge was a rather spectacular rock climb with great exposure on three sides, but unbelievably enough, the rock was nice and solid. We roped up here in two ropes of two, and for the next three hours walked the ridge to the west summit.

It was spectacular to be about 10,000 feet high for so long with long vistas on three sides. We could see main camp, the Lyells, Mons, north to Columbia, west to Sir Donald, but the southeast was obscured by Forbes. There were two nice 20-foot rock pitches on the way to Rosita west. When we had not heard the second rope for a long time, I finally persuaded Bob that a little lunch was in order. He was so concerned over whether the deep gully between the east and west peaks would go, that until then we had doggedly pushed on. The second rope with Leigh leading, of course, had stopped for a large lunch an hour before! The summit was a short half hour beyond lunch and more loose ridge rock. The game was to stay on the ridge as much as possible, but we did go around two small gendarmes.

Our cairn should be plain for several years as there was no end of loose rock to build it with. The gully between the peaks only took us an hour, and this mainly because of picture-taking, etc. The descent was a bit icy in spots but easy, and the ascent to the east peak a real pleasure to those who enjoy unusual views. The ridge is so thin there are holes right through, and one hole framed the Lyells perfectly. The summit cairn of east peak contains the names of Don Woods and his party in 1940, plus the two 1965 parties, and now ours as well. From the Mons Glacier to the summit of the east peak took us about seven hours.

The descent was made speedily and without incident. The snow part way down was welcome after so long on the high, hot, dry ridge. At the col between Forbes and Rosita we detoured slightly to a spring in the snow and drank away our thirst. Then down the East Forbes Glacier we went, slowing only for that very crevassed area until we reached the rocks and unroped. Much further below when we reached the bridges across the Glacier River, we found one bridge floating away. The wading was cold and deep (above my knees). So after fourteen hours, we slushed back into camp in wet boots and feasted on a wonderful hot meal.

Birds Of The Glacier Lake Valley
Frances H. Perrine

Birding can usually be enjoyed at almost any place in the open, and is a fine supplement to camping and hiking. At the Glacier Lake Camp and in the valley this activity was thoroughly enjoyed although the birds were a little difficult to find.

Enroute in to camp, we were greeted by the White-crowned Sparrow in the burned-over

area, and by the Spotted Sandpiper and the Killdeer that nested on the open flats above Glacier Lake. In fact, one spotted sandpiper nested so near to camp and to the trail that we feared she was disturbed so often her eggs would not hatch. However, about Monday the 26th there were three tiny fuzzy babies in the nest with one egg, and the next day the nest was empty! Their eggs are very large in proportion to their size, thus enabling the young to travel almost as soon as they are out of the shell. A few days later the mother and three young were seen safely located on an "island" in the glacier stream.

Just how safe she was from the Sharp-shinned Hawk that cruised the area, I am not sure, for I witnessed that hawk take an immature Swainson's Thrush and a young Philadelphia Vireo. I suspect the hawk had already captured the adult Philadelphia Vireo for none was in evidence with the two hungry and begging vireo babies.

Another nest very close, right in camp, was that of the Oregon Junco. This nest was located on the side of a moraine, in a thick mat of yellow dryas. To protect it, old snags and sticks were placed near it, and a sign erected by it. It was in a spot where the mother was scared off whenever the bugle was blown for meals and the hungry horde came charging, and by folks going to and from the big campfire. We despaired that these four eggs would ever hatch, but they did, the last Thursday of camp. With camp breaking up soon afterwards, the mother probably had a fair opportunity to feed and raise the young.

A frequent camp visitor was one lone immature Cowbird, that often came to the dining tent and tea tent in his search for insects. He, doubtless, was raised by some unsuspecting parents other than his own, as the cowbird is parasitic.

Other birds seen and heard close to camp were a Spruce Grouse with babies, a Hummingbird which may have been either the Calliope or Rufous, a Canada Jay near the former campsite, Clark's Nutcracker, Mountain Chickadee, Brown Creepers, Robins, Townsend's Solitaire, Ruby-crowned Kinglets, Pine Siskins in flight, Cedar Waxwings, Red Crossbills, Chipping Sparrows, and a Woodpecker, heard but not seen, so it could not be positively identified.

Near High Camp a Pigeon Hawk was seen in flight above the meadows. Climbers reported seeing a Golden Eagle soaring above Arctomys, and a family of Rock Ptarmigan near the tents.

On the way out from camp, we thought our birding in Glacier Lake Valley was over with, but not quite, for as it was late in the day, a Night Hawk greeted us as we came through the burn.

Flowers Around Glacier Lake.

Tess Fencer

Mountain flowers are always interesting both to the novice and naturalist alike. Glacier Lake area was no exception. There were flowers of all sorts: from the gravel flats around camp to the high rocks above timberline.

The yellow dryas (*Dryas drummondii*), common through the mountains of B.C. and the Rockies, was perhaps the best example of ground cover over the gravel and boulders of the valley floor, from the end of Glacier Lake up to the icefall at the head of the valley. This strong prostrate shrub with its drooping head of small yellow flowers, and twisted seed tails glistening in the sun, was a delight.

The woods around camp were rich in flowers of many kinds. Scattered among the shrubs of soopolallie (*Shepherdia canadensis*) all aglow with small glossy bright red berries, and the gay open yellow flowers of the shrubby cinquefoil (*Potentilla fruticosa*) were many spotted orchis

(*O. rotundifolia*) and a few patches of yellow lady slippers (*Cypripedium parviflorum*), carefully guarded over by Phyl Munday. Also included in these woods were northern gentian (*Gentiana amarella* var. *acuta*) and several of the wintergreen family. Most noticeable of the latter were excellent specimens of the tall pink variety (*Pyrola asarifolia*) and single delight, also called one-flowered winter-green (*Moneses uniflora*). This low, shy, white flower hangs its head down, hiding its exquisite little face. Added to this were fine specimens of one-sided wintergreen (*P. secunda*), and open-faced pink pipsissewa (*Chimaphila umbellata*) often associated with the pyrolas.

Trips from camp to the glacier revealed on the banks of the busy little rivulets and sand bars beautiful displays of rich magenta and gold water willow herb (*Epilobium alpinum*) and luxurious bright yellow cushions of saxifrage (*Saxifraga aizoides*, I think). The flaming red of the paintbrush (*Castilleja*) added a riot of color.

High camp beckoned, and the trail climbed out of the valley over the huge moraine. The tangled underbrush was a mixture of false azalea (*Menziesia ferruginea*), copper bush (*Cladotomous pyrolaeiflorus*) and, above, the white mountain rhododendron (*R. albiflorum*). All were good examples of mountain shrubs. Soon brush and trees thinned and gave way to many of our well known alpine meadow flowers: yellow arnica, mountain valerian (*V. sitchensis*), dwarf blueberry (*Vaccinium caespitosum*) and bunch-berry (*Cornus canadensis*), slightly stunted but still lovely. There were pleasant patches of the beautiful rose-pink flowers of the red heather (*Phyllodoce empetrifloris*) and white heather (*Cassiope mertensiana*), not quite in full bloom.

Above the heather, the sloping meadows and streams were dotted with the charming little red elephant (*Pedicularis*—I'm not quite sure which species it is botanically). The glorious fragrant glacier lilies (*Erythronium grandiflorum*) were still in full bloom. Growing with them in equal profusion were the fragile pink-white blossoms of the spring beauty (*Claytonia lanceolata*), and the blue alpine speedwell (*Veronica alpina*). Daisy-like blooms of the large fleabane (*Erigeron speciosus*) intermingled with paintbrush which showed an astonishing variety of color from purple through reds to cream. The air was scented with the flower-filled meadows.

Above, on the shale slopes, were many high treasures, the lovers of dry places. Among them were the lovely little prostrate false dandelion (*Crepis nana*) covering the tidy rosette of green spade-like leaves with yellow flowers. There was a variety of pussy toes with compact white woolly heads and others with long stems and separate flowers. Pink mats of moss campion (*Silene acaulis*) look like neat little cushions lying on the surface, but it has a very long tap root pushing its way tightly down among the rocks. Some of the rock crannies were splashed with purple flowers of the superb cushion of *Saxifraga oppositifolia*, a true lover of high places. Here and there were little hairy daisies (*Erigeron uniflorus*) and dwarf yellow fleabane growing with pale alpine milk vetch.

Across the valley by Mons Glacier, near the first moraine, on the northeast exposure, we found a paradise of flowers—green lily (*Zygadenus elegans*), yellow columbine, tall tow-headed babies (the seed heads of *Anemone patens*) bearing witness of earlier splendor, fragrant valerian, grass-of-parnassus (probably *Parnassia fimbriata*), mountain sorrel, white delicate wind flower (*Anemone multifida*) and the rich purple snapdragon-like flowers of mountain oxytrope (*Oxytropis podocarpa*).

On our way to Mt. Sullivan we found flowers not seen on previous rambles. There were showy patches of the beautiful mauve-purple of the beard-tongue (*Penstemon*) also blooms of *gaillardia*, fine plants of bluebell, likely *Campanula rotundifolia*. The minute white flower of the rough, square stemmed, lacy northern bedstraw (*Galium boreale*) was amongst the handsome large

blossoms of the red lily, and wild roses perfumed the air.

Along the swift creek grew large purple fleabane, meadow rue (*Thalictrum occidentale*), and some stunted false hellebore (*Veratrum viride*). There was also a repetition of many of the flowers we had already seen, set out in a lovely display of color.

Before striking the trail at the bottom of the slope on our way back to camp, we came across a swamp with quantities of the white fluffy tops of the cotton-grass (*Eriophorum chamissonis*) waving in a light breeze. Sweet-scented white rein orchis (*Habenaria dilatata*), ladies tresses (*Spiranthes romanzoffiana*), and the delightful little deep violet-blue butterwort (*Pinguicula vulgaris*), all growing together. Butterwort has a rosette of slimy yellow-green leaves with curled edges because it is partly carnivorous.

The trail was lined in places with the vine-like shrub of dainty pink bells of the twin flower (*Linnaea borealis*). Many other flowers were seen on the hike out along the trail. And so, regretfully, we left Glacier Valley and its lovely lake encircled with beautiful mountains.

CLUB PROCEEDINGS

Annual General Meeting, 1965

The 60th annual meeting of the Alpine Club of Canada was held at the Glacier Lake Camp, July 25, 1965, with 130 members in attendance.

The President, R. C. Hind, was in the chair and Miss Elizabeth B. Walker acted as secretary for the meeting.

The President welcomed those present and reported that two comprehensive reports were received from the committees investigating the clubhouse affairs and club re-organization. These reports have been approved by the Executive Board and a precis of each report would be circulated to the membership.

It was moved by L. C. Wilson and seconded by Eric Hopkins that the minutes of the 1964 annual general meeting be adopted as printed in the 1964 Gazette. Carried.

The special report prepared by the Clubhouse Investigation Committee was received and endorsed in principle by the Clubhouse Committee.

Ski Committee. In the absence of J. M. Dodds, chairman of this committee, Bob Scholes reported that the ski camp for 1966 will be held at the Stanley Mitchell Hut in the Yoho.

Hut Committee. Ted Mills reported as chairman of this committee that an arrangement had been made with Hans Gmoser for the use of three huts for a one-year trial period. A caretaker would be at the Wheeler and Elizabeth Parker Huts and he asked that members who used these two huts let his committee know if this arrangement is satisfactory. Two new huts are under construction at Mt. Robson high camp site and in the Northern Selkirks in Fairy Meadow.

The President moved a vote of thanks to Bill Putnam and his crew for their work in the erection of the new hut in Fairy Meadow.

Camp Site Committee. The President reported that this committee is investigating camp sites in two new areas, Beaver-Duncan Summit and the Italian Group. The committee recommended that Mt. Assiniboine be the site of the 1966 summer camp. This recommendation was unanimously adopted.

Photographic Committee. The following report was submitted by Miss Sylvia Evans,



W.R. Joyce

Annual Meeting - Glacier Lake Camp, 1965

Photographic Secretary:

The 1965 photographic competition was successful, with a high standard of photography and more members than usual participating. The 81 colour slides were judged by Mr. Al. Porcher, Mr. John Turnbull and Mr. Don Campbell. Judges for the 31 black-and-white entries were Mrs. Munday and Mr. Wally Joyce. Views of Axel Heiberg Island in the Northwest Territories were of particular interest to viewers. It was a pleasure to see the Ottawa Section win the Wates Shield for the first time; but it is hoped that more local sections will assemble pictures from this year's summer camp to enter in the Section Class in 1966.

We are now preparing a set of training slides, which the sections may borrow to help with instructing beginners in rock and snow climbing techniques. This collection will be increased and improved as more slides become available.

Honorary Librarian. The following report was submitted by Miss Elizabeth B. Walker:

The year's activities consisted mainly of setting up routines for ordering books and binding periodicals so that Vancouver Public Library's facilities could be used. The binding of several long runs of periodicals—Sierra Club Bulletin, Mazama, and Appalachia—was completed. There have been few acquisitions.

A report was prepared for the Committee on Club Organization in which the suggested terms of reference for the position of librarian were outlined and some of the problems facing the librarian presented. These included setting the limits of the collection, i.e. concentrating on North American mountaineering literature; liaison with the Clubhouse Committee for maintaining a recreational reading collection at the clubhouse; and the possibility of establishing an inter-library loan policy.

Projects for the future should include the preparation of: an annual bibliography on

mountaineering in Canada; a union list of mountaineering periodicals in Canadian libraries; and an annual list of library acquisitions. All of these would be published in the Journal. In order to accomplish such objectives it would be necessary to form a Library Committee. With such projects underway the library could truly serve the needs of its members.

Clubhouse Committee Report. During the past year the committee for investigating the operations and financial set-up for the Clubhouse completed its investigations and a copy of this report was received by the Clubhouse Committee. A full discussion of this report was undertaken and the Clubhouse Committee endorsed in principle the findings and conclusions of this report regarding the continuing welfare of the Clubhouse. This report was also discussed with the Calgary Section and they have incorporated in their reply to the Management Committee some of the thoughts and ideas that the Clubhouse Committee discussed with them at their meeting.

The Clubhouse this season is operating with a completely new staff and to date we are very happy with the way they are looking after the members and guests who are attending at the Clubhouse. In this regard as always, we do suggest that more members make the Clubhouse their headquarters for their mountain holidays. The month of August is nearly always a pleasant month in the Rockies and there is usually lots of room available at the Clubhouse for members to book in for a few days and enjoy its hospitality.

Continuing improvements are being constantly made at the Clubhouse and your committee believes we can now offer very pleasant accommodation to all members who do come and stay there. To those members who have not come into the Clubhouse over the past number of years, we know you will be very agreeably surprised to see how much has been done at the Clubhouse to make your stay there an enjoyable one.

Walter and Barbara Sparling have become members of the Clubhouse Committee and because of their long association with the Club will be able to give much valuable assistance to the running and operating of the Clubhouse.

Financial statements for the year 1964 are available from Mrs. J. Manry on request.

In conclusion your Clubhouse Committee leaves this thought for the sober consideration of the Alpine Club of Canada membership: that the closing down, or relinquishing of the Clubhouse lease would be an irrevocable loss to the Alpine Club of Canada. There is a world of tradition, memories and intangible feelings that will be forever lost if this old building is dispensed with. Rather, let it be subsidized by the membership at large and the Clubhouse remain a place of get-togethers for future generations of Club members.

Respectfully submitted,
K. E. Boucher, chairman
Jeannette Manry, sec.-treas.
Barbara Sparling, committee member
Walter Sparling, committee member

Editor of the Journal. Mrs. Phyl Munday thanked those who had contributed to the Journal and asked that anyone who knew of climbs in the Canadian mountains to endeavour to have the climbers send a report of their climb to the Editor. She wished to thank Paddy Sherman, Neal Carter, Don Linke and Monica Godfrey for their valued assistance in the preparation of the material for the Journal.

A unanimous vote of thanks was extended to the editor and her assistants.

By-law Amendment. The secretary-treasurer announced the result of the ballot sent to members June 5, 1965, for the proposed amendment to Clause 1 (c) Qualifications for Members. The result was as follows (350 ballots cast):

For the amendment	253
Against the amendment	96
Spoiled ballot	1

The amendment is hereby declared as having passed, having received 72% of the vote cast in favor of it.

Index to the Journal. The Secretary-Treasurer reported that work is proceeding on this job and that Frank Smith of Vancouver will shortly be undertaking the task of consolidating and extending the information already compiled by Major Tweedie, and having it typed ready for the printer. It may be necessary to alter Major Tweedie's arrangement somewhat.

Coast Climbing Guide. The pre-publication selling price of this guide book was set at \$3.50 per copy, but as from November 1, 1965, the price will be increased to \$4.50 per copy so as to be able to give publisher's discount to retail outlets.

Club Auditor. It was moved by Miss W. Dennison and seconded by Bill Sharp that Clarkson, Gordon & Co. be re-appointed club auditors for 1965. Carried.

1967 Centennial. Poul Nielsen asked if any action was being taken for the celebration of the Confederation Centennial.

Dave Fisher reported that he had attended a meeting in Ottawa concerning this matter. A group of fourteen peaks had been set aside in the Yukon to be named the Centennial Range and the Club would in all probability be asked to contribute climbers to an expedition making the ascent of these unclimbed peaks. The peaks would be named after each province and the two territories, plus one for the State of Alaska which also celebrates its centenary.

Huts. Don Lyon asked for information re the arrangements made with Hans Gmoser concerning the two huts under his care. Ted Mills replied by saying the new rates would be 75c for members and \$1.50 for non-members who stayed at a hut where a caretaker was employed. He also reported that no approval had been received at this date for the erection of a hut at the Boulder Campsite in the Bugaboos.

High Camps at Summer Camp. Bob Scholes brought up the question of high camps at the summer camp and suggested that such high camps be set up prior to the opening of the main camp. He moved, and Bob Kruszyna seconded, the following motion: To request the Executive Board to give consideration to have competent people go into camp long enough before camp opening day for the purpose of: (1) establishing the numbers and location of the high camps required to put the most mountains within the reach of the majority of climbers attending camp, and (2) to assist in the setting up and provisioning of the high camps. Len Chatwin moved that the aforementioned motion be amended so that responsibility for determining the number of high camps at a camp be placed in the hands of the Campsite Committee. As there was no seconder to this amendment, it was withdrawn. The original motion when put to a vote was carried.

Report on Club Organization. The president read the introduction to this report and after some discussion Wally Joyce moved that a vote of thanks be extended to all members of this committee who had presented such an excellent report. This was unanimously approved.

Clubhouse Investigation Committee Report. The president read the main parts of this report to the meeting and the various viewpoints expressed in it. It was felt that having a liquor licence might bring a lot of problems in its wake and that the low rate suggested for skiers was not realistic.

Bill Sharp moved and Sylvia Evans seconded a motion for a vote of thanks to the committee for the tremendous amount of work they put in on the report. The motion received unanimous approval.

Votes of Thanks. George Edmonds moved and Gordon Steeves seconded that a vote of thanks be accorded the amateur guides for their untiring efforts during camp. Carried.

It was moved and seconded that a vote of thanks be extended to the president for his untiring efforts on behalf of the Club over the past year. Carried.

The president moved a vote of thanks to Bill Harrison and his staff for their untiring efforts in the kitchen, specially to those who were on duty to serve the wants of the early climbers. Carried unanimously.

Visitors. The president welcomed to the camp Mr. and Mrs. Venancio Ceballos from Barcelona, Spain.

Silver Rope. The president called on Bob Kruszyna to come forward to receive the Silver Rope on the unanimous approval of the Executive Board. Moved by Henry Hall, and seconded, that the meeting adjourn.

R. C. Hind, President,

W. C. Ledingham, Secretary-Treasurer.

Section Reports

Calgary Section

The Climbing Committee chaired by Bob Peters started the year in March with three climbing lectures, designed to introduce new and potential members to the use of equipment, route finding, map reading, first aid and the fundamentals of good climbing techniques.

Rock climbing school was held on the lower cliffs of Mt. Yamnuska in early spring. This is an annual scheduled outing and consists of six short climbing exercises.

Although the 1965 climbing schedule was a good one, including outings to Glacier, the Kananaskis, Lake O'Hara and Yoho, the weatherman failed to co-operate at all times. The Section weekend at Glacier in August was one of several rained out. Those in attendance set off for the Nakimu Caves instead of higher destinations.

The Section ice school in July attracted only 18 climbers but was one of the more successful weekends.

Along with the scheduled Section weekend climbs, the Climbing Committee is to be commended for holding several climbing schools for the boys attending the YMCA Summer Camp at Camp Chief Hector.

Considering the weather during the climbing season, the lack of attendance does not necessarily indicate a lack of interest, but perhaps a lack of waterproof equipment.

On the social side, the Section started the year with a skating party and broomball game in February; the game ended in a tie.

The Annual Section Spring Dinner was held in the Palliser Hotel with guests Club President R. C. Hind and Mrs. Hind, Mr. J. W. G. MacEwan, Mayor of Calgary, and Mrs. MacEwan. The photographic competition slides shown at the dinner were high in quality.

The Section enjoyed good weather conditions for its softball game and a successful barbecue, both held in June. A scheduled family picnic in September was cancelled when an unusually early snow storm brought most outside activities to a halt.

With the increased interest in mountaineering in the Calgary area the Calgary Section can look forward to another active year in 1966.

Eastern United States Section

Our activities for the year 1964-1965 included the annual meeting on November 19, 1964, held at the clubrooms of the American Alpine Club and an annual dinner on February 6, 1965, held at the Hotel George Washington in New York City.

At the annual meeting announcements were made of the 1965 Ski Camps and Summer Camps. The following officers were elected:

President: Len Chatwin; Secretary: Anne Frantz; members appointed to serve on the executive board: Horst von Hennig, Gibson Reynolds and Ruth Robinson.

After the business meeting, the 38 members and guests present enjoyed an illustrated talk on "The Arrigetch Peaks of the Brooks Range in Northern Alaska" given by Michael Westmacott.

At the annual dinner 30 members and guests enjoyed the late Daniel Doody's excellent movies of the first ascent of the North Face of Mount Edith Cavell, including some footage of the 1960 Fryatt Creek Camp.

Edmonton Section

The annual banquet was held May 8. Peter Vallance of Calgary spoke on "Safari in Africa", and Club President Bob Hind spoke concerning Club activities.

The climbing season began with two novice lectures given to interested would-be climbers, including some Boy Scouts. About twenty novices attended rock school and snow school on the May 24 weekend.

Snow late in the spring and early in the fall gave the climbing committee a few headaches. In spite of this difficulty some climbing was undertaken on every section outing.

Early in June, a group climbed the Grillmair Chimney on Yamnuska and Mt. Princess Margaret. Later in the month, a trip to Celestine Lake was washed out but climbs were made on Roche a Perdrix and Morro Peak.

On a long weekend at the beginning of July, the Section had its most interesting trip of the season into a remote area to attempt the first ascent of Mt. Balinhard (10,270 feet). This peak is located in the southeast corner of Jasper National Park.

Sixteen people led by Bill Angus walked the 17 miles from the Coalbranch road to their base camp. The weather was perfect but after two unsuccessful attempts, one of which came within 75 feet of the summit, the climb was abandoned due to unstable snow conditions. This mountain is rated as being very worthwhile and it is in a truly beautiful setting.

Later in July, a group consisting mainly of new members attempted Mt. Louis but was forced back by a sleet storm. The climbing party was compensated by a successful crossing of the Gonda Traverse on Tunnel Mountain.

In August, five persons went into the Tonquin Valley and successfully climbed Mt. McDonell and Surprise Point. On August 14 and 15, three leaders made a successful traverse of Mt. Colin ascending via the northwest ridge and descending by the southeast ridge. The party crossed the Athabaska River in a rubber raft enabling the climbers to complete their journey from the Jasper airfield in one day.

On Labour Day weekend, a back-packing trip was made by thirteen people into Circus Valley via Portal Creek. Circus Valley was the site chosen by the Section for its proposed bivouac

hut. Due to very early snow, only one unnamed peak was climbed in this area.

On Thanksgiving weekend, sixteen persons went to the Banff Club House. Mt. Edith and Mt. Norquay were climbed on a magnificently clear day. Side trips included the Gonda Traverse and on the way back to Edmonton a large portion of the party stopped to spend a few hours at the Calgary rock school site on Yamnuska. All in all, it was a successful climbing summer. More than a dozen members of the Edmonton Section attended summer camp, where four of our members made their graduating climb. Among those members graduating during the summer were Harry Habgood, Henri Louvet, Aileen Cronin, Elma Demchenko and Jane Pesch.

Congratulations are in order for many people in our Section for their photographic skills. First prizes in the Club photographic contest went to Eric Hopkins and Don Linke for their submissions in the Mountain Skiing and Mountain Feature sections respectively. In our own Section photographic competition first prizes were shared by Joe Kato, Don Linke, Wayne Smith, Doris Campbell and Eric Hopkins.

We are pleased to report that the Section Leader's Badge was presented to John Tewnion.

The Ski Committee with Jack Clark as chairman planned a full program. Despite the weeks of sub-zero weather, the in-town moonlight hike and crosscountry ski hike were well attended. Olavi and Eila Tervonen played host to the Section skiers at their cottage at Jackfish Lake where a sauna is always the order of the day. There were three trips to Jasper. The new T-bar in Marmot Basin has made this area very popular with Edmontonians. A trip to Banff was not too well attended. Seven people from Edmonton were present at Ski Camp at the Columbia Icefield.

The winter monthly meetings were held at the North Western Utilities Auditorium. Charles Lockwood was convener and a wide variety of programs were arranged. These included: a talk and demonstration on R.C.A.F. survival techniques, given by an R.C.A.F. officer; a film entitled "The Enduring Wilderness"; a talk by Eric Hopkins on his trip to the Grand Tetons; a lecture on the geology of the Tonquin Valley; a panel discussion on equipment needed for a 7-day back packing trip; an evening reviewing summer climbing activities; and finally, an illustrated tour of Japan by Jo Kato.

Statistics of Edmonton Section membership are as follows:

Club members (active)	73
Section associate members	21
Junior associate members	4

Total98

Subscribing members 6

The following members were elected to the Section Executive at the annual meeting held on November 17, 1964:

Chairman: John Tewnion; Vice-chairman: Hugh McCullough; Secretary: Margot Dowling; Past Chairman: Jo Kato; Executive Members: Inge Drewin, Jack Clark, Charles Lockwood, and Wayne Smith.

The Annual Children's Christmas Party was held at Molson's Edmonton House on December 13, 1964; about 120 persons attended, about half of them children.

Kootenay Section

The Kootenay Section has now completed its first full year of activity and with a 25% increase in membership we feel we are here to stay.

Blessed with all that lovely snow last winter, the ski touring season was off to a good start, the experienced members turning out in full force and urging the uninitiated to try it out. Consequently as the season progressed there were more and more new faces appearing on the untracked slopes and wondering why they had not done this before. Almost a full schedule of trips was carried out, only one being cancelled due to bad weather. Day trips were made to Old Glory, Plewman Basin, Kirkup Mountain, Copper Mountain, the Micro-Wave Station, Record Ridge, and onto the ridges from the Salmo Creston Summit. Overnight trips were made to the Yodel Inn, the Huckleberry Hut, and the Silver King Cabin. Though many members were still ski touring as late as the first week in June, the season for the Section culminated in a 4-day stay for 19 people at the Slocan Chief Cabin (6,600 feet) in Kokanee Glacier Park. Our local helicopter flew us in on Good Friday morning in glorious weather and we skiied out the 20 miles on Easter Monday.

With the winter behind us our thoughts turned from skis to climbing boots and to training for the summer's activities. Once again from May through to August weekly rock schools were held each Wednesday evening on the excellent practice cliffs near Castlegar.

We were very fortunate in having Byron Olson as a member of the Section this year. Byron, besides being very much at home in the mountains on snow and ice and on rock, is also qualified to teach Mountain Rescue techniques. This he very generously offered to do and also to take charge of the rock school for the first 8 weeks. Byron set up an 8-week schedule of practice sessions and rescue training starting on May 13, and ending on June 23. The weekly sessions continued on under Gerry Brown and Dave Deane who did a fine job of letting the beginners put into practice what they had learnt during the first 8 weeks. By the end of the summer those who had attended regularly were climbing the harder pitches and enjoying it. As a result of Byron's rescue training we now have twelve men in the West Kootenay District with a basic knowledge of rescue techniques from high-angle rock who could be called upon if needed. Jim Street of South Slocan is co-ordinator for the team and liaison has been established with the R.C.M.P.

As last year, June turned out to be "Mulvey Trail-cutting Month"; every weekend an assortment of people and tools could be found at different locations along the trail. In order to get a good day's work done higher up it was found best to camp 2 1/2 miles up the trail. Several very pleasant Saturday evenings were spent round the campfire at this spot after a hard day's work. The trail is now roughed through to the Head Wall, but there still remains a good deal to be done especially on the last 2 1/2-mile stretch.

We were truly delighted when Byron Olson, Rick Askew, and Bob Dean made good use of the trail to make a third ascent of Mt. Gladsheim (9,275 feet). It was a tough trip for a 2-day weekend, and without the trail they all agreed they never would have attempted it. Besides being hard to get to, Mt. Gladsheim is also a mountain in its own right, giving the climber a taste of everything his heart desires, and being by no means an "easy day for a lady". Needless to say there are also many other fine climbs in this hitherto little-explored area.

During the months of July, August and September a Section trip was scheduled every fortnight. Due to the very co-operative weather this summer only one trip was cancelled, and one party failed to reach its objective owing to being on the wrong ridge in the dense fog. Especially enjoyable were the trips to Whitewater Creek when Mt. Brennan (9,514 feet) and Whitewater (9,095 feet) were climbed in glorious weather, and the trip up Silver Spray Creek in Kokanee

Glacier Park, where the entire ridge of Mt. McQuarrie (8,819 feet) and Sunrise Mtn. were traversed and the fast disappearing Caribou Glacier was observed.

And of course there was the old standby, the annual trip to the Slocan Chief Cabin, also in Kokanee Glacier Park where we held a snow school.

On the weekend of September 17, 1965, seventeen members turned up for the annual work party and wood-cutting bee at the Slocan Chief Cabin. Although this building is in a Provincial Park and as such belongs to the Parks Branch, the improvements and maintenance of this fine 69-year-old log cabin seem to have fallen naturally into the hands of the newly formed Kootenay Section. We hope to keep up the good work started in 1961 by a small group of hard working people, many of them now members of the Section, and keep this cabin in good shape for many years to come. From the record book it appears that some 400 people have made use of the cabin this year, not including the ski team who held their summer training camp in the area and were camped in tents adjacent to the cabin. While we are delighted that more and more people are enjoying this lovely alpine country we could wish that they could take a few lessons in good housekeeping. At the end of the summer the condition of the cabin and surrounding area left much to be desired.

Four Section members attended the Club Camp at Glacier Lake where they made good use of the lovely weather and participated in some fine climbs.

A second edition of the Kootenay Karabiner made its appearance in May, with Chris Penn and Jack Oswald still as co-editors. They have done another fine job and with co-operation from contributors plan to produce two a year, one in November and one in May. Besides the interesting and fine articles in this enterprising little magazine it is also proving a means of communication to our scattered membership, containing the winter and summer schedules where they are not likely to get lost. The Kootenay Karabiner is included in our Section dues, but because of many requests we have initiated an annual subscription membership of one dollar for those who wish to receive the magazine, but are unable to take part in Section activities.

The Kootenay Section could not help but be distressed when it was announced that Kokanee Glacier Park was to be downgraded from a Class A Park to Class B, thus making it possible for mining and logging to be carried on in it. Strong protest was made to the Government on behalf of the Section and members were urged to write to their member of parliament giving their views.

The Section was very happy to be able to sponsor Hans Gmoser and his excellent film "Roving Skis", with showings in Trail and Nelson. Members are to be congratulated on a fine job of selling advance tickets which contributed to making this venture a success. Two dinner meetings were held during the year, one in November (the A. G. M.) and one in May. At the November meeting the following officers were elected for the 1964-65 season: Helen Bulling, Chairman; Rick Askew, Secretary; Ann Wick, Assistant Secretary; Directors, John Walters (Trail), Anne Anderson (Castlegar), and Jack Steed (Nelson). For our programme at this meeting Byron Olson showed us his magnificent slides of the ascent of Mt. Waddington. Byron is an exceptionally fine photographer and we were very fortunate in being able to see these excellent pictures and hear the story of the climb. At the May meeting Chris Penn and Gerry Brown showed their slides of the first ascent of Mt. Pambrun (10,400 feet) and traverse of the Purcells, a trip which they took in company with Helen Bulling and Jack Steed.

Ann Anderson also showed her movie shots of the Easter trip to Kokanee, with an amusing commentary.

In December 1964 we were very sorry to lose, but only temporarily we hope, our first Chairman, Kim Deane, and his wife Jill. Far horizons were calling them and starting with New

Zealand they are working and wending their way round the world, climbing mountains on the way, planning to return to B.C. in 1966. The Kootenay Section will always be grateful to Kim for the amount of work and enthusiasm he put into forming the Section and a fine welcome awaits their return.

Midwest United States Section

The Section held its annual business meeting on October 18, 1965, and elected the following officers for the 1965—66 year:

Chairman: Guy Everett; Secretary-Treasurer: Genevieve Simpson; Directors: Frances A. Mullen, Vittoria Mondolfo, and Robert West.

Three members of the section, William Primak, Robert Schluter, and Louise Roloff, attended the Glacier Lake ACC camp in 1965, and the first two presented a report on the camp, both the climbing activities, and ACC business, at the Section's meeting. The Section is much interested in the continuation of the Banff Clubhouse in good physical and financial condition. Robert Schluter presented a program which combined pictures of the Glacier Lake camp activities and climbs, with those from a trip to Armenia and the Caucasus.

During the past year, Lucio and Vittoria Mondolfo covered much of the Pacific area and did some ski touring in New Zealand. William Primak and Ed Gibson climbed in the Adamant Group with Roger Neave and other ACC members, on an expedition serviced by helicopter. Donald and Genevieve Simpson attended the festivities at Zermatt in honor of the 100th anniversary of the climbing of the Matterhorn, and participated in the Centenary Climb. Frances Mullen and Margaret Prouty made a 5-week trek from Kathmandu to Thyangboche, on an expedition organized by Col. James Roberts. They had dinner with the High Lama, visited extensively in Sherpa homes, and met the entire Indian Everest expedition for trail-side chats on the trail between Namche Bazar and Thyangboche. Frances continued on to Japan where members of the Japanese Alpine Club arranged climbs in the Northern Japanese Alps and on blizzard and snow covered slopes of Fuji-san.

Ottawa Section

The climbing programme of the Ottawa Section is sustained by a handful of its members, plus a greater number of Section associates, many of whom have never set foot, some not even eyes, on a real mountain. The Section is grateful for their enthusiasm, and in several cases leadership, whereby standard routes were repeated and new possibilities explored.

The most popular outings were local trips to the Gatineau rocks. More distant excursions were more thinly supported, and currently it is hard to find leaders with time to spare for them. Despite continuing efforts to develop local talent, experienced climbers have rarely resulted from this approach, and the backbone of full membership is made up of "driftwood" from East and West.

The ski touring programme was again delayed by poor snow conditions. Then followed several bouts of freezing rain, an inch of which turned the flattest tour on the schedule, a tour of the backwoods near Hans Weber's home, into a highly exciting event. Skates would have been more appropriate. Other routes, by no means so flat, were fortunately snow covered. The weekend trip to Mt. Marcy in New York State was again a success, and deserved an attendance higher than six. Support for these tours by the ski clubs remains low, partly due to the mixed blessing of the typical safety harness.

On the social side, a big crowd at the annual dinner attended Fred Roots' description of the Canadian Himalayan Expedition. His slides arrived—unedited—only just in time, but fortunately

were all of a high standard, and few begrudged the endurance test of following the adventures of the party to the end. Almost the end that is, for at the time of writing, the party has yet to rescue itself from the last crevasse. Attendance at winter meetings, which had been falling off, rose sharply when combined with the snug firesides of Meg and Hans Weber, and June and Fred Roots, with catering due mainly to the social convener, Lynda Pearson. In future, the standard of catering might have to be reduced, if numbers are to be kept down to what a private home can reasonably stand. How to explain that to Lynda?

In spite of the small size of the Section, a rapid survey indicates that at least ten members or associates have been active in the real mountains during the year. Shortest distance involved was 1,500 miles (Baffin Island); longest was more than double that (Austria). Our real globe trotters are still away, and cannot be included because they haven't paid their dues.

Toronto Section

Our climbing at Bon Echo certainly is the highlight of our year. More and more people are climbing (an average of 22 each weekend), five new climbs have been put up, and the general standard of climbing has increased immeasurably. Those who were at Camp and saw pictures of our climbs can appreciate how attractive the setting is for climbing. We sincerely hope any members of the Club who are in our area during the climbing season will contact us so that we can organize a day or two at Bon Echo. During the hot summer days with the beautiful lake at the foot of such fine cliffs, and with our own hut and property just along the way, I think you can appreciate why so many people are coming out. There are obvious drawbacks—one might even grow to like this sort of thing. With the amount of climbing we have done, we have kept up our proportion of excitement via minor accidents. Luckily we have had no serious accidents, but there have been a few people who have fallen off; in fact on one climb, it has become rather a habit and the climb has only once been completed successfully without a fall.

Two trips to the Shawangunks attracted 47 and 40 people respectively; 35 went to Val David and 30 to the Adirondacks.

Our winter meets, while reasonably well attended, were not as successful as we would like. This was in part due to the fact that we have grown too large to have our meetings in individual houses and had to hire a place where the surroundings were rather cold and inhospitable. Next year, we plan to hold our meetings in the Toronto Camera Club's premises which have good facilities, are centrally located, and much more appealing.

Two showings of Hans Gmoser's film at the Eaton Auditorium were extremely successful. The auditorium was completely sold out.

Vancouver Section

The Section continued to grow, rising by over 80 new members to 240.

A long fine summer, starting in mid-February and lasting through to September, made for an exceptional climbing season. 42 weekend and day trips were arranged, which included 3 schools, 21 climbs, 16 ski trips, 2 work parties, and 3 trail-clearing trips. Up to time of writing, of 36 trips scheduled, 6 were cancelled, the total attendance being 392. Evening rock-climbing sessions were also held during the week at the North Vancouver quarry and at Point Atkinson. The week-long camp in the upper Bridge River area had a very small attendance and was hampered by one of the few weeks of bad weather this year.

The Section planned a week-long climbing seminar based from the Club hut at Lake Lovely

Water in the Tantalus Range immediately after the Club's annual Summer Camp. Unfortunately it had to be postponed owing to lack of response. It was felt that this failure was probably due to lack of advance notification to members of other sections. Publicity for a similar event in 1966 will be given earlier; the seminar will be rechristened "Climbing Camp" and will have the services of Hans Schwarz as professional guide.

The Junior Climbing programme was very successful under the direction of Colin Oloman and his cohorts. A series of 7 training outings was held, attended by some 40 boys and girls ranging in age from 14 to 17. The course consisted of 2 days' rock climbing, 1 day snow climbing, 2 weekend pack-ins to the Garibaldi high country in spring snow, and finally a climb of Mt. Sky Pilot and to Lake Lovely Water. The training course was followed by several climbing trips. The programme was hampered at times by a shortage of leaders to handle the large groups, and lack of climbing equipment and transportation. The equipment shortage was alleviated by an allocation of \$250 of Section funds to buy additional ropes and ice axes. Many of the youngsters are now buying their own equipment.

The Section now has a number of ropes, ice axes, crampons, tents and gas stoves that can be rented at very reasonable rates.

On the social side, there were nine regular evening meetings with a variety of illustrated talks by members and guests, and four special events. At the annual banquet in March Paddy Sherman was the speaker. The photographic competition was held in May. The Annual picnic, held at Ambleside in August, was somewhat marred by poor weather. Owing to the lack of a Section cabin the Halloween and New Year's Eve parties were held in the homes of Jean Rennie and Murray Harris.

A new venture for the Section has been the staking of a lot at Alta Lake adjacent to the new ski development at Whistler Mountain. This followed many discussions and much searching for a suitable location for a cabin site. The staking is merely a preliminary step, and no definite building plans have been made as yet.

Victoria Section

During the earlier part of this year parties went ski-touring on Mt Baker and climbing on Hurricane Ridge in the Olympics. We also climbed Mt Todd off the Port Renfrew Road, and Mt. Whympet, in the Cowichan Lake area.

Some members belong to other climbing groups, and participate in their activities, as well as enjoying unscheduled outings.

Various people— W. E. M. Mitchell, Bill Lash, Ted Goodall, Dudley Godfrey and Paddy Sherman—have been here, there, and everywhere; and Paddy Sherman has published his book about mountains and climbers, "Cloud Walkers"

Mike Penn and Fred Crickard were up on Mt. Arrowsmith, and Syd Watts and Pat Guilbride went with other climbers up Victoria Peak.

Preparation Of Index To Volumes 1-49 Of The Canadian Alpine Journal

With reference to the proposed Index to The Canadian Alpine Journal volumes covering the years 1906 to 1965, mentioned in the obituary of Major Tweedy (1965 Journal, page 210) and also in the Minutes of the Annual Meeting of 1965 in this present volume, a committee was formed consisting of Eric Brooks (Chairman), Neal Carter and Elizabeth Walker, to proceed with the work.

Upon examination of the material compiled by Major Tweedy, it was found that his method was not suitable for the present, being far too detailed, and also that the typed sheets he had prepared from his cards were not in a form suitable for the printer. This material covered the years 1906 to 1958 and to bring it into shape would prove almost impossible; so it was regretfully decided to have an entirely new Index prepared and place the Tweedy material in archives of the Club.

To this end Frank Smith, an old member of the Club who is familiar with its activities from its inception, was called in, and after an examination of the Tweedy material agreed with the findings of the Committee. Mr. Smith thereupon made a study of the whole question and submitted a plan to the Committee, which was approved, so he accordingly started in October 1965 to compile a completely new Index. The work has proceeded satisfactorily and with this issue of the Journal it is possible to complete the cards up to the end of 1965, and place them in shape to proceed with the typing of copy for the printer. This will be done as quickly as possible and it is hoped that by the end of this year all type will have been set and the actual printing of the Index will have progressed so that it may be issued either late in 1966 or very early in 1967.

OBITUARIES

Dr. Anne Norrington 1876-1965

Dr. Anne Norrington, a life member of the A.C.C., who was born at Exeter, Devon, England, in July 1876, died in Victoria, B.C., in her 90th year on October 31, 1965.

Dr. Norrington's early studies were completed in England and after teaching in Exeter she went to Jamaica in 1904, where she taught for four years, then in 1908 she came to Canada to teach at Havergal College, Toronto. In 1917 she obtained her B.Sc. at the University of Manitoba and had the honour of being the first woman to graduate from the University with that degree. Later she obtained her Ph.D. at the University of Chicago.

She spent many years teaching in the Western Provinces, including five years at the University of Alberta while doing research work, and she also taught for two summer sessions at the Biological Station of the University of Washington. Due to her extensive work in botany, Dr. Norrington was always a keen observer of alpine flora and during her time spent in the Kootenays she made a study of the flowers of the Kokanee Glacier Park, and an illustrated article on these flowers was published in the National Geographic Magazine.

It was in 1914 that Dr. Norrington attended her first A.C.C. camp in the Yoho Valley and became a life member. She graduated on Mt. President under the leadership of Ernst Feuz. In all, she attended six Club camps and had outings with the Nelson Mountaineers, and in the Cascades with the Washington Mountaineers. During her life Dr. Norrington travelled a great deal and she was always intensely interested in the distinct lines of flowers growing at different levels in the mountains.

On retirement Dr. Norrington made her home at her summer cottage in Crescent Bay, near Nelson, B.C. and spent the winters in Victoria, but in her later years she resided permanently in Victoria. Up to her last year she was very interested in the activities of the newly formed Kootenay Section of the Alpine Club, as she herself had been active in that area in the twenties with the Kokanee Mountaineering Club.

Our sincere sympathy is extended to Dr. Norrington's surviving sisters, brother, and family.

M.G.

Stella Shopland 1906-1965

With the passing of Stella Shopland in the spring of 1965 the Club has lost a member who enjoyed to the full climbing and the people she climbed with. The most distinctive feature about being in the mountains with Stella was that she shared her wonderful enjoyment with her companions.

She first went climbing with the B. C. Mountaineers about thirty years ago. A little later she was a member of a group of librarians who shared a cabin on Hollyburn Ridge. She became an active member of the Alpine Club in 1946 and attended the 1947 Camp at Glacier, the 1949 Freshfield Camp, the 1953 Scott Glacier Camp and the 1956 Anniversary Camp at Glacier. In July 1951, she was a member of a Vancouver party that flew in to Taseko Lake to make an ascent of Mount Monmouth.

For a number of years she enjoyed outings with the Vancouver Section, and the writer still remembers with amusement her remarks one morning as she proceeded a cheval around the Crater Rim of Crown Mountain. She also livened up many a workbee at the old Seymour Cabin.

She served the Section as Secretary from 1950 to 1952.

Stella introduced many young people to the mountains, and most recently had two young nephews with her on the ski slopes.

She trained as a librarian at the Library School of the University of Toronto, and later completed requirements for a B.A.(U.B.C), and an M.A.(University of Washington) in working towards a doctorate in literature.

Formanyyears she was librarian and instructor in Children's Literature at the Vancouver Normal School. When the Normal School became part of the College of Education she continued as a member of the faculty. Many teachers in British Columbia remember with affection their instruction in her specialty, Children's Literature. A Memorial Fund, which is to be used for student assistance, was established by her friends at U.B.C. to commemorate her long service to students.

M.F.

Evelyn C. Smith

Miss Evelyn C. Smith arrived in Calgary in 1906 from her home in New Brunswick and soon after became associated with members of the newly formed Alpine Club of Canada in that city. As a result she attended the Annual Camp in Rogers Pass in 1908, graduating on Mt. Rogers and also becoming a Life Member.

With the advent of ski-mountaineering, the transportation of climbers and supplies by airplane and helicopter to distant heights, the mechanization of rock climbing and the modernization of clothing, equipment and supplies, it is hard to realize that only a scant sixty years ago when the A.C.C. was organized, mountaineering was a much less complicated business than it is today. Then, it was only necessary to add to one's everyday apparel a pair of nailed boots, a pack bag and some supplies, to make it possible to sally forth into the wilderness and pick off the odd first ascent, while the Club camps were more or less primitive in their facilities.

While at the Rogers Pass Camp Miss Smith became well acquainted with Mr. Mitchell, then Secretary-Treasurer, and was able to assist him in the clerical work required, which assistance she continued to render at successive camps. She also acted as hostess at the Banff Club House on several occasions.

She moved to Vancouver to live in 1912 and joined the Vancouver Section, of which she

became Secretary for the years 1916, 1917 and 1918 under the Chairmanship of B. S. Darling and the Rev. A. F. I. Sovereign. She took part in all Section activities but later confined her climbing to private parties on weekends, finally ceasing to attend the Annual Camps. She was a well known figure at Section meetings, then held in private homes, and being of a quiet, friendly nature gained many friends. In later years she severed her connection with the Section, so that the present generation of climbers never knew her, but she continued her interest in the mountains and mountaineers until her death on June 6th, 1965.

She is survived by a sister, Mrs. Dorothy McKnight of Vancouver.

Thus passes a true mountaineer, who, in her quiet way did her best to forward the work of the A.C.C. in its early stages and one who, above all, loved the beauties of the mountain scene, far from the stress of modern city life.

F.S.

Poul Nielsen 1930-1966

Poul Nielsen was born March 26, 1930, in Copenhagen, Denmark. He was the oldest of five children, three brothers and a sister. He completed his education in Copenhagen to University entrance, then decided to join the Danish Government Weather Bureau, where he gained firsthand knowledge in mapping, meteorology and outdoor life.

In October 1956 he convinced a younger brother that they should leave the country to seek a brighter future in Canada. They came straight to British Columbia, where they found jobs immediately. Poul joined the Vancouver Section of the Alpine Club of Canada early in 1957, as he obviously had fallen in love with British Columbia's great outdoors. His appetite for hiking, climbing and skiing was so enormous that he established an unusual record of activities. He had been up Mt. Seymour, to mention one particular mountain, over sixty times. It is impossible, however, to give an account of his outings according to his diary, which reveals an almost complete coverage from the Cascades to the Coast Ranges and the attendance at several camps in the Rockies as well as other areas.

Remarkable achievements were, according to *The Climbers Guide to the Coastal Ranges of British Columbia*, p. 128, a first ascent or traverse of the, southeast ridge (route 2) to Mt. Dione with John Owen in 1959 as well as his participation in the Mt. McKinley Expedition of 1963. He was Climbing Chairman of the Vancouver Section for 1962; an active member of the Mountain Rescue Group and a devoted editor of its Bulletin; a very enthusiastic leader of the Youth Group and a successful leader of the Vancouver Section. Poul has rendered an outstanding service to these organisations for which we owe him a great deal.

While on a ski trip in the Mt. Baker area on February 9, 1966, Poul was a little ahead of his companions when a snow avalanche buried him.

In recognition of Poul's good fellowship and work a small shelter bearing his name will be erected at the Serratus-Dione Col. Those who knew Poul well cannot dismiss a feeling of sadness. Why had it to be him, a young and very likeable friend, a good and helpful companion, an experienced climber and skier and true member of the Alpine Club. Our sympathy is extended to his brother Jorgen and brothers, sister and parents in Denmark.

N.S.



Poul Nielsen

Roger Sherman Whitney 1905-1965

On July 21, 1965, Dr. Roger S. Whitney, an active member of the Swiss Alpine Club, The American Alpine Club, and the Alpine Club of Canada since 1932, was killed in a climbing accident on Mt. Ranapalca in Peru, when he slipped on the descent of a steep snow slope at 19,300 feet.

Born on Long Island in 1905, he went to school in Switzerland from 1921-23, where he got a life-long passion for the mountains and learned young the lore and skill that made him a superb climber. A graduate of Yale College and of Harvard Medical School in 1932, he set up his medical practice in Colorado Springs, where he had always grand mountains at his door. In the dark days of 1941, he went to Britain to join the Emergency Medical Service and then transferred in 1942 to the Medical Corps of the United States, serving in Europe until 1945. He then returned to his practice in Colorado.

He came first to the Alpine Club at Glacier Camp in 1932. After the camp, he was a member of a joyous party climbing from Lake O'Hara. At that time, he led on the most difficult pitch on the first ascent of the Watch Tower. At the Assiniboine Camp in 1935, he led the daring team of doctors who so spectacularly lowered the injured Charley Woodsworth down the snow and ice slopes of that mountain to make possible his remarkable recovery from what seemed almost certainly a crippling accident. Following camp he went again that year to Lake O'Hara and found an alternative and more elegant route up the Watch Tower. War and various duties and distractions prevented him from returning until the Elk Lake Camp in 1964, where he and the writer renewed a friendship after thirty years.

His sureness, skill and grace as a climber were an education and a delight to companions in the Swiss Alps, in the Selkirks and the Rockies, in the Tetons and Olympics and in Alaska. The mountains always released springs of gaiety in him.. His high spirits sustained the weary just as his resourcefulness surmounted forbidding difficulties. His calculation of what would go without crossing the fane margin of safety was unerring. If there was any miscalculation at the end his friends know that it lay in misjudging the toll of the years and not in any mistake in the mountain craft he knew so well.

J.A.C.

BOOK REVIEWS

Cloud Walkers

By Paddy Sherman, Toronto: Macmillan of Canada, 1965. 161 pp. \$4.95.

Considering the mountainous nature of most of B.C. and the Yukon, it is remarkable how little has been done to acquaint the general public with these mountains and the people who frequent them. Consequently, fascinating tales of adventure, triumph, failure and sometimes of tragedy lie nearly forgotten in newspaper files or in back issues of the Alpine Journal. Meanwhile the average reader—and perhaps the average member of the Club—does his vicarious mountaineering in Nepal, Switzerland or Peru, all unaware of the real-life dramas that have occurred on his doorstep.

For such readers it is fortunate that one member of this Club has now collected and published the narratives of some of these adventures. The result is neither a mountain anthology nor merely another volume of personal memoirs but a novel combination of both, a varied selection of alpine incidents retold in the light of the author's knowledge of the ground and frequently of his own participation.

The adventures chronicled range from Rev. Kinney's controversial near-ascent of Mt. Robson through the Homeric saga of the 1925 Mt. Logan expedition to the B.C. Centennial climb of Mt. Fairweather in 1958. This last expedition very nearly ended in disaster long after its members thought all dangers were behind them. Also included is an account of the accident on Mt. Howson, in which Rex Gibson, then the President of the Club, lost his life.

The sub-title "Six climbs on Major Canadian Peaks" does somewhat less than justice to the scope of the book. It is not primarily about climbing per se, and the addict will look in vain for details of the number of pitons driven or the exact length and angle of each lead. Rather it concerns itself with the mountains themselves and with the men and women who seek them out. Again, Mt. Fairweather, rising from tidewater in an unbroken sweep of nearly three vertical miles, is unquestionably a "Major" peak, but a Canadian one mostly by courtesy since over three quarters

of it, including the entire route of ascent, is in Alaska. Mts. Seymour and Slesse on the other hand scarcely qualify as major peaks by any standards and the climbing reported in the chapters dealing with them was only incidental to more serious business.

Occasionally the author's zeal as a journalist overrides the reticence of the mountaineer and one wonders if it was really necessary to include the names and home towns of all the boys involved in the disaster of a few years ago on Mt. Temple. These however are minor complaints. On the whole it is both a fascinating story and a valuable record. On reaching the last page the reader, be he layman or expert, can expect to wish there were more.

I.B.K.

A Climber's Guide to the Coastal Ranges of British Columbia.

By Dick Culbert. Vancouver, Alpine Club of Canada, 1965. 312 pp., 8 map inserts, \$4.50. (Available from the Secretary-Treasurer, Mr. W. C. Ledingham, 2974 W. 28th Ave., Vancouver 8, B.C. Please add 23 cents Social Security Tax to all orders originating in B.C.)

This new guide book covers the ranges between the Pacific Coast and the plateau country of Interior British Columbia, starting from the International. Boundary and extending northwards to the Nass River. A short section on Vancouver Island is also included. All told this amounts to approximately 25,000 square miles of mountainous country, of which less than 10% could be called "explored". The guide starts, rather significantly, with a description of the several routes up Siwash Rock, a 40-foot pinnacle in Vancouver's Stanley Park, and ends with a four-line paragraph about the western half of the Nass Range, covering an area of roughly 1,000 square miles.

The first half of the book deals with mountains that are generally within the range of weekend trips from Vancouver. The frustrations of climbing out of Vancouver are manifold: wasting good days trying to untangle a confused system of logging roads, chasing after gate keys, or spending evenings on the telephone attempting to locate the one and only person who just might know where a certain old mining trail starts. The new guide with its carefully researched notes on general access into the various climbing areas will eliminate much of this. The descriptions of the climbs themselves are necessarily somewhat short but adequate for anyone with a little experience in route finding.

The second half of the book deals with the remaining 90% of the Coast Mountains. This change of scale naturally affects the type of coverage that can be provided in 150 pages. Most climbing trips into these areas should be, and generally are, preceded by fairly extensive home work involving the study of maps and air photos and checking of references. The guide provides an excellent starting point for this work with summaries of the general access possibilities, brief descriptions and complete references on the routes that have been followed by earlier parties, and the occasional note on worthwhile virgin peaks. The eight inserted sketch maps provide the information that is consistently lacking on the topographic maps of the area, namely peaks and trails in correct location. The 16 pages of "Introduction" contain the general information that anyone with plans for climbing in the Coast Mountains should have. Matters such as air photo coverage, maps and charter planes are also discussed.

A quick glance at the guide book will show that the lion's share of recent first ascents goes to Dick Culbert and to some of his helpers. No one could have been more qualified to write this Climber's Guide. To have started and successfully completed such a tremendous project will assure Dick Culbert the gratitude of present and future friends of the Coast Mountains.

R.K.

The Palliser Expedition: An Account of John Palliser's British North American Exploring Expedition, 1857-1860.

By Irene M. Spry, Toronto: The Macmillan Company of Canada Limited. 1964. 310 pp., maps, illus. \$7.50.

The history of Canadian mountaineering has tended to be occupied with the golden age at the turn of the century when most of the high peaks in the Canadian Rockies were first ascended. There have been few accounts available, other than those buried in the journals of fur traders, of the earlier attempts to pierce the barrier of the glistening mountains.

Amongst those who left an account of their attempt to break through this barricade was Captain John Palliser, leader of the British North American Exploring Expedition, 1857-1860. Sponsored by the British Colonial Office the mission of Palliser's expedition was to explore the region that stretched from Lake Superior to the Rocky Mountains, recording geographical data, examining possible transport routes and appraising the possibilities for future settlement.

The members of the expedition, all of whose names are commemorated in the nomenclature of the Canadian Rockies, were James Hector, geologist, naturalist and medical doctor; Thomas Blakiston, meteorological observer; John Sullivan, astronomical observer and secretary; Eugene Bourgeau, botanist; and John Palliser, leader.

The Report of his exploration, printed in 1863 as a government "blue book", has been comparatively rare. A typical government document consisting of a series of journals, detailed reports, and observations recorded by the various members of the expedition it is not easy to read. Mrs. Spry, using the report as a basis, has succeeded in her self appointed task of writing the popular book about this expedition that Palliser himself wanted to write.

The first half of the book covers the expedition's zigzagging progress from the Lake Superior wilderness across the almost empty prairie to Fort Edmonton. Not until July, 1858, did the party get its first view of the Shining Mountains.

The second half of the book, admittedly of more interest to the mountaineer, deals with the expedition's attempts to discover practicable routes through various passes. In 1858 Palliser found Kananaskis Pass and returned east through the North Kootenay Pass. The energetic Dr. Hector traversed Vermilion Pass and then crossed from Kootenay Valley to Beaverfoot River and descended the latter to the Kicking Horse River. He then went up the Bow River and crossed Bow Pass to the North Saskatchewan River. The touchy Blakiston, who divorced himself from the expedition, traversed the North and South Kootenay passes and on the return trip reached Waterton Lake. The following year Dr. Hector made a trip to Jasper House. Another trip later on in the year, through Howse Pass and into the Columbia River valley, ended in a maze of fallen timber and dense woods.

Mrs. Spry writes in an easy narrative style of the hardships and adventures a group of young, inexperienced men going through a strange country excerpts from the official Report are woven smoothly into her account. It is unfortunate that the maps have been bound into the book instead of being tipped in and then folded. This book is highly recommended for all Canadian mountaineering collections.

E.B.W.

Climbing Days.

By Dorothy Pilley (Mrs. I. A. Richards). 2nd rev. ed. London, Seeker & Warburg, 1965. 352 pp., illust. 42 shillings.

At the time of its original publication in 1935 *Climbing Days* received excellent reviews in the mountaineering periodicals with the reviewers commenting upon the author's ability to express the agonies and ecstasies of Alpine experiences. I have just finished reading the recently issued second revised edition and feel that previous reviewers correctly assessed the book "as a very good substitute for being in the act of climbing".

In the revision it is unfortunate that the few errors contained in the original were not corrected, such as Mt. Baker being wrongly attributed to the Coast Mountains rather than to the Cascades.

In an interesting preface entitled "Retrospection" Mrs. Richards comments upon the many changes in mountaineering since 1935. As one of the early members of the Pinnacle Club, a rock-climbing club for women, she takes pride in noting the achievements of women climbers such as Claude Kogan.

Ending in 1928 *Climbing Days* in reality only covers part of Mrs. Richards' experiences. Another volume telling about later expeditions to other ranges, more especially the Selkirks and the Bugaboos, would be welcomed. Mrs. Richards has been a member of the Alpine Club of Canada since 1940.

E.B.W.

Waterton Lakes National Park; lakes amid the mountains.

By David M. Baird. Ottawa, Queen's Printer, 1965. 95 pp. illus. maps. (Canadian Geological Survey. Miscellaneous Report No. 10) \$1.50.

Glacier and Mount Revelstoke National Parks, where rivers are born.

By David M. Baird. Ottawa, Queen's Printer, 1965. 104 pp. illus. maps. (Canadian Geological Survey. Miscellaneous Report No. 11) \$1.50.

These two titles continue the series being published by the Canadian Geological Survey to inform the traveller of what he is looking at in Canada's national parks. A short geological history of the area is given and then notes explain the views from individual lookouts and road stops. There are good photographs and an index in each.

Mountain Rescue Techniques.

By Wastl Mariner. English Edition translated by Otto T. Trott, M.D. and Kurt G. Beam. Innsbruck, Oesterreichischer Alpenverein, 1963. 200 pp. 117 sketches. Distributed in North America by The Mountaineers, Seattle, Wash. \$2.75.

From its early days the Austrian Alpine Club has advocated that mountaineers be trained in rescue work. In 1948 it published the first edition of what was to become a standard mountain rescue text throughout the mountaineering world. Since then the many revolutionary advances in rescue methods have necessitated a new edition. This English translation has been recognized as the official manual of the International Commission for Alpine Rescue.

The manual is divided into two parts: one dealing with summer rescues and the other with winter ones. A description of specialized rescue equipment is given as well as its use. Methods of

improvising rescue gear “on location” are also discussed. A useful chart of first aid principles is included. This manual should belong to all mountain rescue groups.

CORRECTIONS

Mt. Pambrun

At the conclusion of the article “Ascent of Mt. Pambrun” on pages 77-85 of the 1965 Journal appeared an editorial note referring to a book review “The Ascent of Mt. Lillian” on page 219 of that issue. The review implied that Mt. Lillian and Mt. Pambrun might be identical.

Mt. Lillian

Subsidiary N.W. peak of
Mt. Pambrun



C.J. Penn

Mt. Lillian From Summit Of Mt. Pambrun, Aug. 1964, Looking Roughly Northwest.

(The subsidiary peak just hides Lake Bonny Gem on slopes of next range beyond.)

We have heard from Mr. C. J. Penn, one of the party who made the described ascent of Mt. Pambrun, that they were aware of the reviewed booklet and that there is no doubt Mt. Pambrun is a separate mountain. Penn’s party are justified in claiming its first ascent. (See accompanying illustration.) —Editor.

Mt. Brennan

Following publication of the Alpine Note “Whitewater Basin—The First Ascent of Mt. Brennan (9514’)” on pages 137-138 of the 1965 Journal, we have been informed by Mr. C. J. Penn that he and Gerry Brown made a previous ascent in 1963 and found evidence of at least one earlier ascent, —Editor.