The Canadian Alpine Journal

PUBLISHED BY
THE ALPINE CLUB OF CANADA

1954

HEADQUARTERS
BANFF, ALBERTA

VOLUME XXXVII

THE

CANADIAN ALPINE JOURNAL

VOLUME XXXVII

1954

PUBLISHED BY

THE ALPINE CLUB OF CANADA

MAY, 1954

THE ALPINE CLUB OF CANADA

FOUNDED 1906—INCORPORATED 1909

AFFILIATED WITH "THE ALPINE CLUB",

AND THE LADIES ALPINE CLUB (ENGLAND)

OFFICERS, 1952-54

Honorary President
MAJOR-GENERAL W. W. FOSTER, C.M.G., D.S.O., (A.C),
Victoria, B.C.

Honorary Vice-Presidents
DONALD GORDON, C.M.G., Montreal, Que.
W. A. MATHER, Montreal, Que.

President
BRIGADIER SIR OLIVER WHEELER, M.C., (A.C.),
Vernon, B.C.

Vice-Presidents
J. F. BRETT, Montreal, Que.
R. J. CUTHBERTSON, Calgary, Alta.
CAPT. A. H. MacCARTHY, (A.C.), Annapolis, Md., U.S.A.

Honorary Secretary
F. H. SMITH, Vancouver, B.C.

Honorary Treasurer
R. B. RUSHWORTH, Calgary, Alta.

Honorary Auditor
W. T. READ, Regina, Sask.

Honorary Photographic Secretary
L. W. CHATWIN, Ottawa, Ont,

Secretary-Treasurer
L. C. WILSON, 1408 Gladstone Road, Calgary, Alta.

LOCAL SECTION OFFICERS

Victoria
A. W. LASH, Chairman
MISS M. THOMAS, 88 Moss Street, Secretary

Vancouver
I. B. KAY, Chairman
MISS G. L. SMITH, P.O. Box 316, Secretary

Calgary
M. K. MacGOUGAN, M.D., Chairman
MISS B. RICHARDSON, 1309- 15th Street, N.W., Secretary

Edmonton
E. HOPKINS, Chairman
MISS D. ADOLPH. 11520-95th Street, Secretary

Regina
W. T. READ, C.A., Chairman
MRS. A. DALGLEISH, 3154 Athol Street, Secretary

Winnipeg
H. A. V. GREEN, Chairman
MISS M. D. FLEMING, 1429 Wellington Crescent, Secretary

Ottawa
W. F. CHISHOLM, Chairman
MISS D. H. PECK, 234 Rideau Terrace, Secretary

Montreal
I. F. BRETT, Chairman
MISS E. HAMILTON, 3550 Peel Street, Secretary

New York
H. S. HALL. JR., A.C., Chairman
DR. F. F. GAEBELRIN, Stony Brook, Long Island, N.Y., Secretary

Chicago
DR. G. M. EVERETT, Chairman
E. C. PORTER, 164 N. Wacker Drive, Secretary

CANADIAN ALPINE JOURNAL

The Editor is not responsible for statements made or terms used
by contributors to the *Canadian Alpine Journal*

CONTENTS OF VOLUME XXXVII

CONTENTS OF VOLUME XXXVII *cont'd*

TABLE OF FIGURES VOLUME XXXVII

SPECIAL NOTE FOR THE CAJ DIGITAL EDITION: An oversized fold-out map, "Coast Range – Monarch Mt. & Snowside Mtn. Area," by J. L. Dudra, and an oversized fold-out photo, "Panorama from the Summit of Mount Kelvin," by P. Robinson, were included in the hardcopy version of the 1954 *Canadian Alpine Journal*. They are not included in this digital version due to size restrictions.

EDITORIAL COMMITTEE

MRS. DON MUNDAY .....Editor
H. E. SAMPSON .....Obituaries
P. SHERMAN .....Book Reviews
J. TARRANT.....Alpine Notes
E. R. GIBSON.....First Ascents
W. H. MATHEWS .....Scientific Section
J. S. HUDSON .....Advertising

Material for the Journal should be sent to Mrs. Don Munday, 373 Tempe Crescent, North Vancouver, B.C., Canada, or to any other member of the editorial committee by November 1st.

Members are urgently requested to assist by furnishing articles themselves or by informing the committee as to where articles might be procured.

Manuscripts should be typed with double spacing. *Photographs should be finished with glossy surface and on each photo there should be pasted a strip of paper bearing the caption and photographer's name.*

Copies of the past and current issues may be obtained from the Secretary-Treasurer, L. C. Wilson, 1408 Gladstone Road, Calgary, Alberta.

CANADIAN ALPINE JOURNAL

PUBLISHED BY
VOL. XXXVII THE ALPINE CLUB OF CANADA 1954

FOREWORD

In relinquishing my duties as President of the Alpine Club of Canada it would be proper for me to set down for the information of members some thoughts about the future in the light of the past four years. From the point of view of management of the Club the highlight of the past four years has been the steady and considerable rise in cost of establishing a summer camp due to increasing labour costs and increasing competition for the services of outfitters and packers. Not only are there more mountaineering and hiking clubs today who establish camps—at one time the Alpine Club of Canada was entirely alone in the field, and for many years this was so— but also there are many, many more tourists seeking to hire ponies, guides, etc., and there are many more fishing and hunting parties than there used to be. Finally, with Canada booming as it has been, jobs are so plentiful that the somewhat irksome job of packer, for a short period, is not too popular. The same applies to cooks, very hard to obtain for short periods even at sky-high prices. For four years I have been striving to get back to our old system of a contractor who does everything, including food supply; the closest I have been able to come, at one camp only, was a single contractor for everything except the actual supply of food, undertaken by the Club. For other camps it has perforce had to be the Club providing the food, hiring cooks and waiters or waitresses, and putting only the construction of the camp and the actual packing, in the hands of an outfitter. Even then, it has been necessary for old hands of the Club who have the knowledge, the time and the inclination, to do a very great deal of the construction work; for this task, a rather thankless one as is the management of the camp itself, the Club owes a great debt to Eric Brooks and Russ Cuthbertson. It must be remembered that all this work is entirely honorary—if work can be called honorary; anyhow, there is no payment for this work, except to the outfitter which as stated above has been steadily increasing each year. Each outfitter claims he makes insufficient profit, hence charges more, but I am afraid it is a question of what is a "sufficient profit". For reasons given above, we have little choice—take it or leave it is the cry today. As we have to clinch matters many months ahead in order to issue the Camp Circular by April, we mostly just have to take it—or do without a Camp.

Much of the reason for our heavy costs is our heavy camp. I mean heavy, literally. Everything will go nicely in a freight car—but it takes quite a few horses at a minimum of $2.00 per head per day, plus quite a few packers at the sky the limit to pack 25 miles or so, the contents of a freight car. It thus behooves us to consider whether, if we want to go 25 miles or so off the beaten track—pioneer in fact—we should not do one or both of two things, namely, drastically cut the weight of tentage and other stores where we do have pioneering camps, and/or cut such camps in number to about one-quarter of the total, in other years camping at well-known, near-by places easy to organize, easy to reach at minimum expense. Could we have more roads, more bridges, more trails; in other words, if we had more and better communications, the matter might

be different but, so far, I have been unable to persuade the authorities that the mountaineer is a real factor in Canadian mountain travel; eyes of those in authority are turned towards the tourist dollar, as I see the position. There is, indeed, some opposition even within this Club to improving communications in that it will put us more in sightseers' hands; I do not know that that happens in the Alps, more climbed than any mountain range in the world. Admittedly, the tourists in the centres there come and "gawp" at those crazy enough to mountaineer, but the mountaineer gets lots of climbing, just the same. There is also a difference here in that many insist on new ground, first ascents and so on. How many first ascents are available in the Alps today? New (and increasingly difficult, improving the standard) routes, yes; but new mountains, no. Sooner or later, we must come to this also; meantime, bush-whacking is preferred by many and we, the Club, suffer in consequence from lack of good leaders—we rely almost entirely on the good will of our members for this chore (it is a chore) and many are unwilling to come to places they know by heart, though will come readily enough to "new" regions. This is also a major problem of management, for we never know how many leaders we may have at any given camp. An Alpine camp without leaders would be as sorry a one as a camp without a campfire. We owe much to the Canadian Pacific Railway for assisting us in this respect with professional guides (as always was done before the last war) and at one camp for one of our very old friends and member, Edward Feuz.

It appeared to me, in 1950, that there were quite a lot of rather random "decisions" at the General Meeting to camp at this or that new place, without ever finding out if such were possible. For a summer camp of our size, ranging from 120 to 180 in camp at one time, there must be (apart from the matter of cost and sufficient leaders, sufficient climbing within reasonable reach of the MAIN CAMP. That is, unless we completely alter policy and have a relatively small headquarter camp (compare hotel base in Alps) and a number of outlying camps for the peaks, like Alpine Huts. But this, with volunteer labour, moving *in the period of their vacation* large quantities of stores to a high level camp is hardly a practical proposition; and there are no persons in the country of whom I am aware that can do this for us, even at considerable cost, for there are no guides, no porters, as there are in Europe and indeed Asia. Why, I do not know; but there are not. I suppose it is the "standard of living", lower in those countries than here so we are pricing ourselves out of the high-camp market. The end result was the initiation by me of "Camp Dossiers" and "Camp Recce Forms" setting out what information was required; and authority from the Executive Board to spend up to $500 on reconnaissance in a season, limited to $100 for a single recce.

However, the Board and the Club as a whole cooperated nobly in my contention that we must decide *at least one year in advance* and better two or even three, where succeeding camps should be. This implied reconnaissance in good and sufficient time. That this policy has paid dividends there can be no doubt—I mentioned earlier that to get a circular out in time, management must contact outfitters, etc., in about January of each year, and they are hard to come by, as are cooks. So we must know, early, where we are going. It has also paid dividends in "thank-yous" from those in authority (all of whom have their budgets to consider) in help with trails, bridges, road repairs and so on, though perhaps not (yet at any rate) in building roads to serve the mountaineer, who after all is also the pioneer, the forerunner of the tourist dollar. Many reconnaissances were made both on the ground and from air but for many reasons, mostly communications, only the one has been successful so far—the Hooker Icefield of 1953. The French Group failed because of too much dispersion of the climbing; the upper Chaba failed because of difficulty in crossing the Athabaska River. The Mt. Tsar region failed for lack of any trail whatever and the Bugaboos, mooted for the anniversary camp for 1956, will fail unless a certain company (now in the planning stage) puts the

road in order and allows us to use it. The Government has, at present, no intention of catering to the mere mountaineer in that region, and the road at this moment is in very bad condition indeed.

With the increase in all costs, it has been necessary to "up" subscriptions all round—the Journal costs more; now even postage is to be raised—and also to up the daily charges at the Clubhouse. But in particular, we have had to up, quite considerably, camp charges compared with say fifteen years ago. The reasons for this have perhaps been made clear in the foregoing—though it must be recognized that while the cost of camps has gone up nearly four times in that period, the charges have been no more than doubled. How long that can be maintained is doubtful; we tend to price ourselves out of the market, for each year we carry still more weight—overhead —around the mountains in establishing our luxurious camps; and each year there is more and more demand for more luxurious food. Enough there must indeed be, but it is at least questionable whether we should be quite as luxurious in the matter of carrying water and tin to camp, as we now are. There is the matter, food of a different kind, food for thought.

There is, too, the matter of tentage, of which we have acquired very little new, since the war, until 1953. Our tentage wears out—to some extent through desuetude, storage over most of the year rather than use—and has to be replaced; it is important now, to use tentage requiring minimum cutting of poles because it is becoming increasingly difficult to get the Parks and other Government authorities to permit the necessary cutting of trees to provide poles—which has been, not particularly with us but with all campers, grossly overdone in the past. As with so many other "unlimited" resources, we are finding that this resource with the increasingly heavy drain on it, this resource too is being cut almost to extinction. Not necessarily by us; but by the cumulation of clubs of our sort, now taking to the mountains. There was a time when game was supposed to be inexhaustible; similarly fish; perhaps there was misjudgment there. The same applies to our trees, for tent and other poles, in the mountains. It seems to be for us to give what lead we can to younger organizations by curbing indiscriminate cutting of poles, brush and so on. Above all to combat that terrible thing, FIRE. Reverting to tentage it is perhaps interesting to note (Plate 37 of "The Ascent of Everest" by Hunt) that the eaves overhang introduced in some of our new tentage is closely akin to the method used in the Everest tents; and also that one of the best known firms on this continent remarked "Why did we never think of that" when confronted with the verandah covering for the doors of bell tents, designed by me.

With air-lift what it now is, there is an increasing tendency to travel east instead of west—to the Alps, or even farther afield. The cost of transportation is little different from eastern Canada and U.S.A. to western Canada or to the Alps; the cost of living in the Alps is vastly less than in Canadian hotels or chalets, less perhaps even than in Camps of the A.C.C. In time, perhaps the trans-Atlantic journey is quicker. The problem is there; the solution, not so easy. Above all, there is very fine climbing in the Alps—no new peaks, but plenty of new routes for those ambitious enough to undertake them, in rock and snow conditions at least as good as we have; and little more than a rucksack is required, because of the huts stocked with provisions and with a caretaker—who, at a pinch, may also be guide. I mention this not to discourage those who like our camps, but to point up the problems that occur in maintaining our camps, at a standard and price that will attract. The problem is there, and is becoming increasingly there, and it has to be faced, if we are to survive. Today, we have very severe competition. With the air-lift it is indeed possible to do "winter" mountaineering in the antipodes—their summer, fine mountains.

On the other and much brighter side of the picture, is the fact that we alone run camps to transform graduating members to active members. No other club does that, as far as I am aware. I

think that we have done, and are doing, sterling work on this side of the picture. Our membership has much increased in these last few years and this is to no small extent due to the instruction we give, to the pleasure and camaraderie of our camps; we must keep up these camps making them as cheap as it is possible to do with present costs and maintain unbroken for many years yet our present record of (to 1953) 48 consecutive years during which has been held a summer camp of the Alpine Club of Canada. I believe that the Alpine Club of Canada perhaps does more than any Club in the world to encourage the budding mountaineer and I ask all our members to further this, one of our major aims, "The encouragement of mountain craft and the opening of new regions as national playgrounds."

Finally I cannot thank enough all those who have helped me and given me guidance during my four years as President: and I wish my successor all luck.

NORTH OF MONARCH

By John L. Dudra

The last unknown area in the Canadian Coast Range which has been largely ignored by mountaineers is situated north-west of Monarch Mt. (el. 11,720) and south of the headwaters of the small Bella Coola River tributaries. Generally speaking, the whole terrain is a plateau of approximately 7,500 ft. lying in a N.W.- S.E. direction, bordered by mountains. The northern half consist of rugged peaks and glaciers while the southern half consists of snowfields, a few large glaciers and an ice cap. Four hundred square miles of mountaineering region is too large an area to be overlooked for long, and this was no exception. An intriguing aspect is that on the topographical maps is shown a dark-brown coloured blank with the following notation: "Numerous Glaciers - Peaks 9,000 to 10,000 ft."

Henry S. Hall, Jr. and Hans Fuhrer were the first men to feast their eyes upon a portion of this remote plateau when they made a successful first ascent of Monarch Mt. in 1936. But besides the brief description of what they saw, nothing was known about this area. In later years, mountaineers contented themselves by climbing in the less remote parts of the coast range and shunned the plateau with its peaks because of the difficulty of approach which involved very long back-packs through brushy north coast valleys.

Finally, after lapse of 15 years, two other mountaineers were rewarded by a look at this unknown land, but this time from the north-west. Peter Schoening and I gazed in wonder at this huge plateau of glistening glaciers and snowfields when we made the first ascent of Mt. Saugstad. Sharp granite mountains of coast range structure rose in glittering splendour captivating our gaze as we perched on the summit scanning the south-east horizon.

One very interesting object which centered our interest was what appeared to be a body of water dammed up by a glacier. The lake appeared to be in a pass or a very high valley, and at once speculation started about whether or not a plane could land on it. An aircraft landing would save many days of relaying supplies.

After returning to civilization, we set about locating maps which would show more detail of the area. Our main quest was the location of the lake or some prominent feature, but no maps could be found which had this information. After two years, I procured a sizable stack of government air photographs and from these I compiled a map which seemed reasonably accurate until compass bearings were taken and tied in to rectify any errors made from the airphotos. The next difficult task was to convince sceptical air-line companies that an aircraft could land and take off after discharging the climbers. With this done the open road to the "Promised Land" would be ours. All wrinkles iron themselves out in due time provided enough persistence and pressure is exerted upon them. So it was with ours.

On the evening of July 2, 1953 at 6 p.m. a Beaver with four climbers, 500 lbs. of supplies and gear, took off from Bella Coola bound for the mysterious lake. The weather was unsettled, with a 9,000 ft. ceiling of heavy cloud obscuring the summits of the mountains, but the flight went well. Flying low over the huge glacier in the pass, water came into view, beautiful, green glaciated water, two miles long — ample length to take off a Stranraer. We banked sharply, dropped, and the pontoons were knifing the surface as the plane settled in the water, bringing two years of scheming, hoping and planning to a reality.

My three expedition companions were members of the A.C.C. and exceptionally versatile

climbers. Fips Broda has had a lot of experience in the Alps and also climbed Elbruz in the Caucasus. Jack Atkinson, the official photographer and first-aid man, was also an excellent ice and snow climber and performed remarkably well on rock. Howard Rode had experience in the Selkirks, Cariboos and the local mountains near Vancouver.

Upon landing, all the supplies, except the air drop cans, were unloaded on a small sandy beach, where a fresh water creek flowed into the lake. Jack and Howard started establishing a camp while Fips and I took off in the aircraft to make an air drop further south. With the drop completed, the pilot brought us back to the lake, wished us luck and took off as sunset was approaching. By the chilly evening sun we took stock of our surroundings and checked the map over and over again. As was earlier surmised, the lake (Ape Lake, el. 4,555), is situated in a pass and drains into the Talchako River. Noeick River drains west of the pass while the glacier contributes to both watersheds by spreading to two sides at the snout. The location of the lake is ideal, as it affords a centralized camp for climbers into virgin territory in any one of the four directions.

Primary object of our expedition was to cover and explore as much of the area as time would allow, and climb a few peaks enroute. To accomplish the long treks between distant points, skis were included.

We packed enough food to last until we picked up the air drops and the rest was cached by the lake for future use. The plan was to reach the air drop and proceed south until a camp could be set up which would put us within striking distance of Monarch.

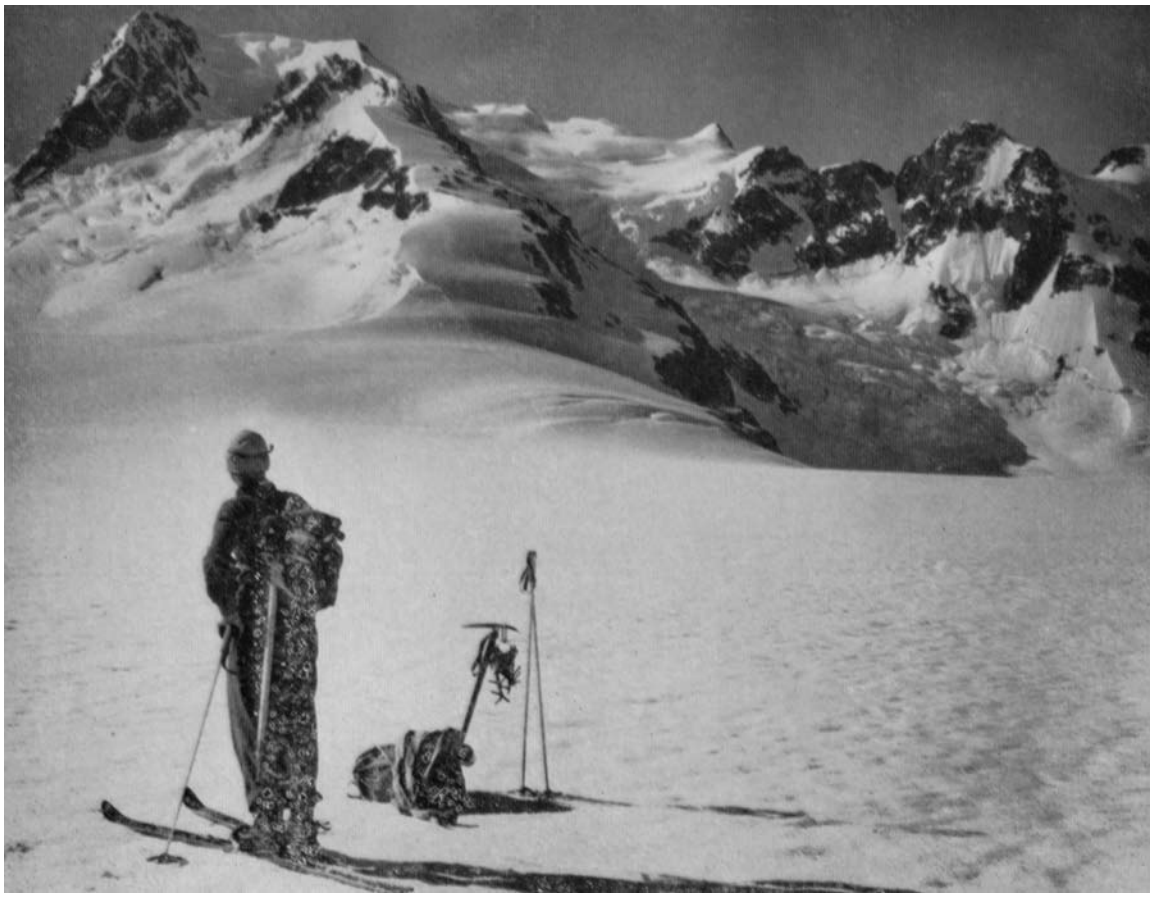
We followed a large moraine from the lake to the glacier above it, just below an ice fall that tumbles from the north flanks of Mt. Jacobsen. From there on skis and skins were used exclusively. Climbing slowly with heavy packs we followed the glacier to its névé fields near pass No. 1 (el. 7,995). On the south side of the pass, several magnificent peaks could be seen as well as two parallel snowfields leading to the ice cap.

A 2,000 ft. drop from the pass to the upper Jacobsen Glacier was a pleasant change from the continuous climbing. Crossing the glacier on skis did not present the hazards of breaking through a crevasse which normally threaten a foot party. After reaching the other side, Howard set up camp in a curious wind cirque near a rocky peak protruding from a glacier while the three of us went to recover the air drop supplies.

Next morning with everything divided for the advance and return, we broke camp and moved south-east towards the ice cap. In the evening, on a high rock outcrop overlooking the big expanse of snow and in full view of Monarch, we set up camp No. 3 (el. 8,100). This put us within a reasonable distance of Monarch and also of a fine glaciated peak directly south which we named "Princess Mt."

Four a.m. dawned cold and clear. After a warm breakfast we readied our packs and gear for the coming climb. Princess Mt. was the big effort for the day as a warm-up climb to Monarch. The trip to the base proved to be longer than expected due to underestimation of the wide expanse of snow.

In this area, to one who is not familiar with large glaciers and snow fields, distances become very deceiving until the scale makes itself known by the long trek one has to make. Our skis were left at the base of a large rib on the north side. A prominent spur ridge leading almost directly to the summit proved a good route. No difficulties were encountered, although near the top a 30-ft. overhanging cornice forced us to make a delicate traverse on the exposed south side. According to two aneroids which were in agreement, a rare occurrence, the elevation at the summit was 9,450 ft.

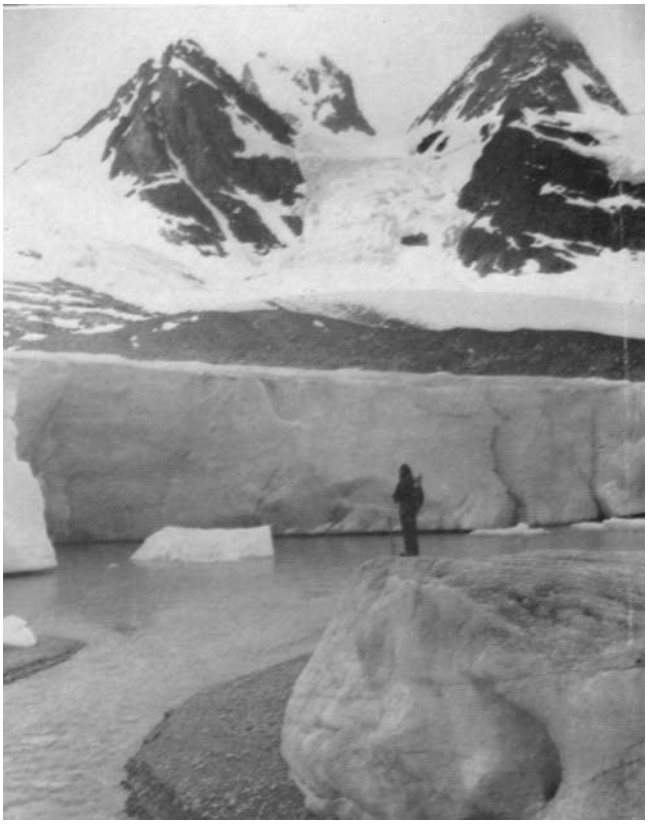


Near The Base Of Princess Mt.
Photo Jack Atkinson

Route lay up the prominent center ridge.

Icefall On Princess Mountain.
Photo Jack Atkinson

Ice Cliff Near The Lake. Mt. Jacobson In The Background.
Photo Jack Atkinson



SPECIAL NOTE FOR THE
CAJ DIGITAL EDITION

An oversized fold-out map, "Coast Range – Monarch Mt. & Snowside Mtn. Area," by J. L. Dudra, was included in the hardcopy version of the 1954 *Canadian Alpine Journal*. It is not included in this digital version due to size restrictions.

Back at camp No. 3 over hot soup, food and tea we concluded that the day's 20-mile ski trip with the climb was a fair accomplishment. Unfortunately, the preceding three days had been strenuous, due to constant pushing, and the hard pace began to show on the party. Rode had blistered feet, Atkinson was badly sunburned even though he took all necessary precautions, and Broda's feet resembled pieces of raw meat. Luckily, I escaped these annoyances. Not knowing how our strength would be by morning it was decided to wait until then before making definite plans. During the night Atkinson's lips swelled to unbelievable proportions. To risk further aggravating them seemed foolhardy. Rode also thought that he would be unable to walk for a few days.

Not wishing to sacrifice our chance for Monarch by a delay, in case weather turned bad, Broda doctored up his feet with salve and yards of tape and insisted he was well enough to go. We made up packs for two days—intending to bivouac the night out—donned our skis and started out at 1 a.m.

Immediately west of Monarch two parallel glaciers flowing north into Talchako Glacier and separated by a large rocky rib, offered a good route to reach Monarch's west face. Half-way up the west glacier a low point on the rib enabled us to cross over to the eastern glacier which flows alongside the western face. We crossed a bergschrund below the ridge on a convenient snow ridge which seemed a little shaky but bore our weight. From this point with the aid of field glasses we had a close look at the huge western wall we hoped to climb. On the left of the main face an excessively steep ice fall was unanimously rejected, whereas on the far right, 3,000 ft. vertical walls were also out of the question. A route finally selected as practicable wound up the centre face to a large buttress; above this, to a snow filled couloir, and then to a big snow field on the upper half of the face. The summit ridge would have to be gained at some low point. After making a rough sketch of the route we descended to the névé pass separating Page Mt. from Monarch.

Page Mt. is a steep pinnacle, the highest point of the rocky rib we crossed. We named it because of its proud stance at the foot of Monarch. This bold tower fired our interest at first sight and now that we were in its shadow with time to spare there was no reason why we should not climb it.

We left our packs at the pass and taking only necessary equipment started out for the tower. The climb proved very interesting, a combination of rock both good and bad with ice and snow. From the summit (calculated el. 9,650) we enjoyed a view of Waddington, Silverthrone, Princess and a host of unnamed lesser peaks to the south. This viewpoint also offered an excellent angle from which to study the west face of Monarch. There seemed no doubt in our minds as to the choice of routes. The centre face looked to be the only practical way up.

Back at the pass we shouldered our packs, and started up towards the summit of Monarch. We intended to climb as high as possible on the base snow slopes, then leave the skis and proceed on foot until a reasonable bivouac place was found. With the end of the day drawing closer, Fips finally discovered a small flat protected rocky perch, large enough to accommodate two prostrate bodies for the night. Two pitons were driven and some sling rope used to discourage nocturnal wanderings to the steep slopes 50 ft. below.

The night passed in reasonable comfort and we had breakfast at 4:30 a.m. Soon afterwards stiff boots, muscles and joints were creaking upward to the sun's rays near the top. Climbing was comparatively easy to the buttress. From there verglassed rock became more evident until it resembled a nearly vertical ice rink. A knife edge of ice connecting the top of the buttress with the side of the great couloir presented a classic example of crampon straddling and belaying until our ankles ached. Not daring to enter the couloir, which funnels avalanches from the snow field

above, we remained on its left side, climbing on rock as much as possible. What appeared to be a snowfield below the rock ridge was in reality a huge slab of ice disguised with restless snow upon it, the latter ready to start seeking lower elevations at a moment's notice. Much time was lost on many belays up this slope until firm rock was reached below the ridge. Travelling along the serrated ridge we could not detect where our route joined the one used by Mr. Hall on the first ascent. But from photographs it was evident that the two were the same on the last part of the ridge climb to the summit. The summit, a very small snow covered dome, was reached at 1:30 p.m. with weather conditions ideal.

Blessed with luck, we thoroughly enjoyed the beautiful scenery of wonderful mountain country around us. In the south Waddington and its satellites were very clear, as were the sharp Bella Coola mountains to the north. The ice cap stretched out to the north-west bordered by many imposing mountains which gleamed with the light shed by the sun upon their glittering coats of ice and snow. It was unpleasant to think of leaving this panoramic view but with the mid-day heat softening the snow a start down had to be made.

The big snow field was treacherous, with water running on the surface of the ice. Ideal avalanche conditions prevailed as was quite evident from the booming cannonades all around us. Several rappels, one of 120 ft., were required to descend the buttress. The bivouac site was reached at 8:00 p.m. and with our belongings gathered we started down to our skis. By this time the snow had hardened, giving us a very fast run to the glacier below. In fading light we reached the site of the bergschrund bridge below the intervening ridge only to find it gone. The heat of the day made it collapse and its remains could be seen in the gaping hole below. This compelled us to descend part way into the bergschrund and then climb 40 vertical feet of snow to the upper lip. From here, with the aid of the climbing rope, we pulled up the skis and packs. By the time we were ready to proceed, the last rays of the sun disappeared.

Travelling at night proved easier than we had anticipated. Visibility by snow light permitted us to travel without carbide lamps while the cold forbade frequent stops. We maintained a furious pace over the frozen snow with only one thought in mind—to reach camp No. 3 as soon as possible. As we neared the rocky outcrop on which the camp was situated, Broda began yodelling at intervals to let Atkinson and Rode know that two weary donkeys were coming home to rest.

At 1:45 a.m., weary and cold, we stumbled into the tent after 21 hours of continuous moving. Over cups of hot cocoa prepared by Atkinson, we recited the story of the climbs and crawled into our sleeping bags.

The next morning we decided to move camp back and pick up the remainder of the air-drop supplies. The overall plan was to climb Mt. Jacobsen on our way back, pick up more supplies at the lake and make an all-out effort to climb Snowside Mt. As we neared the airdrop site the weather grew sullen and soon great clouds obscured the mountains. Then the storm broke upon us. We were forced to set the tent up in a crevasse for wind protection and spent a damp night cursing all makers of mountaineering tents.

By morning the weather had improved and while drying wet garments we contemplated our next move. After breakfast Rode, who still complained of not feeling well, left for the lake camp while the three of us removed all the supplies from the airdrop tins. After everything was packed we started back-across upper Jacobsen Glacier to the first pass on the flanks of Mt. Jacobsen. In the evening with the weather clear, we studied the walls of Mt. Jacobsen, towering above our camp. They looked to be very steep, exposed and clearly not the sort of a thing one wants to climb in the heart of the Coast Range. All the more feasible routes lay on the other side but we were reluctant to

lose altitude, not to mention the time in order to reach them. Therefore the west wall it would be.

On the morning of July 11, thoroughly rested, the three of us started up. The rock was exceedingly steep and exposure severe on many pitches. In one of the numerous chimneys we had a narrow escape when the rope dislodged a loose rock from a chock stone. A good portion of the climb up to the ridge was a stiff grade 4. Above this we unroped and scrambled onto the summit.

The ascent consumed a lot of time, so rather than return the way we had come, we chose to descend via the steep hanging glacier on the south side, traverse around the edge of the wall and climb back up to camp. As we neared the bottom, a roar of an avalanche filled the air and seconds later tons of ice and snow came into view hurtling down the slopes of the east peak of Mt. Jacobsen. The hanging glacier was an unhealthy road, but it was considerably faster.

Back in camp we ate a good supper, packed up and started down in the general direction of the lake. We intended to cache part of the equipment on a rock outcrop, go to the lake for more supplies and on the return trip next day pick up the cache and go on to Snowside Mt.

After running down on skis for 10 minutes one of the party called an abrupt halt and in picturesque and descriptive language informed us that he had left "Excalibur", his ice axe at the last camp site. Since we were on skis, the ice axes were carried in the packs and a predicament of this sort was easily understood. Leaving his pack he set out and it was almost dark before he reappeared. We arrived at the lake camp at 12:30 and using all of Rode's stockpiled firewood, a blaze was set, pots filled with clear water and a feast started that lasted until 3:30 a.m.

In the morning a dip in the lake amid small ice bergs made some of us feel human again. Water on the snow camps is a scarce item and we took full advantage of this luxury to compensate for the days we went unwashed. After breakfast we packed the supplies, bade Rode goodbye, and started up for the cache.

The weather had been getting worse steadily. Two hours after we left the lake it finally broke. First rain, then wind and sleet mixed with snow drove at us until our packs were covered with ice. It turned bitterly cold while the wind kept rising in velocity. At the cache, in a shrieking gale, a rocky hollow big enough to accommodate the tent was discovered. Here we pitched camp and sat up all night taking turns supporting the tent pole. Outside, guy ropes whipped like violin strings.

We did not know the official wind velocity but we are convinced that but for the protection of the hollow, the tent, though made of good material, would have gone in shreds. Storm-bound for 36 hours we played chess, sang, blew on a harmonica and drained the last drop of brandy from our modest jug. This loss of time eliminated any possibility of an attempt on Snowside Mt. Throughout the whole trip my first and greatest desire had been to climb this captivating peak, but now all I could do was look upon its walls, encrusted in a blanket of fresh snow and vow to return to try my luck.

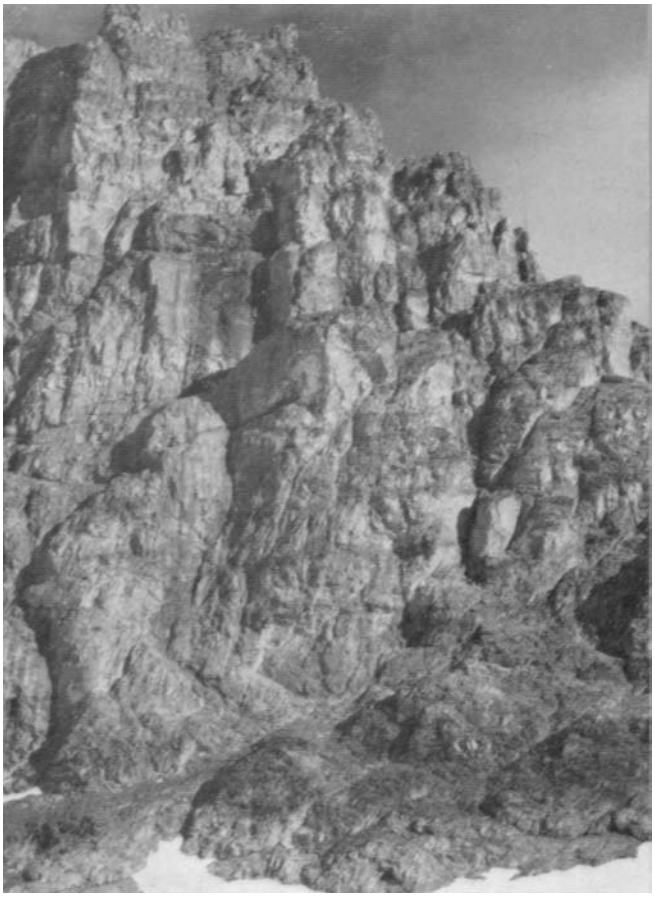
On the way down the glacier we cached our skis under a huge boulder for future use because to carry them out was a prohibitive thought. Rode was waiting for us at the head of Noeick River with news that he had brought over the remainder of our supplies from the lake.

Next morning in swirling fog we started uphill, bound for the pass at the head of Noosatsum River watershed. Behind us lay a wonderful land, full of enchanted peaks, truly a marvel of nature—while ahead waited the deep gloomy gorges of the upper Noosatsum. For four days memories of the ice and rock land left behind kept us going through places only people knowing coast mountains could visualize, until finally our tricounis hit the road gravel of the Bella Coola valley.

The expedition had been a marvellous experience in unexplored country where mountains

Climbers Resting On Mt. Jacobson.
Photo Jack Atkinson

Jacobson neve fields on left.



West Face Of Mt. Jacobson.
Photo Jack Atkinson

Route lay on right skyline then up center face.

Between Airdrop And Camp 3.
Photo Jack Atkinson

Unnamed virgin peak in the distance.

Mt Monarch And Page As Seen From Camp 3.
Photo Jack Atkinson

stand second to none in ruggedness and beauty while memories of glaciers keep one's thoughts busy with a pleasant past.

Some of us will definitely return to this unforgettable area, to feast our eyes on the beauties of its mountains and to try our luck on Snowside and other peaks. One thing is certain— come what may, on the outgoing trip an aircraft will replace the waterfalls of a mad mountain river for me.

INTRODUCTORY NOTES ON THE MT. GOOD HOPE AREA

By Neal M. Carter, F.R.G.S.

Chilko Lake, 41 miles long, lies roughly south-to-north at an altitude of 3840 feet just north of the 51st parallel and west of the 124th meridian in British Columbia. Its head is enshadowed by rugged glaciated peaks straddling the Coast Range Divide; its waters emerge from between the gentler sloping Interior foothills of the Range as the Chilko River, flowing north-west onto the Chilcotin Plateau to merge with the Chilcotin River that continues across the Plateau finally to join the Fraser River.

Some 13 miles from the upper end of the lake its only branch, Franklyn Arm, reaches out for 6 miles to the south-west towards the Divide. In the angle between rises Mt. Good Hope, 10,632 feet, the highest peak within a radius of 20 miles and with the exception of Mt. Queen Bess (10,700 feet), the highest between the Mt. Waddington region and Vancouver.

Six to eight miles south of Mt. Good Hope several high peaks in a heavily glaciated area, presumably unclimbed and not mapped in detail, invited the attention of several members of the Vancouver Section of the Alpine Club of Canada who had seen this area in recent years from the air and during climbs in the vicinity[1]. Armed with the following information concerning earlier travel in the area, with numerous air photos and a large scale map plotted therefrom by one of the party, plans were laid to visit Mt. Good Hope and its satellites to the south during the latter part of July, 1953.

The high snow or glacier passes south of the head of Chilko Lake and Franklyn Arm did not deter occasional trade between Interior and Coastal tribes of British Columbia Indians. William Downie, in a report to the British Columbia Government on his August 1861 exploration from the head of Bute Inlet part way up the Southgate River that rises only 4 miles south of the head of Franklyn Arm, mentions that Indians described the trail he followed as extending up the Southgate to its head and beyond, presumably to Chilko Lake; Dr. Malcolm Goddard in 1912 remarked[2] that "Indians cross a pass from Chilko Lake and come to Bute Inlet in three days, but from what I have seen of both ends of this route it would not be a pleasure trip for a white man." Nevertheless, Goddard also mentions that some 20 years earlier (i.e. about 1902) a white man took twenty horses from the head of Franklyn Arm, up Deschamps Creek and over a crevassed glacier on the Coast Range Divide at its head, and thence down the Southgate River.

Indians, however, like the white prospectors, trappers and hunters who undoubtedly visited this area from time to time, had little desire to scale the higher peaks. Nor had Stanley Smith, who in 1893 undertook for the British Columbia Provincial Police a search for two men unreported for over a year after leaving Howe Sound for the Chilcotin to prospect a railway route through the Coast Range. Smith and his companion left on their search from Squamish on July 26, 1893, and proceeded up the Squamish River headed for Chilko Lake. Their report of their route through the intervening mountainous and heavily glaciated regions, then practically unmapped and unknown, is rather vague; but Munday's[3] interpretation of it, plus the present writer's later study of aerial photos, indicate a remarkably direct though arduous journey over a glacier pass to a tributary of the

1 "The Tchaikazati Story", C. A. J., 1952, pp. 102-109. "The Southgate Adventure", C. A. J., 1953, pp. 105-114.

2 "The mountains of Lake Chilko", C. A. J., 1913, pp. 20-33.

3 "Stanley Smith's Travels in the Coast Mountains, 1893", C. A. J., 1940, pp. 159-169.

Toba River, to the head of the Toba, across more glaciers to the Bishop River, thence over the Coast Range Divide. They reached Chilko Lake on September 13. The missing men were not located

The pastime of cairn-building on summits of the peaks about the head of Chilko Lake appears not to have commenced before 1912. In that year Goddard[4], accompanied by an Indian named Kese, approached Chilko Lake from the Interior by packhorse and made a leisurely circuit of the lake by Indian dugout canoe. Their climbing excursions during July resulted in the first recorded ascents of Mts. Goddard, Chilko, Merriam, and a high peak about a mile to the north-west of Mt. Merriam. In mapping the vicinity, Goddard remarked (of the present Mt. Good Hope, which they did not climb) "C 26 ... offers, I think, a fine climb as it is quite steep and the highest of the lake region." He also noted the peak now known as Mt. Farrow, and mentions exploring up a "much neglected Indian trail along the river which flows from a large glacier southwest of Mt. Merriam." This would be Farrow Creek, up which our 1953 party backpacked to form a base camp near the foot of that glacier.

The next record of ascents is of those by surveyors, not mountaineers out for a holiday. Capt. R. P. Bishop in the course of establishing a triangulation survey connecting the Interior side of this part of the Coast Range with the Coast itself at the head of Bute Inlet, made in 1922 with George Durham the first recorded ascent of Mt. Good Hope[5]. Mt. Chilko (8,974 ft.) was also ascended, as well as several peaks and vantage points around 8,000 ft. elevation which were named only as survey stations for temporary recognition purposes. The Powell Lake Sheet (4 miles to the inch) published in June, 1923, by the British Columbia Department of Lands appears to be the first map generally available to the public to show Mt. Good Hope[6].

A search for potential sources of hydro-electric power along the British Columbia Coast occasioned the next, and most extensive, penetration of this area. The vertical drop of some 2,450 ft. in a distance of 10 miles from the head of Chilko Lake to the junction of Durham River, plus a further drop of about 850 feet in the 5½ miles down the Bishop River to its junction with the Southgate at 656 feet above sea level, led to surveys being conducted in 1929 and 1930 to assess the possibilities of tunneling under the Divide for utilizing this tremendous head of water[7]. Parties in charge of Major R. C. Farrow and F. Butterfield ascended Chilko Creek at the head of the lake, climbed Mt. Chilko, and traversing a 6,270-ft. glacier pass descended Durham Creek to the Bishop River after establishing a station on a 7,385-ft. summit just east of Durham Creek; they took horses up Deschamps Creek over the 5,977-ft. pass to the head of the Southgate River, establishing a station on an 8,285-ft. peak 2½ miles west of the pass. Two peaks, 8,758 and 8,377 feet, two miles east of the head of Chilko Lake were also occupied. Although Mt. Good Hope was not climbed, Major Farrow reconnoitred Boulanger Creek to its head just south of Mt. Good Hope, and looked down the valley (Farrow Creek) up which Goddard had explored from Chilko Lake in 1912 and in which our party was to camp. The waterpower development did not take place.

In 1951, while members of the Vancouver section of the club were assisting in training

4 "The mountains of Lake Chilko", C. A. J., 1913, pp. 20-33.

5 Named by Bishop after Rear Admiral Sir Christopher Cradock's flagship sunk in the Battle of Coronel off the cost of Chile on Nov. 1, 1914. Mt. Monmouth (10,470 feet) some 10 miles southeast of the head of Chilko Lake, and first ascended in 1951 (ref. 1), was named by Bishop after the cruiser also sunk in that battle.

6 The heights given thereon for Mts. Good Hope (10,652 feet) and Chilko (8,887 feet) were later officially altered to those given in the foregoing text.

7 "Search for Power in the B.C. Coast Range", by R. C. Farrow, The Geographical Journal (London), Sept.-Oct, 1945, pp. 89-118,

R.C.A.F. mountain rescue personnel, trips were made by air to Chilko Lake during which various training climbs were led by Bob McLellan. On one trip an overnight camp at a timberline lake between Franklyn Arm and Mt. Good Hope allowed an ascent high onto an arête of Mt. Merriam but time did not permit making what would probably have been the second ascent. On another trip a one-day assault was made on Mt. Farrow from the bay into which Farrow Creek empties; a presumable first ascent was almost completed when the party was obliged to return for a rendezvous with its plane.

SEVEN HOPEFULS AROUND "GOOD HOPE"

By Elfrida Pigou

We grumbled at the weather, but it was perfect for our two best climbs, and though throat lozenges were the most popular item in our first aid kit, is that all bad? Some spent a night without sleeping-bags or even spoons, but we had food and several tents; glaciers and goats threw rocks at us, but missed; and while there were few flowers, those there were warmed by a background of ice and rocky peaks. We came, and went, and those two words frame a picture no one could forget.

Setting out hopefully from Vancouver on the morning of July 18th, 1953, our two little Beaver planes (we had expected one Norseman) dived into the clouds north of Squamish like bees darting into the forest. Hats off to the bush pilots of B.C. From the second plane, as the clouds cleared, we glimpsed the braided strands of the Lillooet River, and so finally after bumping along the third-class sky-way between coast ice fields and the dry belt we landed on the turquoise waters of Chilko Lake to find the first plane just taking off and its passengers sorting out gear on the solid ground of a cold but pine-scented beach.

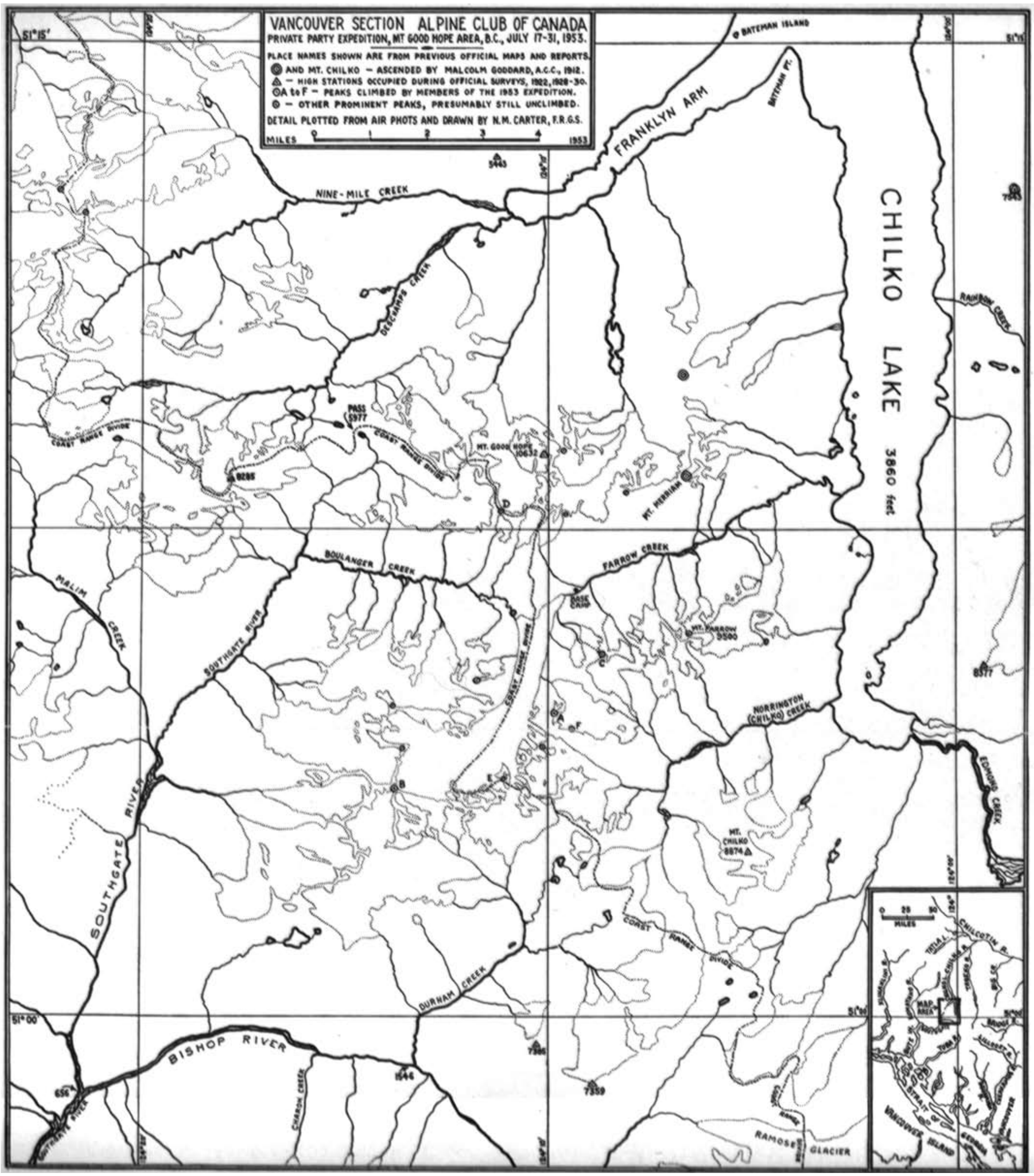
The party consisted of Alan Melville (leader), Dr. Neal Carter, F.R.G.S. (who had done much to assist with plans, but was not until the last minute certain that he could come himself), Dave Young of Portland, Oregon, and his wife Jo, Tom Marston, Leon Blumer of Trail, who has climbed in various parts of the world, and the writer.

We lunched, sorted gear, and packed our first relay up the south side of Farrow Creek (see map). Keeping well away from the creek at first, we crossed the foot of various ridges leading down from Mt. Farrow, avoiding much of the bad bush and swamps closer to the creek. Full of enthusiasm, we made too long a carry. That night we camped by the lake, one or two with sleeping bags, others tents, while one scorched and froze between two fires.

A fresh start next day took us beyond the glacier stream which comes down from Mt. Farrow, turning west before circling to flow into Farrow Creek. Passing a meadow blue with forget-me-nots we camped near a snow-slide from a breach in the valley's southern wall. A view of our proposed base camp site showed bush, of course, not meadow (how deceptive air photos can be) and the glacier and mountains beyond. Eastwards we saw the 6000-ft. precipices of Mt. Merriam, already climbed but not by us, nor from this side. We turned our backs on it next morning, a little regretfully, and continued up the valley, crossing to the north side of the creek and remaining on that side, though we found later that it was better to cross back again for the last hour's travel. We camped that night on old moraine among water willow herb.

For packing in, the weather had been good. Now, amid showers, we moved camp a short distance. Good water was on our side of the creek, but our only wood was "driftwood" on the far side. We heaved a big pile of it to our side. It seemed easier than taking water to the other. We forgot the third dimension. Water was provided, everywhere, later.

Meanwhile there was a sunny interval, it was already Tuesday, and we were surrounded by mountains. Leon and I could bear it no longer, so about four o'clock we crossed the creek and set off to make a recce of what to Leon's eye of faith was a possible route to Mt. Farrow. We had passed, on our way in, a known route to this mountain (almost climbed several years ago by Ian Kay and some R.C.A.F. boys on a training climb) but left it for later. After a moraine and gully-side scramble we reached the tongue of a steep glacier which we called the Cave Glacier, although "Map" would be a more suitable name as in the foreshortened view from camp it looked like a map


VANCOUVER SECTION ALPINE CLUB OF CANADA
PRIVATE PARTY EXPEDITION, MT GOOD HOPE AREA, B.C., JULY 17-31, 1953.
PLACE NAMES SHOWN ARE FROM PREVIOUS OFFICIAL MAPS AND REPORTS.
AND MT. CHILKO — ASCENDED BY MALCOLM GODDARD, A.C.C., 1912.
— HIGH STATIONS OCCUPIED DURING OFFICIAL SURVEYS, 1922, 1928-30.
A to F — PEAKS CLIMBED BY MEMBERS OF THE 1953 EXPEDITION.
— OTHER PROMINENT PEAKS, PRESUMABLY STILL UNCLIMBED.
DETAIL PLOTTED FROM AIR PHOTS AND DRAWN BY N.M. CARTER, F.R.G.S.
MILES 0 1 2 3 4
1953
BATEMAN ISLAND
FRANKLYN ARM
CHILKO LAKE
3860 feet
NINE-MILE CREEK
DESCHAMPS CREEK
RAINBOW CREEK
PASS 5977
COAST RANGE DIVIDE
MT. GOOD HOPE 10632
MT. MERRIAM
BOULANGER CREEK
FARROW CREEK
BASE CAMP
MT. FARROW 9500
MALIM CREEK
SOUTHGATE RIVER
NORRINGTON (CHILKO) CREEK
EDMONDS CREEK
MT. CHILKO 8874
SOUTHGATE
DURHAM CREEK
BISHOP RIVER
CHARON CREEK
RAMOSE GLACIER
51°15'
51°00
7359
VANCOUVER ISLAND

REFERENCES TO DR. CARTER'S MAP

Peaks marked A to F climbed by the party were given the temporary names shown below in parentheses, for purposes of reference. Some of these names have been submitted to the Geographic Division of the B. C. Department of Lands and Forests for possible official adoption; in other cases the name in quotes following the parentheses has been later selected as more suitable for submission.

"A"—(Chimney-pot Peak)
"B"—(Endless Mt.) "Mt. Cradock"
"C"—Admiral Ridge
"D"—(Tenderfoot Mt.) "Mt. Durham"
"E"—(Wednesday Mt.)
"F"—The Joker

Other names being submitted are:

For the large glacier feeding Boulanger and Farrow Creeks—"Goddard Glacier."

For the glacier flowing north and west from peaks "A" and "F"—"Roof Glacier."

For the small glacier just below and N-W of "C"—"Map Glacier."

For the glacier north of "D" and west of Mt. Good Hope— "Good Hope Glacier."

For the unclimbed peak between "A" and "E"—"Mt. Coronel."

For the unclimbed peak approximately one mile west of the lower part of "Goddard Glacier"—"Mt. Marston."

For the unclimbed peak approximately one mile north of "B"—"Mt. Canopus."

For the unclimbed peak approximately two miles north of "B"—"Mt. Otranto."

For the unclimbed peak approximately one mile east of "D"—"Pluvius Peak."

For the unclimbed peak approximately one mile west of Mt. Merriam—"Mt. Glasgow."

For the peak climbed by Goddard, two miles north of Mt. Merriam —"Mt. Kese."

of the U.S.A. (the cave being the Gulf of Mexico); we discovered later, looking back from the way to Good Hope, that "Canada" is even bigger than the "U.S.A."

The sun could hardly have touched the glacier, but boulders were sticking out of it like currants from a bun, so we crossed hurriedly below the steep tongue. Leon eyed the ice longingly, but happily I had no crampons, and it was too late in the day to be below that ice chute, so we took to the rocks on the east side. Here we had some quite interesting climbing on good rock, the best we found in the area, when suddenly a big rock shot off the glacier, and exploded violently on a rocky hummock below. Glad to have been well above it, we obtained a view of the upper glacier, considerably crevassed and ending in a rock wall whose gullies might possibly take us to the ridge above. The descent to camp avoided the upper gully by traversing high on the east side and following goat paths down (the rock here was as bad as it was good up above). As a route to Farrow, this would be interesting but long, as at least one peak must be traversed on the ridge once it was gained, and the head of another glacier passed before setting foot on Farrow itself. And Farrow is 10,000 ft. high, our camp only about 4500.

That night it poured. Alan referred to his tent as a "shower-bath", and Tom had a private pool in his. Still, it was Wednesday, and as the clouds lifted a desire to climb something arose. Jo had a sore ankle and could not wear her boots (she had come in running shoes), so decided to stay in camp. Neal and Tom wished to visit the head of Boulanger Creek, which flows into the Southgate from the west side of the main glacier. The glacier itself is thus the watershed between Coast and Fraser River systems, and they found the division of the surface waters clearly marked. Lower were several muddy lakes in the ice, their edges and even bottoms, as far as could be seen, cleft with crevasses. And beyond flowery meadows, and queer waterfalls like weirs.

Meanwhile the rest of us followed the slightly-crevassed main glacier to the bend and there climbed a small peak by its eastern face, which consisted of unpleasantly loose blocks although the backbone when we reached it was firm granite. Our hoped-for view was blotted out as we reached the summit above a short snow ridge, and it snowed while we built a little cairn. The return to the glacier by the snow and ice of the south and western slopes was hilarious and swift. We nicknamed it "Mt. Wednesday".

Next day clouds hung around the peaks. Alan wished to visit Boulanger Creek, Neal and Tom still had colds, Leon and I decided on another recce of Mt. Farrow (most recce'd and as little climbed as any in the area). It was a lovely morning, except on the peaks, as we turned up beside an icefall on the east side of the glacier and reached the big snow-bowl at its head. A pleasant scramble brought us to the ridge on the north side of this, whose left arm curving around to north and east leads eventually to Farrow. Climbing two small peaks on this ridge, we were not rewarded by the desired view until we had given up and were returning.

A beautiful Friday morning found everyone full of energy. Jo still could not wear her boots, but the rest of us set off up the glacier, following our previous day's route to the snow-bowl. When we started, we had intended to attempt the beautiful pyramid with the ribbon of snow, which dominated the valley on the journey in. However, a discussion ended in our setting out for a peak seen yesterday to the south and now called, provisionally, Chimneypot.

In brilliant sunshine we traversed the snow-bowl, crossing the bergschrund on a comfortable snow bridge to a col between the mountain and a little peak later referred to by me as Joke peak (I climbed it during a longish rest stop on the day down, 10 minutes up, 10 to build a cairn, and five down. But it looked like a real mountain). The col should be called the Gasp, for that is what everyone did, as we reached it. Southwards to the horizon lay ice and snow, crevassed and

ribbed with rock. No forest could be seen, the deep clefts of the valley (see introductory notes for the vertical drop of Bishop River) were far too narrow and lay in the wrong directions for us to see into them. The Toba Icefield stretched for miles in the south-east. To the right of it rose Mts. Gilbert and Raleigh, which some of us set out to climb last year. Southwest the distant view was cut by a magnificent-looking peak south of Chimneypot. Walls and ribs of rock there were, but the impression given by these northern faces was that of an ice age, no forest anywhere nor any green thing.

From here we followed the south-east ridge, easy but varied rock, until surmounting its shoulder we gazed at a splintered knife-edge, dipping and then rising again to a broader knoll. None too hopeful, we climbed down a buttress on the south face, and with some surprise, traversed it to the gap. In this was one of those flat mushroom boulders which seem to have no visible means of support, in healthily airy surroundings, but instead of taking off on one side or the other, it stayed put, and we traversed around the gendarme beyond and returned to the ridge. The rock was good, although vertical plates had a tendency to come away, and was far easier than it looked. A broad highway now led to the summit. A further summit beyond, though nice-looking, was obviously lower, yet we regretted that scattered items of equipment prevented an attempt at a traverse of the mountain.

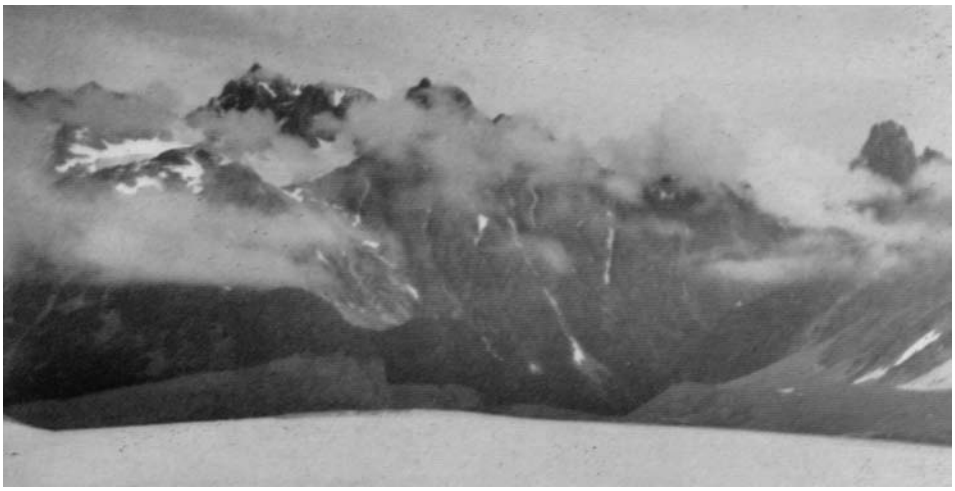
Lazing in the warm sunshine, we now enjoyed a magnificent view of Good Hope, although as it lies beyond the ridge forming the north wall of the valley, parts of our proposed route were still hiden. Westwards we could see part of the Homathko Icefield over the shoulders of "Pyramid" Mountain and another like a breaking wave at the head of the main glacier. We returned contentedly to camp, to find it empty. Where was Jo? Wild surmise led nowhere until the "last man" arrived in camp and turned out to be Jo. Still in running shoes she had gone for a stroll on the dry glacier and had seen us returning but was too far off to call to us or catch up.

Chimneypot weather, in the summer of '53, could not be expected to last. So Saturday's summits hid in fog.

Alan set off, but we others rested, exploring around camp or visiting the little lakes in the ice. Alan was late for dinner, after which he described an interesting climb up a snow chute and slabby rocks to an outlying buttress of one of the striking peaks on the 9000-ft. ridge which leads eastwards to Merriam and forms the north wall of Farrow Creek Valley. Glimpses through swirling snow of black precipices above and bergschrunds below the northern walls assisted his singing ice axe in convincing him it was time to return, a manoeuvre which snow on his "running-shoe" slabs made trickier than the ascent. This peak deserves an attempt in more reasonable weather.

Next morning's downpour brought breakfast in bed to some, I believe Alan refused his, complaining it would disturb a little pool he had in his tent. Something with a taste for pink plastic had chewed up some of our tableware, and stolen more. However the rain stopped, and as the clouds rose to above 8000 feet, 1 set out after goat pictures and a route to Good Hope. Crossing the moraine, I followed a creek up to a meadow and screes below bluffs, where a family of goats were feeding. One clink of a nail, and they departed up a gully. An attempt to follow their route was discouraged when they threw rocks at me, obliging the pursuit to take to the bluffs. This was slower, but they kindly waited whenever I got too far behind. From the alpine slopes above, the last seen of Father Goat was a supercilious head peering over a ridge. I reached a shoulder and followed a rocky rib to where it petered out between two glaciers. There were obviously no difficulties this side of the main ridge, but it was 5:30 and time to return.

Monday began with a glorious clear sky and heavy mist on the glacier, billowing smoke



Mt. Good Hope.
Photo E. Pigou

Mt. Merriam Down Farrow Creek.
Photo E. Pigou

Glacier Below Slopes Of Mt. Good Hope.
Photo E. Pigou

Note double tongue, right to Chilko Lake left to Southgate River.

South From The Summit Of Good Hope.
Photo E. Pigou

Centre distance Mts. Gilbert and Raleigh

above the ashes of grey moraine, where rosy water-willow-herb glowed like coals. However the mist turned to thick cloud, leaving us only dim glimpses of a desolate valley to show for our day.

Next morning, Good Hope or bust. Perfect weather justified the mountain's name. Although at best a second ascent, it is a fine-looking mountain and a magnificent viewpoint. Neal, Alan, Leon and I followed the goats' route, more or less, then after lunching on the rocks near my farthest point, crossed the barrier ridge and gentle snow slopes beyond (deceptively steep on the air photos). Beyond lay a col with a little green pool in the snow, and it is here, we believe, that our predecessors' route crossed ours. Capt. Bishop and Mr. Durham had come up from a hut on the Southgate to its head in a valley north of Boulanger Creek, had crossed a ridge and come up a glacier to this point. From here, though we did not then know it, they had ascended the rocks, by gullies and ridges, finding them rather unpleasantly loose. We discussed two routes, one that way, by zig-zags up to a patch of grey rock near the summit. But as it seemed possible walls might block progress there, we finally chose another route, scrambling first up a sort of rock-pile, really part of the southern ridge, though it looked separate from below, then traversing on rather nasty wet snow into a gully on our right, which led up to the dip between the two peaks of Good Hope. The snow on the traverse was steep and had been long in the sun; we hugged the rocky wall above in order to be on top of anything that slid. However nothing did, and we reached the gully to find water gurgling inaccessibly under thin snow-covered scree.

Up in the notch at its head we were at last on the roof, and as we plodded up the last crisp slopes, our heads were turned in fact by the superb view. North-east beyond the purplish-red ridge of the other peak, the blue lake lay among dry-belt hills. All the rest of the horizon was ice and snow ribbed with rock. Neal had taken bearings on Good Hope from Dalgleish, Monmouth, and one of the peaks of Gilbert. Now we saw these, and Raleigh, Grenville and Queen Bess. The Toba and Homathko Icefields stretched for miles, among peaks named and nameless. The Waddington group was partly- wrapped in cloud although at times the tip of Waddington thrust through, and later as we returned the clouds had vanished. Jagged pinnacles in the north-west must look incredible from near at hand.

A huge cairn proved the previous presence of surveyors. We were cold in spite of the bright sun. A shout floated up from below. Dave and Jo (her boots had not been a success), who had climbed a subsidiary peak west of the pass in the barrier ridge, had seen us against the sky.

On the return, the unpleasant snow on the traverse was freezing again. We avoided the goats' route by keeping to the ridge until nearly down to the meadows, although this involved a short bushwhack afterwards. Down in camp Tom had cooked a delicious meal, and regaled us also with a tale of a visit by a red fox, possibly the thief who chewed and stole our tableware.

Next day we left, the spare day saved for Farrow being wasted as of course it rained, so we continued leisurely to the lake. Here we enjoyed sunshine and showers, punctuated by a breeze every 15 minutes. Breakfast lasted until lunch, when the supply of flapjacks, and the party, were almost exhausted.

About 6:30, in spite of low-hanging clouds, our plane collected us. Flown by Val Hennell, pilot and mountain-photographer, it sped between the walls of our valley, nearly scraping the goats off the bluffs at its head as in spite of clouds we all snapped pictures. Then down to the Southgate we sailed serenely over bush and canyons and so home. Near summits were fogged, but through a hole in the clouds up the Homathko River we saw Waddington rising like flames of rock.

MUNDAY LAND AGAIN

By Sterling B. Hendricks

Companions of other years would never believe that the wildernesses of the Interior Ranges in which they found such beauty were but a prologue to the Coast Range as the penultimate and finally to Munday Land. At last they agreed that their first visit should not further be delayed, no matter what might be the sacrifice in trading expense for speed to make a trip possible within an east coast vacation period. Seven joined me.

Two left Washington, D.C., by air coach at 10 one night and less than 48 hours later were preparing to camp beside Tellot Creek, after landing on Dumbbell Lake (Ghost Lake) by charter plane from Vancouver. Jim Bullard and I, as the outfitters, had a harder time pounding the pavements of Vancouver to find the items required by eight people for a month in the bush. The party traveled in two groups of four, the first group going ahead to arrange things and to be on the ground at the head of Tellot Glacier for the air drop.

Late in July, after some final adventures with icefalls in a mist, all eight were together on a rocky outcrop at 10,000 feet even with the base of Mt. Shand. Provisions were cached 15 minutes higher up near the tip of Mr. Dragonback. The campsite is the best to be found, being warmer, less windy, and more assured of water than the H.M.C. or Sierra Club sites. Here was stone, instead of ice, for a bed, and flowing water from noon until the evening freeze.

Around us in a diadem at elevations of 10,500 to 12,000 feet were the summits and incomparable granite walls of the Tellot peaks. It stretched from the Claw peaks overlooking the Tiedemann Glacier, over the summits of Mts. Dentiform, Stilleto and the five peaks of Serra, before swinging around over Tellot, with Dragonback as an outlier, Argiewicz, S, the peaks of McCormack, Shand and on down to the east over the Four Guardsmen and a score of other summits.

We climbed twelve of these summits, but did not make any noteworthy new routes, even though the weather was perfect, the steep snow and ice in excellent condition, and the rocks free of verglas. This might have been due to our limited time, or to Arnold Wexler still suffering from an automobile accident. I think that it was more due to a respect for the difficult rock climbing of the region. Even though their praise has not been sung widely, peaks like the higher Claw, the lower tooth of Dentiform, Serra One, and both peaks of McCormack offer real climbing pleasure. The other four peaks of Mt. Serra, none of which we climbed, are the real challenge of the region, with Four and Five still to succumb. Serra Four could safely have been tried, under the conditions as we found them, by frontal attack over Three as had been used by the Sierra Club party in reaching the col between Serra Two and Three. This is not a region where one kicks steps up an easy snow slope and then scrambles over a few rocks to the summit. Rather, one must have an adequate supply of pitons and know both the real use of crampons and ice axes as well as the nature of adherence of snow to ice and man to rock.

After a couple of weeks at the Tellot Camp we decided to travel on to the upper Scimitar Glacier by a route that had been explored leading down the icefall between Mts. S and Argiewicz to the upper basin of the Radiant Glacier. This route is direct to the Scimitar Glacier, and when possible—the key being the uppermost icefall—is to be preferred to the way down Cataract Glacier and Creek. It is sheer beauty every step of the way, first with immense névé blocks of the icefall and then with the incomparable views of Mts. Tiedemann, Asperity and the other peaks around the Radiant Glacier. Our only difficulty was just before reaching Scimitar Glacier, where I must

confess we roped off a loose stone on a moraine to avoid some wet slabs. The passage followed the south side of the icefalls and the adjacent slopes.

The Scimitar Glacier camp site (ca 5,000 ft.) was at the foot of the Tumbling Glacier, where a flat medial moraine and nearby wood on the steep slopes made for comfort. Three first ascents were made from here of Mts. Hickson, Haworth and Serendipity—the last two of our naming. Mt. Hickson was climbed by the easy slopes facing Mt. Waddington up which Rex Gibson and I had strolled fifteen years earlier to reach the lower summit. Jane Showacre, Don Hubbard, Alvin Peterson, Ken Karcher and I, had some fun with the ice wall which is becoming more prominent and a bit of a struggle with the rib of rock which was followed to the summit. My memory of the way and the timing was rather dim, which led to much ribbing by the others, which was climaxed when an ice avalanche of Himalayan proportions fell from Mt. Waddington and swept a route that I was recommending.

On the same day Arnold Wexler, Arthur Lembeck and Jim Bullard climbed up the east edge of the Tumbling Glacier, making fast time with crampons, to the Parallel Glacier and crossed it to the snow slope leading up the peak (Mt. Haworth) just east of Mt. Geddes. The slope and final rock were easy. The stroll was rewarded by a fine view of Mts. Remote, Bell, Roovers and the back country.

Mt. Serendipity is on the limiting wall of the Scimitar Glacier between Mt. Chris Spencer and the Tumbling Glacier. It is apparently Mt. Hermit of the H.M.C. 1948 party (note photograph facing Page 155 A.A.J. Vol. 7, No. 2, January, 1949). Jane Showacre, Don Hubbard, Jim Bullard, Ken Karcher and I set out at dawn up the Scimitar and then headed upward to the Serendipity Hardship col. The way led up for 4,000 feet first beside the tumbling stream, then over the steep snow swept by rocks from the surface of several higher glacier tongues. We took to some ferocious ice-polished rocks to avoid possible stone falls and finally reached the bare ice where crampons were brought into use for 500 feet. After a second breakfast, easy snow slopes were followed to a berg-schrund above which the snow steepened and became more unstable. The col, finally gained, was connected with the summit by an easy ridge.

All would have been well if someone had not suggested following the ridge on eastward toward the Mt. Geddes col. The rock was perfect and soon led to a big perpendicular step of about 200 feet in the ridge. Hopes were raised as an intricate way was found down the northern slopes and back to the ridge below the step. The way continued horizontally across airy ledges to the edge of a 1,000-ft. precipice. This looked like the end and at least the attempt to continue toward the col had to be abandoned. Instead a perpendicular double crack was followed downward on the south wall toward a steep glacier on the face. Don Hubbard, when near the bottom of the cracks, was hit by a large rock that the two on the second rope were trying to hold. After a little patching he was again seaworthy. The next pitch ended in a steep wall requiring two 50-ft. rappels to find easier ground. The glacier was soon reached and Ken Karcher did a wonderful job of kicking downward to the double bergschrund which required two leaps for crossing. Glissades and easy slopes led back to the Scimitar Glacier. After a day's rest we headed down the Scimitar toward Scimitar Creek, with the plan of continuing down to Cataract Creek and then up to the climbing camp in timber near the end of the Cataract Glacier. Scimitar Creek has more bush than I remembered, but the stone marked way up Cataract makes travel easy. A flat camp site was found just behind the north moraine. Here the weather went sour and only a small summit (Mt. Sepia acording to us) at the head of the glacier, opposite camp to the south was climbed one afternoon with Jane leading all the way. The return included a display of running down a steep boulder field.

Upper Tellot Glacier (Left To Right): Mt. Waddington, Mt. Serra.
Photo Alvin Peterson

Mt. Mccormack. *Photo Alvin Peterson*

On Radiant Icefall. *Photo Alvin Peterson*

Mt. Asperity And Mt. Tiedemann, Above Radiant Glacier. *Photo Alvin Peterson*

The weather still being broken, we decided to cross the Cataract col and pick up supplies at the Tellot cache before descending to Nabob pass. The passage required two days.

Nabob pass is one of the few alpland regions in this country of snow and ice. It is too far from the major peaks to serve as a climbing base, but is just a day below a climbing camp on Mt. Waddington, the Tellot camp, or a climbing base for the Mt. Marcus Smith group. But its beauty is transcendant, with two lakes framing the wild alpine scene of Mt. Marcus Smith, and the peaks on the west side of the lower Tiedemann Glacier. Here we loafed amid heather and summer bloom. Two ascents were made of Mt. Serpentine, both with good climbing. Arnold Wexler and Arthur Lembeck went straight up the face above camp, finding the summit rocks all that could be desired.

Finally, the day came to return to Dumbbell Lake and await the planes for Vancouver. Two came in late on the expected day and soon we were high in the sky trying to look at all the landscape at once. Perhaps I was most drawn to the winding Homathko Valley, from which mild conjuring raised shades of two forms—Don and Phyllis Munday—struggling more than twenty-five years earlier towards the unknown.

The day will come when each new trip to the Waddington region will not warrant description. But even then, the two who first endured to reach its heart will be acclaimed and accorded an honor as great as de Saussure's.

AN ASCENT IN BAFFIN ISLAND

By P. D. Baird

Not many members of the Alpine Club of Canada, perhaps, realise that there is more than one great group of mountains in the country. The resident of Montreal wishing to visit glacier-hung peaks will find on the map that those of Baffin Island are by far the closest, then Greenland, and only then our Western ranges. To get there is, of course, a little complicated and definitely expensive. However, the average impecunious Eastern resident like myself has little hope of reaching any real mountains at all at his own expense. I have climbed in the Rockies only because military duties took me there, and in the Arctic on scientific expeditions financed on account of their research aims.

The Eastern Canadian Arctic has some of the most magnificent scenery and technical mountaineering problems of the world. The major mountains range of Baffin is 700 miles long from the tip of Cumberland Peninsula to Bylot Island. In this region the general level of the mountains is 5,000-6,000 feet,' often rising directly from sea level, with their entire height above the tree line and glacier-hung. The highest peaks just exceed 7,000 feet, and it is the ascent of one of these that 1 wish to describe in particular.

Actually I have been climbing at long intervals in Baffin since 1934 when I was a member of J. M. Wordie's Arctic Expedition[8]. In 1939 I made some ascents on Bylot Island ; in 1950 I was back again in the Clyde district around latitude 70, but the position of leader of a large expedition left me little time for mountaineering. We had with us then three representatives from the Swiss Foundation for Alpine Research who made a score of interesting first ascents. This Foundation cooperated with us again in 1953 on the Arctic Institute of North America's expedition to the Cumberland Peninsula area.[9] Four Swiss scientist-mountaineers were included in the party and we planned a definite program of mountaineering.

We found ourselves in an area of very spectacular peaks. Many of the highest were capped with small ice domes, and to the northwest of our base extended a large, smooth high level ice cap (the Penny Ice Cap). In a study of aerial photographs before we left we realised that one peak in particular overhanging Pangnirtung Pass stood out clearly above its companions and might prove to be the highest on the whole island. Part of the expedition's work was to survey the heights of the highest peaks and it became apparent that two other mountains, much less spectacular, were of almost equal height. It was only at the end of the expedition that we found "The Queen", as we had named our peak, was the second highest (7,014 feet). We had resolved all along to attempt its ascent and a cache had been laid down by air at 4,500 feet to supply a high level camp for mountaineering within striking distance of "The Queen" and other fine peaks. But our first attempt got no further than this camp. Three of the Swiss, Hans Rothlisberger, Howsie Weber, Jurg Marmet, and I spent four miserable days there while wind, snow and rain battered the two mountain tents. We decided to postpone the attempt and try later to climb the peak directly from the Pass, the floor of which lay at an elevation of 400 feet.

Our chance only came at the end of the whole expedition when we were evacuating our base camp by back-packing down the Pass. Jurg and I left on August 24 allowing three clear days

8 Longstaff, T. G., and M. H. W. Ritchie. The Shores of Baffin Bay, A. J. May 1935, pp. 49-58.

9 Elminger, F., H. Mulli, and Rothlisberger. Baffin-Island-Expedition 1950, Berg der Welt Vol. 6, 1951, pp. 91-151.

on which to try the climb. This is late for Baffin Island mountaineering. In 1950 we had first snow quite early in August which covered the peaks down to 1000 feet, but 1953 was kind to us and the final two weeks of August were mainly clear, calm and warm—perfect climbing conditions.

We reached the base of the mountain after a fourteen mile march with heavy packs and camped when I felt I could go no further. I knew that a short way (one mile) beyond a prominent gully ascended through the lower cliffs of the peak. But my previous reconnaissance from the Pass had been hampered by a cloud layer at the top of this gully—we could not be sure of the route between it and the east ridge to the summit which was visible from base camp.

We had intended to rise at 3 a.m. on August 25 but more than an hour before that we woke sweating: the wind had dropped and so had the liner of our light tent which was stifling us. We got it fixed and slept again till 4 a.m. By 5:45 we were off and half an hour later started in the shade up the long scree and boulder-filled gully. An hour and a half later we were at the top of it with almost 3000 feet of our climb accomplished. Now we saw a sloping traverse on scree between vertical cliffs above and steep slabs below would bring us to the eastern ridge. There was an Arctic hare here which allowed us a close photograph. We reached the ridge at 9:20. The upper part of the mountain now appeared before us like a deck chair, a shallow snow-filled corrie bounded by two ridges: we were on the right hand of these as we gazed upwards.

Both ridges steepened into towers where they joined the summit ice cap, the tower on the other ridge seemed the easier so we crossed, cutting a few steps in the icy approach to the ridge. Then two short, difficult rock pitches, ably led by Jurg, caused us to rope for half an hour and we were on the final snow slope. At 12 :30 we were on the roof of our local world and for an hour revelled in the view for 100 miles around. It was warm and windless: we looked down at the two tents of our expedition base camp wondering if our people there could see us at twelve miles distance. And they did! We built a cairn on the north-east rock shoulder with a record of the ascent and sped down, by-passing the rock pitches by descending thinly covered ice slopes to the west of the ridge.

In under twelve hours altogether we were back at our camp and in bed before dark. Next day came the continuation of the weary back-packing down to the fiord head, but we were buoyed by our joyful recollection of a grand climb. Three days later as the rearguard of the expedition came down, they too paused at “The Queen” and Howsie Weber, Bill Ward and Vero-Wynne Edwards repeated our ascent by the same route.

“The Queen”

A SUMMER IN THE ST. ELIAS RANGE

By Tom Miller

Despite a worthy amount of recent mountaineering in the St. Elias Range there are still many fine original climbs awaiting attempts. It was the hope of making some of these climbs, as well as the desire to visit this famous range, that inspired the formation of the 1953 Mt. Logan—Cook Expedition. The original plans called for a light, air supported, party to attempt the first ascent of McArthur Peak (14,400), a new route on Mt. Logan from the east, and finally the first ascent of 13,760-foot Mt. Cook. Although we were able to carry out only the third part of this plan we did see a great deal of fine country and thoroughly reconnoitred the other two climbs.

The group consisted of Dick Long, from El Sobrante, California; and Tim Kelley, Dick McGowan (leader), Franz Mohling, and myself, all from Seattle.

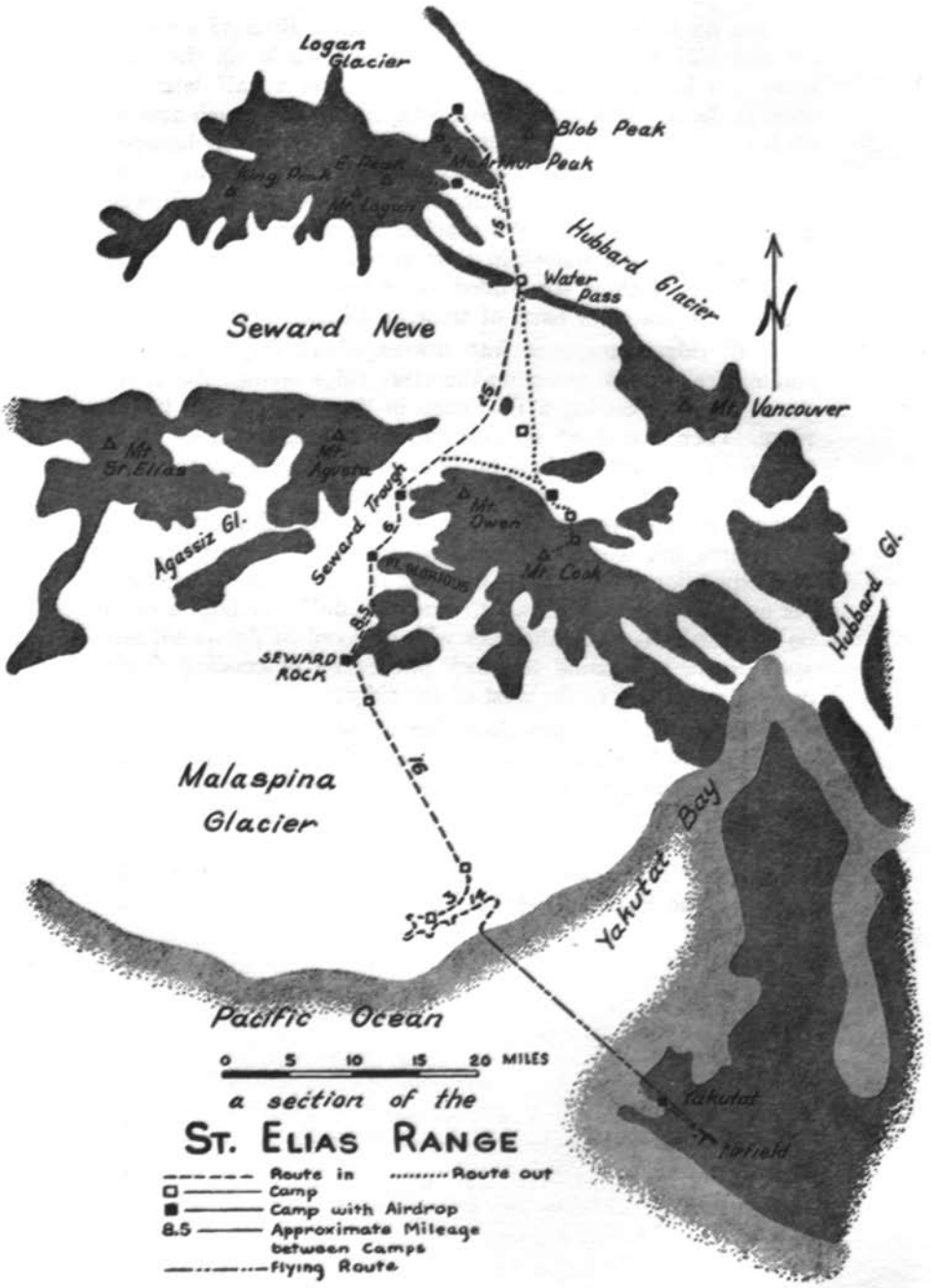
Most of the party were in Yakutat by June 20th, and we spent the week doing the highly interesting work of air dropping. All our food and equipment was free-dropped from a Piper Cub flying at near stalling speed from ten to thirty feet above the glaciers. Bill Neindorff of Seattle and John Merriman from Yakutat did all our flying, and it is due to their skill that we were able to drop about 1,700 pounds of gear and never lose a willow wand. Merriman's flying was really terrific. His ability to manoeuver a plane in a steep narrow valley allowed us to put the Logan drop in a maze of crevasses, at the very base of the east ridge.

By June 28th all the drops had been made and the last of the party flown over to the Malaspina Beach by Merriman. We then started the 85-mile walk over the glaciers to the base of the peaks. Three days of bad weather delayed us only slightly and we arrived at McArthur base camp at 8:00 a.m., July 4th. We had followed the route used by the 1952 King Peak Expedition as far as the head of the Seward Trough. We were able to use our 27-pound magnesium sled to advantage most of the time. Once out on the Seward Névé we cut straight across to a gap in the ridge running between Logan and Vancouver (called Water Pass by our expedition).

Travelling at night, we made up to five miles an hour pulling the sled across the frozen snow. From Water Pass we dropped down about a thousand feet onto the Hubbard Glacier up which we travelled in a northerly direction towards a glacial pass between McArthur Peak and a prominent peak to the east of it. Just below Water Pass I became violently ill, a condition which I attributed to a special McGowan breakfast consisting of melted oleomargarine and chipped beef. Rather than waste a fine cold morning the fellows put me on the sled in a sleeping bag and pulled me the last ten miles to McArthur. This was somewhat of a switch, carrying climbers into the mountains.

On July 5th at 2:00 a.m., McGowan, Kelley, and Long left to establish a route to a high camp on the north ridge of McArthur. Mohling and I were to follow in 24 hours with further supplies. While we were waiting, the Cub came over and 'chuted a radio to us. Unfortunately the set refused to function. Hoping to get it back to Yakutat we gave the signal and Merriman landed the Cub (on wheels) at 7,300 feet on the frozen snow of the Logan Glacier. The crust wasn't quite hard enough, and when a wheel broke through, a ground loop was narrowly avoided. It was impossible to add the weight of the radio and hope to get the plane up with the snow getting softer by the minute. So John took off and we were left without communications, a deficiency which was to be felt most sorely in the next few days.

The next morning Franz and I made the crampon climb up the north ridge, which varied


Logan Glacier
Blob Peak
Hubbard Glacier
Water Pass
Seward Neve
Mt. Vancouver
Mt. St. Elias
Mt. Agusta
Agassiz Gl.
Seward Trough
Mt. Owen
Mt. Cook
Hubbard Gl.
SEWARD ROCK
8.5
16
Malaspina Glacier
Yakutat Bay
Pacific Ocean
0 5 10 15 20 MILES
a section of the
ST. ELIAS RANGE
Route in
Route out
Camp
Camp with Airdrop
8.5 Approximate Mileage between Camps
Flying Route
Yakutat

from broad and easy to narrow and corniced. We arrived in high camp to find Dick Long very sick with what we thought was acute appendicitis. Although the sun had done its work on the crust we immediately began to take him down to base camp, 4,400 feet below. A first attempt at a packboard carry proved a failure in the steep, thigh-deep snow, so we had to walk Dick down with Tim supporting him from the front and the other three belaying and anchoring from the rear. What had been a pleasant ascent turned into a five-hour nightmare. Two hours after we arrived in base camp Dick McGowan and Franz left to snowshoe the 85 miles back to the beach where they hoped to get a plane in. Unfortunately they were unable to get more than 15 miles before being hit by a terrific blizzard on the Seward. They were gone 24 hours and immediately after their return the storm really hit. We spent the next two days in the tents, but fortunately Long was feeling better. The weather cleared on July 9th and at 10 p.m. the plane came over for a routine mail drop. We made signals in the snow and next morning John returned and made a mail pick-up in which we were able to express our desire for a doctor.

The next day a 10th Rescue Grumman Albatross flew over and dropped us a microwave radio with which we were able to talk to a doctor on board. He felt that Long should be taken out. The Air Force pilot promised to have a ski-wheel equipped light plane in as soon as possible. But the weather closed in and it began to snow, we felt that another long wait was inevitable.

Lying in our sacks we had only started to prepare ourselves, mentally, for sleeping out another of the famous St. Elias storms when we began to hear airplanes. This was nothing unusual, for during the past few days we had all been the victims of a hallucination we called “Airplane Ear”.

Tim stuck his head out and announced in a rather astonished voice that Merriman was out there, in all those clouds, in the Cub. John landed the plane on skis, coming to an abrupt halt in the slushy snow. He had landed on wheels on the bare ice of the Malaspina, changed to fixed skis, and then flown in to McArthur.

He was now unable to taxi in the slush so he and Long retired to the tents, while the rest of us set out to snowshoe a runway. Stomping back and forth along the strip, the weather reminded us nostalgically of home in the Cascades, temperature 32.1 and raining hard. The next morning John was able to get the Cub off. He made a perfect ski landing in the grass beside the airfield in Yakutat.

Two days of discussions and mild bad weather followed before we started back up the peak, leaving base camp at 1:30 a.m. At 8:30 we were digging out our cache at high camp. The weather was sunny but after our recent experiences we had doubts as to its permanence. We decided to take bivouac equipment and try to go straight to the summit while the storms vacillated.

The steep snow slopes above high camp were in really deplorable shape. Below a two-foot layer of semi-consolidated powder was a stratification of very hard wind-slab which was resting, how I have no idea, on a six-inch air layer. Above this slope we came out on a narrow snow ridge which led into the prominent rock buttress at 13,000 feet. The route possibilities were a 100-foot, 75-degree ice gully or a two-hundred-foot climb up the iced rocks. I was unable to get pitons to stay in the ice in the gully so we turned our attentions to the rocks.

Franz and I were happily climbing these in brilliant sunshine when Dick, waiting below, announced that it was snowing in the clouds. Having no desire to be cut off from our camps we descended, leaving our anchors in the rock. We were back at high camp at 9:30 p.m. and it was snowing hard. The next three days were spent in the tent and on the morning of the fourth the blizzard was still going strong but we no longer had a sufficient food margin. Giving up McArthur

The Breakup, Mt. Cook. *Photo Tom Miller*

On the route between the first two camps

Mt. Cook From The Seward Neve. *Photo Tom Miller*

Route was left hand skyline

we collected our gear and headed back up Logan Glacier in a fog.

Two days after leaving McArthur, on the morning of July 21st, we were picking up the Logan drop and looking rather unhappily at the base of the east ridge.

From aerial photographs and views we had anticipated no difficulty in getting on the ridge, but it ended in a towering buttress with steep walls on both sides. Kelley and I spent the afternoon climbing the interesting rocks on the end of the ridge. We knew it would be impossible to relay loads up our ascent route, so we anchored 500 feet of fixed rope to the top of the ridge and rappelled down the fluted ice slope. Kelley, descending first, had the privilege of breaking off the upper lip of the schrund, dropping into its depth and getting a thorough plastering with snow. We spent two days hauling loads back up this fixed rope, using a pulley system so the men at the bottom could haul the cans up by simply running down the lower part of the slope.

During these hauling days a little paper work convinced us that with a party of only four, we would be unable to relay loads fast enough on the ridge to maintain an adequate food margin in the upper camps. So we decided to cache the food and equipment on the rock ridge and hope to return some other year. One evening Tim and I went up to the ridge to about 10,000 feet and found the climbing straightforward, although it looked as if it would get interesting for the next 3,000 feet. We feel that the east ridge of Logan would be a fine climb, possibly one of the best in the Yukon.

By July 28th we were at the base of the north side of Mt. Cook. The problems on Cook were first, to find a route through the crevasses to a saddle on the north ridge, and second to sneak up to this col and the summit during a lull between the many storms. Dick and I spent a day wandering in and around crevasses in an effort to find a route to the base of the slope leading to Cook Col. The little section of glacier below this slope was a real mess and so disheartening that the next day Dick and Franz walked over to a pass looking down on the Hubbard to see if we could sled around the peak and get to the col from the other side. Tim and I returned to the breakup and to our surprise managed to work out a route.

The following day we moved a camp through the breakup to the base of the slope leading to the col and spent a night waiting for the snows above to freeze. The next morning we were off at four, and at seven reached the col, where we set up a camp then continued on for the top. We cramponed up the snow in deteriorating weather and were in a cold cloud at the summit. After the usual huge lunch we descended to our col camp, arriving at 6 p.m. We slept the night there, and next morning dropped down to base camp.

On August 3rd we started the trip back to the coast. The sled ropes fitted comfortably into old worn places and we moved easily down into the fog hanging over the Seward Trough.

On August 8th we crossed the last of the abominable pressure ridges, and arrived at the beach only to find that our food cache had been stolen. We had eaten all our emergency food, the wood on the beach wouldn't burn properly, it was still raining, and we wouldn't be picked up until the weather cleared. This trip was starting to get a little depressing. We lived off the land as best we knew how—and the rain continued. We began to take a certain sadistic delight in watching each other slide, splashing and groaning, into a sleeping bag which had been soaking wet for six days.

Finally, on the morning of August 12th we were spotted by a Coast Guard amphibian, which was making air drops on the Malaspina for Professor Sharp. They took word over to Yakutat and an hour later John Merriman landed the Cub on the beach and took the first two aboard for the flight across the bay.

TRAVERSE IN THE NORTHERN PURCELLS

By Fenwick C. Riley, Jr.

On August 19, 1953, five of us — Peter Robinson, Gene White, and myself from the Dartmouth Mountaineering Club, and Rob Day and Robert Brooke from St. Louis, Mo.—left Spillimacheen, B.C., to begin a traverse which would take us from the head of Vermont Creek south approximately twenty-six miles to the head of Bugaboo Creek. To the best of our knowledge, we would be in unexplored territory from the time we climbed out of the Vermont Creek valley until we reached Mt. Conrad. Although rumor had it that there was a good mining road from the Spillimacheen River to the Ruth Mine on Vermont Creek, no one could tell us exactly where it was, and we lost most of the day driving up and down logging roads searching for it. During our search, we met a group of Harvard Mountaineers who were returning from making three first ascents in the Carbonate range just north of our proposed route. They told us of their ten days of sunny weather while we stood in a drenching shower, ominous warning of what the weather had in store for us.

Finally we found a logger who knew where the old mining road was, and at four p.m. we were struggling up a wet, slightly overgrown trail as rapidly as our eighty pound packs would permit. The abandoned road crossed the ridge between the Spillimacheen River and Bobby Burns Creek, across Bobby Burns Creek, along the west bank of Vowell Creek, and then up Vermont Creek to the old mine cabins, a distance of about fifteen miles. The first four miles, as far as Summit Lake cabin, were in fairly good condition, but after that the trail was a jumble of windfalls, very painful to negotiate with a large pack. It took us sixteen hours, four the first day and twelve the second, to reach the Ruth Mine, and it rained nearly all the time.

Two nights were spent at the cabins, while we relayed half of our loads up to Cold Shiver Col at the southwestern corner of the glacier at the head of the north fork of Crystalline Creek, just west of the Vermont Creek valley. The following day we again ascended the glacier, left the remainder of our loads on the ice, and turned north to make the first ascent of Mt. Syphax (ca. 9600 ft.). The climb was not too difficult. This seemed to be the case with nearly all the mountains we saw until we had crossed the Conrad Icefield. From the west, our route went up the south face over a series of slight ledges to a snow summit and then to the true summit, which is rock.

Returning, we carried our full loads over the col into the Valley of the Lakes, where we pitched camp under the towering south face of Mont Brouillard (ca. 9800 ft.). Although the next day was cloudy, we made the first ascent of Mont Brouillard, a fairly difficult climb which took four and a half hours. We climbed the snow on the southeastern ridge of the pinnacle, up over the rock to the notch, crossed through the notch to the west face, and up to the summit ridge, and there we split our forces. Three of us continued along the west side to the summit and did three very interesting pitches on the way, and two others went along the east side of the ridge. To reach the summit we had to climb a twenty-foot pitch up a crack which began about six inches wide and rapidly opened into a narrow chimney. Sleet fell while we were on the summit, and our descent was hurried by the threatening rumbles of an approaching thunderstorm.

The patter of raindrops lulled us to sleep that night, but we awoke in the morning to find a three-inch layer of snow covering everything. That almost ended the traverse, but after some discussion, we decided to go on as far as a wedge-shaped, unclimbed 10,000 ft. peak two days to the southwest. If the weather was still bad we were to turn back, but two days later we knew that

The Northeast Side Of Mt. Brouillard.
From Color Slide By P. Robinson

Showing first and last portions of route
(note figures on glacier).

The South Summit Of Mt. Syphax Looking Northeast.

The Valley Of The Middle Fork Of Crystalline Creek.
From Color Slide By Fen Riley

Descending toward Camp IV.
The Cascade coming down from the most northerly peak in The Crystal Range. Just beyond the peak is Climax Col.

we would go southward to the Bugaboo no matter what the future weather turned out to be. For behind us lay a route which would have been next to impossible to retrace. It had been open and relatively easy as we climbed over the ridge separating the Valley of the Lakes and the neighboring valley, which Peter had called a "geologist's paradise". But the following day when we descended to the middle fork of Crystalline Creek we bushwhacked down a very steep slope, thickly covered with small trees and bushes. At times, we had to swing on the trees to get down. Proceeding up the middle fork of Crystalline Creek, we climbed the small steep glacier at its head and reached the Hume Creek Pass. The clouds appeared to be blowing away, and we were able to get a good look at the spectacular country around us. To the northwest was the unclimbed 10,000 ft. peak, its summit hidden in clouds. To the west, and seemingly not much more than a stone's throw away, were the rugged peaks of the Selkirk Mountains, inviting but impossible to reach. To the northward we could see Brouillard and Syphax, under their new coverings of snow.

Deciding that we had better cross the next pass in case the weather turned bad, we climbed down to the Hume Creek glacier and ascended it, passing beneath a good-sized hanging glacier. To cross Climax Col, we had to climb a steep snow slope and then a difficult pitch of rock. At the top of the col, we decided that it would be very dangerous in bad weather and we were glad to have our loads across it. Glissading down a slope of powder snow, we worked our way about half way down into the valley of the south fork of Crystalline Creek and camped just at dark, in clearing weather.

The next day dawned bright and clear, but about noon when we set out a climb the north peak of Crystal Mountain (ca. 9700 ft.) clouds were again blowing in from the west. After a pleasant snow climb, we reached the north summit and got an even better view of the area. Now to the southeast we could see the glistening white summit of Mt. Conrad, the west tongue of the Conrad Icefield, and three peaks which looked like they would provide some interesting climbing possibilities—Mt. Thorington (ca. 9900 ft.) above the west tongue of the icefield; an unnamed peak (ca. 9800 ft.) in the Crystal Range, and the south peak of Crystal Mountain (ca. 9800 ft.). The sky was completely clouded over when we glissaded down off, and rain that night convinced us that we would definitely have to give up the idea of making a first ascent of the 10,000 ft. peak. Next day we moved camp down to the valley floor in a driving rain, and Peter and Rob carried part of our supplies up to the glacier tongue to save time the next day, while three of us set up camp in a grove of trees.

The next day, Bob Brooke's birthday, was cloudy but not rainy, and we were heading toward the icefield at 7:15, up the steep moraine. Stopping for lunch, we looked out across the glacier toward Mt. Malloy (ca. 9800 ft.), around which we would have to go to reach a camp-site. Just to the north of us, Mt. Thorington's east peak occasionally came from behind the swirling clouds, looking like a miniature K2. By 6:30 p.m. we had crossed to a moraine on the other side of the glacier tongue that flows to the north here, and ascended to the icefield pass, which is about 9500 ft. high. Descending an ice fall, we camped on a moraine beside the glacier at the head of Malloy's Creek, constructing rock platforms for the tents. It had taken us eleven hours to cross the icefield, and we were thankful that there had been little sun that day.

After a cold, windy night, four of us set off to make a second ascent of Mt. Conrad. Rob Day decided to stay in camp and rest. We all tied on the same rope with me in the lead, and, ascending the icefall that we had come down the night before. We crossed the icefield to the north ridge of Conrad. A six-inch layer of new snow covered everything, and made the going pretty tiring, and clouds limited visibility to between twenty-five and fifty feet. At 3:00, four hours after

we left camp, we found the cairn that had been built in 1933 by Conrad Kain and I. A. Richards after their first ascent of the mountain. We stayed long enough to leave a note, and then made a hurried descent. While waiting for us to return, Rob had found a cave under a huge boulder and it provided a shelter from the night winds.

Starting at 10:40 the next morning, we set out over the Malloy's Creek-East Creek pass of the icefield in thick fog. Luckily, we had aerial photographs and knew which direction we wanted to go to reach Warren Glacier. Soon we found ourselves at the head of an icefall, more broken and challenging than any we had previously run across. The limited visibility made route finding difficult, but Peter managed to choose a good route down. At one spot we had to rope the packs across a large crevasse before climbing down into it and up the other side. That was followed shortly by two sixty-foot rappels, which put us below the worst of the icefall. The fog had cleared by the time we reached the valley floor, and revealed to us an amazing sight. We were in the middle of a semicircle of icefalls, all sparkling blue, flowing into the valley.

Climbing a long snow slope, we came out on the Warren Glacier. Although we had been waiting for days to see the much-talked-of sight of Bugaboo, Snowpatch, and Howser Spires, we saw only the lower three hundred feet of Bugaboo and Snowpatch as we hiked for two hours across the ice.

Glissading down the steep Snowpatch-Bugaboo col, we scrambled down to Boulder Camp, arriving there at 8:30 p.m., twelve days after leaving Spillimacheen. We were met there by several of Peter's friends who had come to join us for some climbing in the Bugaboos, as well as an encampment of Iowa Mountaineers. In spite of much talk of coming good weather, three of us decided that civilization's call was too great and we set off in a drizzling rain for Spillimacheen.

Despite popular report, the Purcells do not decline in alpine characteristics in the area north of Mt. Conrad, and we found several peaks as yet unclimbed, that would be worth going back for.

FURTHER ADVENTURES IN THE NORTH SELKIRKS

By William Putnam

In the spring of 1953 the Harvard Mountaineering Club decided to hold its third leadership school. This decision was based on the successful trips run in 1947 and 1951, which produced a number of very competent leaders. Since a trip into the Sir Sandford area in 1948 with Ben Ferris and Andy Kauffman, I had always felt a great fondness for this particular region, so we planned to assemble at Swan Creek on July 20, an advance group going up to clear trail on July 18.

Harry Francis saw to it that aerial drops were prepared which David Michael (Georgia) threw out of the plane onto the Gothics Glacier and the upper Sir Sandford Glacier. Harry also saw to it that fourteen of the younger H.M.C. members knew how to get to Swan Creek at the right time with the proper equipment for three weeks in the hills.

On Friday, July 17, some of us arrived at the Swan Creek crossing, where we faced extremely high water and had to plan our crossing very carefully. Late next day we were across the Columbia River with much gear and thinking of going up. Sunday morning, Graham Matthews, Georgia, Roger Gregg, Art Read and John Hodgson started up with me through the horrible bush of the lower Swan Creek. There is a zone of about three-quarters of a mile which burned about twenty-five years ago. This has now become really thick undergrowth with old logs criss-crossed throughout. From our camp on the only large ½ acre) gravel shingle at the lower end of Swan Creek, we six bushed with machetes and axes a fairly good trail through all this mess, arriving at the big timber by noon. The trail we made should be recognizable for two or three years and possibly longer, since the new trees are now getting fairly sizeable.

The whole party was safely ensconced at the new campsite in upper Fairy Meadow by Tuesday afternoon. We feel that as a result of our trail work, future parties will find Swan Creek much less terrifying than it has been in the past.

Our first concern was for our aerial drop, so on July 22 we all set out past the Echo and Shoestring Glaciers to Friendship Col. The drop was located easily. All bundles were brought in from the Gothics Glacier to the col and cached there; we took down only enough for our needs for the next few days, the remainder being packed down as needed by parties climbing around the Gothics Glacier.

Before undertaking any serious climbing, Harry and I undertook a one-day session of instruction in step chopping, ice and snow belaying and crevasse rescue for all members new to this work.

Every younger member of the expedition was to climb at least once with one of the experienced members. For this purpose we had to do some careful organizing of climbing parties every day so that Matthews, Michael, Francis, Aspinwall, Bernays and myself had different parties from those of the preceding days. As the days went by, other members seemed to become qualified as leaders and there was opportunity for some of the leaders to climb together.

This expedition made first ascents as follows:
Mt. Sir Andrew (from Cycle Pass via the east slopes).
Mt. Sir Henry (Cycle Pass via northeast snow slopes).
Stickle.
Magog (a four lead rock climb of great difficulty).
Yggrasil (from Gothics Glacier via west ridge).

Fria (from Gothics Glacier via east snow ridge).
Mt. Sir Benjamin (from Gothics Glacier and north face).
Gibraltar.
Toadstool.
Mt. Silvertip (from Haworth Glacier and south face).
Lesser Blackfriar. Ravelin (from Sir Sandford-Ravelin Col and south ridge).

We also made a number of new routes on previously ascended peaks as follows:
Enterprise Peak (from Mt. Sir Henry and north ridge).
Mt. Colossal (from Unicol via the southeast face).
Pioneer Peak (from Pioneer Pass and the northeast slopes).
Wotan (from south and east; two new routes).
Footstool.
Mt. Sir Sandford.

Other ascents included: Mt. Sir William from Nobility Glacier via the south slope; Mt. Unicorn from the upper Granite Glacier; Pioneer Peak from Gothics Col and south ridge; Sentinel Peak from the south ridge; Damon from Friendship Col; Gog via the south corner; Thor from upper Gothics Glacier and east ridge; Belvedere Peak from Silvertip Glacier and south slopes; Mt. Quadrant from Echo Glacier and south ridge; Enterprise Peak from Enterprise Glacier basin and south face; Mt. Citadel from upper Sir Sandford Glacier and east ridge; Palisade Mtn. from Sir Sandford Glacier and south slope.

The great number of ascents listed indicates that we enjoyed generally good weather, and had a fairly strong and eager party.

Of most interest are the ascents of Gibraltar, Sir Sandford, the Little Blackfriar and Stickle. Gibraltar has long excited the minds of those who have seen it. It appears to overhang in every direction. After analysis of various pictures I decided that the only feasible route would lie in the southwest corner.

On the morning of July 28 nine of us proceeded to Gibraltar and its west satellite, known as Toadstool. Georgia and Jim McCarthy attempted the north face of Gibraltar, by a route we determined the previous day. Pete Alden and Craig Merrihue examined the Toadstool, so named because it overhangs on all four sides. They found a cold, wet chimney partially filled with ice, up which they chopped steps, emerging-above the overhang on the south face. This brought them quite rapidly to the summit. Graham Matthews was looking at the southwest re-entrant corner of Gibraltar and, in company with Nabokov and McLeod, examined the possibility of getting off the snow. It appeared to be the only really difficult pitch on the whole route. After several false starts a sling was fastened to a piton and this hand hold enabled the party to commence. A steep gully brought them to the southwest face, which went relatively easily up to a mass of fractured boulders, near the west shoulder of the peak. By this time Georgia and McCarthy had retreated.

The west shoulder of Gibraltar is extremely sharp and the boys found it rather difficult to traverse along this knife edge crest toward the summit. It was a fine climb, but the Toadstool, while quite spectacular, was really a letdown.

The next ascent we made, of real interest, was that of Mt. Sir Sandford, It was our opinion that the routes previously used were quite dangerous. Georgia was certain that a route could be found along the northwest ridge, and I felt that the east ridge would be worth an attempt. When we had our camp pitched on the ground moraine at the foot of Silvertip Glacier we each took a

reconnaissance party in the direction of our respective ridges. On August 2 six of us got up at 4 a.m. and took off across the Sir Sandford Glacier to the Sir-Sandford-Ravelin Col. My party went up the ice fall of Footstool Glacier to the base of the north buttress of Sir Sandford. Here we were tempted by the north buttress and temporarily gave up on the east ridge. We went up about 1,000 feet of this rock before we decided we needed pitons.

Although it was really too late in the day, we traversed down to the upper Footstool Glacier and went up the Footstool for a closer look at the east ridge. We decided it was worth a real attempt, but it was too late that day. Meanwhile Georgia's party had reach the Col and found on the west side of the northwest ridge a system of very easy ledges which took them past all the obstacles that Howard Palmer's party spent three years struggling with. The ledges took them back to the northwest ridge above the "long slope" near the level of the Hour Glass. From here it was straight-forward step-kicking in snow along the upper glacier to the axial ridge of Sir Sandford. They were a little over seven hours getting to the summit. Two days later Harry Francis took a much larger group up what we now called the tourist route. I took another large party to attempt the east ridge without success.

Between these assaults on Sir Sandford several members of the expedition constructed a cairn 20 feet high, which we estimate contains about 46 tons of rock.

On Aug. 4 Georgia, Matthews and McCarthy were off looking at the Little Blackfriar. The Big Blackfriar had been climbed by Sterling Hendricks in July, 1946, and their report of the Little Blackfriar indicated that it would be considerably tougher. Georgia's group was gone from camp for 18 hours. The route lay over the summit of Mt. Belvedere and along the connecting snow ridge, which was somewhat corniced, until they were on the rocks of the Blackfriar massif. A wide ledge on the west side of the peak took them around to the north on the west face to a prominent gully. Although this gully has one extremely difficult pitch, they ascended it to the peak in six leads from the ledge. The Little Blackfriar is almost sheer on all faces and although this description of the route sounds simple there was considerable difficulty in finding a route, because of the steepness of the cliff itself. It took them 13 hours to reach the summit from the cairn. The return was hastened by several rappels.

After the main body of the expedition had left, McCarthy took a group up Magog, one of the two prominent gendarmes which stick out of upper Echo Glacier. The more substantial-looking of these, Gog, had been climbed three years earlier by Gerry Cunningham's party. Graham Matthews had been much impressed with the Stickle (sometimes known as Gothic Spire) a stiletto-shaped pile northeast of Pioneer Peak. The Stickle rises sharply from the low ridge between Pioneer Peak and Adamant and is accessible only from the Granite Glacier side. On the Adamant Glacier (south) side there is a sheer cliff for quite some distance below the cols and along the south side of the Stickle. In 1950, Kauffman had attempted the Stickle. Matthews discovered a route on the Pioneer Peak side by which he could get through the upper crevasses and onto the rock. His party worked more to the north side, and found the going relatively straight-forward to the summit . Their descent was by the northwest side, by a series of rappels. This climb was the last our group made in the area, and was certainly one of the most rewarding, bringing to a close a very successful season in one of Canada's finest mountaineering areas.

ASCENT OF MT. CHAPMAN

By A. C. Fabergé

Howard Palmer and Robert H. Chapman probably were the first mountaineers to visit the extreme north of the Selkirks. Their aims were mainly topographic, and their expedition, which took place in 1915, is described by Palmer.[10] Starting on the western side of the range, from the mouth of Mica Creek, they ascended several of the summits of Fred Laing Ridge. This last name is not used by Palmer, but appears on the 1" to 4 miles Revelstoke-Golden British Columbia Department of Mines map No. 5 D. Palmer wrote: "between the trunk stream and its northerly affluent" (that is, Bigmouth Creek and Louislee Creek of the above map) "rose a splendid new peak covered with snow, which dominated its entire neighbourhood." Further in the article, a footnote appears: "since this was written, the peak has been named by the Geographic Board of Canada "Mt. Chapman", in honour of Major Robert H. Chapman, deceased". On the map, the altitude of the peak is given as 10150 feet.

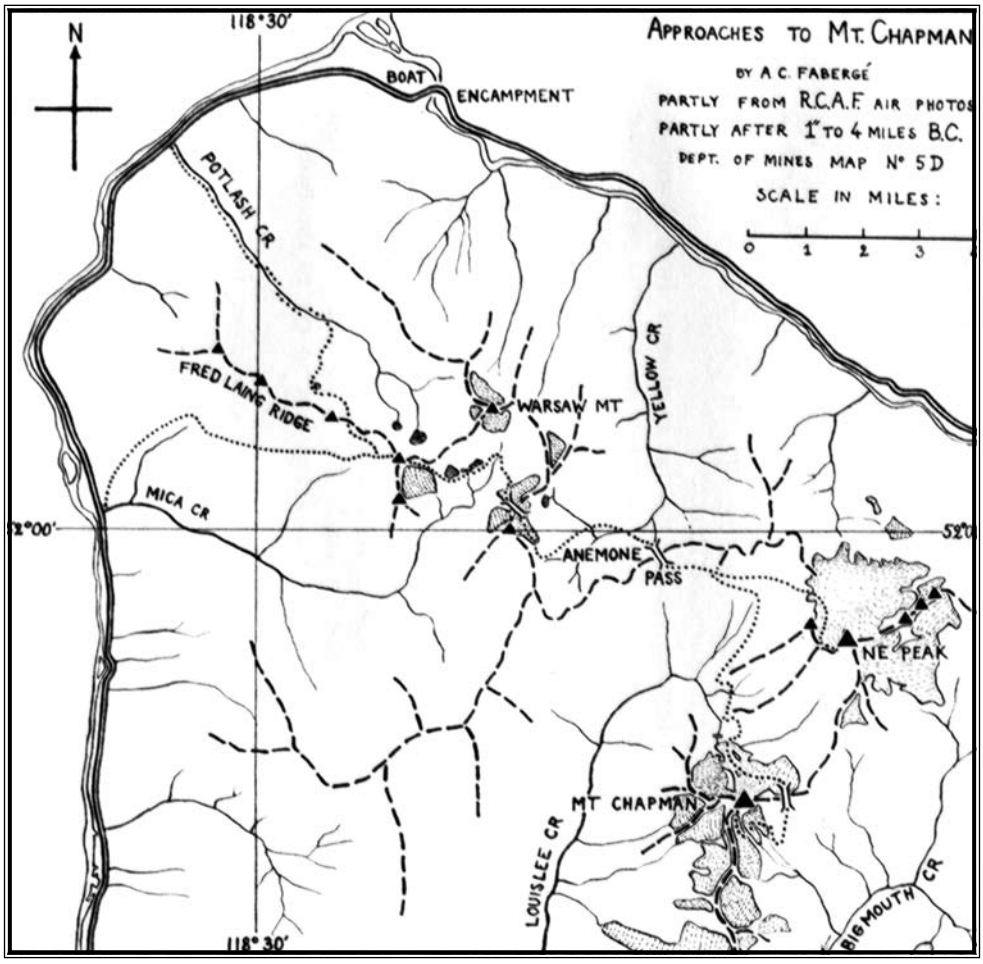
I became interested in this peak and its neighbours when I first saw them from the Windy Range in 1950, and next summer the first attempt to reach it was made with Richard Wilson, of Oxford. Having only six days, we started from the mouth of Potlash Creek, and followed its course for about four miles. The upper part of this valley is rather flat, and occupied by an enormous and uninterrupted growth of slide alder, a discouraging sight to meet as one emerges from the forest; but our dismay did not last, for we soon discovered that the stream here lends itself to wading. Thus without too much labor we could reach a pass in Fred Laing Ridge, along the southwest side of which we continued towards our objective.[11] Traversing along the south side of Warsaw Mt. on a broad shelf which carries a minute glacier and several lakes, we dropped a few hundred feet to Mica Creek, near its source. Thence we rose to a glaciated pass, and descended the southeast side into the upper basin of Yellow Creek. This is a wide expanse of alpine park land, five or six square miles in area, with several lakes. Our base camp was set up on the edge of this basin, at a spot we now call Anemone Pass, which leads to Louislee Creek. Except for the initial forest, the route is remarkably pleasant and easy, but complicated in its detail. Several false moves were made, for the map is very inadequate. In particular, descent from the glaciated pass to the Yellow Creek basin at first looks quite impossible, and a search had to be made for a traverse on small ledges leading diagonally down through the cliff. It took three and a half days to get to Anemone Pass.

Mt. Chapman seemed too far to attempt from Anemone Pass, and we confined our attention to a nearer peak, some four miles northeast of Chapman. We were reduced to just one day on which to climb, and that day proved to be one of continuous rain and fog. After trying to find our way for about two hours, we declared the situation hopeless, and we started back. On reaching Fred Laing Ridge, the route was changed; instead of crossing to Potlash Creek, we kept above timber on the southwest slope. That evening, camp was made at timber line, at a spot estimated to be directly above the mouth of Mica Creek. Next morning it took just five hours through the forest to reach Big Bend Highway. We had climbed no peaks, but had found how to get to the base of Mt. Chapman.

At one moment there were six candidates for an expedition in 1953, but we finally were

10 Palmer, H., 1942. "Topography of the Gold Range and Northern Selkirks, British Columbia". Geogr. J. 57: 21-29.

11 Warsaw Mt. Name used by Thorington in "A Climber's Guide to the Interior Ranges of British Columbia" 2nd Edition. It is almost certainly the "characterless dual topped massif . . . did not surpass 9,000 feet or so" of Palmer's article.


N
118°30'
APPROACHES TO MT. CHAPMAN
BY A.C. FABERGÉ
PARTLY FROM R.C.A.F. AIR PHOTOS
PARTLY AFTER 1" TO 4 MILES B.C.
DEPT. OF MINES MAP N° 5D
SCALE IN MILES:
0 1 2 3
BOAT ENCAMPMENT
POTLASH CR
FRED LAING RIDGE
WARSAW MT
YELLOW CR
MICA CR
52°00'
ANEMONE PASS
NE PEAK
MT CHAPMAN
LOUISLEE CR
BIG MOUTH CR
118°30'

reduced to two, R. A. Schluter and myself. In case of any mishap away from civilisation, a party of two is at such a disadvantage that it ought normally to be regarded as contrary to good practice. This consideration imposed on us a severe safety code, and was decisive in the choice of a route on Mt. Chapman.

After buying provisions for ten days in Golden we drove to the mouth of Mica Creek. Our route was about the same as the return journey of the 19S1 party. In three days we reached Anemone Pass, almost half this time being spent in the forest. The usual Selkirk undergrowth is there, and much altitude must be gained, for the start is at only 2000 feet. Nevertheless, by Selkirk standards, it is very easy: there are no alder slides; with care old burn areas can be avoided, and one continuously travels up the line of greatest slope. Once above timber, the way is pure delight. Palmer wrote of the alps of Fred Laing Ridge: "The pastoral character of these outlying spurs of the range (6000-8000 feet) was very favorable to our work; they resembled the White Mountains of New Hampshire, with smooth rounded slopes carpeted with grass and flowers, and whitened here and there with snowbanks. It was possible to travel almost as one willed. Around Anemone Pass is the most beautiful area of alp-land I have seen in the Selkirks. Reflecting an everchanging Selkirk sky, many small lakes are set at various levels; connecting them, a network of streams and waterfalls flows in and out of snowbanks. Among the meadows are groups of dwarf spruce, clumps of Cassiope and Phyllodoce, while Anemones appear in masses at the margins of the receding snow, where the grass is still brown. It is a paradise for numerous marmots, who all seemed unusually fat and well fed as they sat up on their hind legs to examine us. Across the pass, Mt. Chapman in its full height appears above the dark forest of Louislee Creek, extensive and powerfully sculptured glaciers giving the peak a dignity altogether beyond its modest altitude. To the left, and nearer, was another, lower glaciated summit, to which we referred as the northeast peak. This Wilson and I tried to reach in 1951. So delighted were we to set down our packs and find ourselves in such a spot, that we unanimously declared a full rest day, even though we did not feel particularly tired.

On August 6 we climbed the northeast peak, going across the alps at the head of Louislee Creek, and up the main glacier to a saddle, whence the summit was reached by the west ridge. We found a large cairn there, but no message. Enquiries made since leave little doubt that the peak was climbed in 1937 by a survey party led by Mr. N. E. McConnell, who in his report gives the altitude as 9954 feet.[12] Weather was sunny, and we spent a long time examining Mt. Chapman, four miles to the southwest, but several questions remained unanswered. So foreshortened did the southeast face appear, that it was very difficult to assess its climbing possibilities, although a photograph taken from the Windy Range in 1950 gave much help. The crossing of a cliff separating two parallel glaciers is the key to this side of the mountain. At one point only did the cliff look possible, and if so, the far glacier would take us close to the summit from the southwest side. Two other routes could be considered, the east and northwest ridges. The east ridge, which is the left profile of the photograph, is by far the most direct. Parts are steep, however, and their difficulty would depend on the nature of the rock, a factor most difficult to forecast, for these mountains consist of a most singular mixture of excellent granite with the loosest and most friable schist overloaded with mica. The northwest ridge, facing Anemone Pass, seemed so long, and required so great a loss of altitude, that we excluded it from our plans.

Next day we spent five hours moving camp closer to the base of Mt. Chapman, over alps

12 Information kindly supplied by Mr. P. E. Palmer, Chief Topographic Engineer, Topographical Survey, Ottawa.

Mt. Chapman From Main Peak Of N.E. Summit.
Photo Dr. A. C. Faberge

Mt. Chapman.
Photo Dr. A. C. Faberge

and dwarf forest at the head of Louislee Creek. Between two forested ridges we came upon an absolutely flat meadow with deep and clear meandering streams, a former lake, and nearby we pitched our tent. Between the tongue of Chapman glacier and camp remained one more forested ridge, and this gave us an unpleasant surprise early next morning, when we were on our way to the peak: behind it was a smooth and quite unclimbable slab. There was no choice but to go down into rather horrible bush, a detour that cost two hours. More time was lost on the glacier, where I started up the wrong side and finally got involved in impassable crevasses. At the start, weather had been clear, but by the time we reached the pass, a mixture of rain and snow was falling, and we were in thick fog. Many climbers would have preferred to turn back under the circumstances, but Bob Schluter thought the discomfort and prospect of a bivouac worth accepting.

It seemed unreasonable, with the weather prevailing, to try the east ridge. Occasional rifts in the fog disclosed that for the route on the southeast side, a descent of about 1000 feet on the Bigmouth Creek drainage would be needed. With little hope, we proceeded. The way is complicated, but would be obvious to anyone trying to repeat it. First, diagonally down over loose rock, scree, old moraines and snow, then up steep glacier-worn rocks, up and across two small glaciers, to the base of the long cliff mentioned earlier. The spot in this cliff, which had looked climbable, was a sort of shallow and almost vertical gully, consisting of rocks embedded in a kind of earth. For two ropelengths, the passage required much care. Once on the third, far, glacier, we knew that simple snowplodding would take us to the summit rocks; but the storm continued, and nothing could be seen of the surroundings. Our dead reckoning consisted simply in following the steepest slope. Some final steep snow, a few ropelengths in disconcertingly loose rock, and we were on the summit ridge in the vicinity of the summit. Some minutes were spent looking for the highest point, for little could be seen in the horizontally driven snow. It was 6 p.m., and much too cold to linger. Never have I spent less time on a summit. Hurriedly we built a rudimentary cairn, scribbled an almost illegible message, and left.

Light began to fail as we got off the last glacier of the southeast face. At this point we should have started our 1000 foot ascent back to the pass; instead, we went down a little to find shelter for a bivouac among some rocks. Extra food and a tarp made the night fairly comfortable. Next morning, in intermittent rain, we returned over Chapman Pass and down the north glacier, reaching camp at midday.

Plenty of food remained, and with much improved weather the journey back was made in leisurely fashion. Two very easy days took us back to the edge of the forest above the mouth of Mica Creek, and the descent to the road occupied five hours.

REFLECTIONS ON EVEREST

Acclimatisation versus The Use of Oxygen on High Mountains

By N. E. Odell

On Coronation Day, *The Times,* London, opened an editorial article with these words: "Seldom since Francis Drake brought the *Golden Hind* to anchor in Plymouth Sound, has a British explorer offered to his Sovereign, such a tribute of glory as Colonel John Hunt and his men are able to lay at the feet of Queen Elizabeth for her Coronation Day." It went on to say: "It is pleasant to think that the atmosphere of youth and aspiration belonging to the new reign inspired Colonel Hunt's men in a contest which, as has long been recognised, could be won only if the spirit repeatedly triumphed over the weakness of the flesh, and even of the exhausted mind." Significant and inspiring words indeed both in respect of the supreme achievement of the summit of Mount Everest by a British Expedition, and the gratification so widely felt that New Zealand mountaineers, and in particular Sir Edmund Hillary, have added so notably to that "tribute of glory" in our Sovereign, at the opening, let us hope, of another and as vigorous, Elizabethan era.

In this article I want to say something of the effects of effort and endurance upon the human involved in this specialized kind of pursuit, this combat with extreme natural conditions; may we call it, in present circumstances, this unusual "knightly venture", that has summoned men again and again to pit their strength and will against giant Himalayan peaks. And let it be understood; that in recent years it has not been upon Mt. Everest alone but upon a score of other lofty summits of that great range where bold enterprises have striven ; have in many instances failed, or, have sometimes succeeded. But success in entirety has only been attained by extreme tenacity, as well as by a high degree of team-spirit and of comradeship in the men who climbed as an articulated and disciplined unit, although, be it noted, only the small spearhead, of perhaps two individuals, could ever hope to stand upon the summit. This striving of the human being upon mountains well above twenty thousand feet in altitude, involves of course, not physical difficulties of steep rock or ice alone, but the physiological difficulties attendant upon an environment where the partial pressure of oxygen falls to a third of that existing at sea level, and atmospheric pressure upon the human frame and organs is correspondingly reduced.

With such conditions carried to an extreme in the case of Mt. Everest it was only natural that the earlier expeditions following the First Great War, should have adopted the advice of physiologists and equipped themselves with an artificial supply of oxygen for use high on the mountains. The advice given, was largely based upon tests made in low-pressure chambers ; although important physiological information had been obtained in a more natural mountain environment by Dr. A. M. Kellas during ascents to over 23,00 feet on Mt. Kamet and Pawhunri in the Himalaya, as well as by other physiologists at relatively moderate altitudes in the Andes and on Pike's Peak, Colorado. But such noted experts in England as Professor G. Dryer, Professor J. S. Haldane, Professor Sir Joseph Barcroft, Sir Leonard Hill, B. H. C. Matthews (now Professor Sir Bryant) and others, e.g. Dr. Vandall Henderson, of Yale University, were prominent in their offers of much kindly physiological assistance to the earlier Everest Expeditions. However, two view-points on the part of physiologists stood out in marked contrast at that time: Kellas as early as 1916 declaring (Geograph. Journ. 49, 1917), "It is highly probable from the data obtained that a man in first-rate training, acclimatised to maximum possible altitude, could make the ascent of Mt. Everest without adventitious aids, provided that the physical difficulties above 25,000 feet are

not prohibitive"; whilst Professor Dreyer, of Oxford, maintained that, although oxygen need not be used below 23,000 feet, it should be taken at all times above that altitude, during ascent and descent, as well as while sleeping (cited by P. J. H. Unna, "The Oxygen Equipment of the 1922 Everest Expedition", Alpine Journ. 34, 1922, 245.)

Now, the first Everest Reconnaissance of 1921 was entirely unprovided with an artificial supply of oxygen; and it has been recorded (ibid Unna 1922) that no apparatus would have been available for the second Everest Expedition of 1922 had not Kellas reported his difficulty in getting primus stoves to burn at high altitudes on Mt. Kamet. That brought about experimentation in the vacuum chamber at Oxford on modified burners for the stoves, as well as discussion as to the needs of the climbers themselves in the further attempt on Everest. The result was that after much preparation, breathing apparatus became available for the second expedition, and as is well known, use was made of it on the north face of Everest to an altitude of 27,235 feet during an ascent by George I. Finch and J. Geoffrey Bruce. However, that same year Mallory, Norton and Somervell, unequipped with breathing apparatus, reached an almost equivalent altitude of 27,000 feet. Consequently, the case for oxygen appeared unproven. Nevertheless Somervell, one of the medical officers of the party, expressed his view in no uncertain terms when he declared (C. G. Bruce: The Assault on Mt. Everest, 1922), "The chances of climbing the mountain are probably greater if oxygen be not used", since, he maintained, the oxygen prevents that degree of acclimatisation in the individual that should be acquired, and in the event of its failure endangers the party's return: he added "It were better to prepare for a number of attempts each by a small but acclimatised party, rather than to stake all on one or two highly organized endeavours, in which oxygen and a large number of coolies, are used."

This opinion, coming from so experienced a mountaineer and physiologist as Somervell, is apt to be forgotten today in the light of recent success on Everest by means of oxygen.

In 1924, with what was hoped would be improved apparatus, but still with mixed feelings prevailing as to its actual efficacy, our party of that year embarked on the third expedition to Everest. I was given the dubious title of "Oxygen Officer", in spite of being absent in Persia during the previous winter of preparation. My henchman, however, was A. C. Irvine, who proved to be a very able mechanic, which under the circumstances was invaluable. It should be stated that the original apparatus used in 1922, and now slightly modified, was based upon the model designed for use by fighter-pilots in the R.A.F. during the First Great War. The containers (cylinders), three in number, of special high-tensile "Vibrac" steel, were charged to 120 atmospheres, and each held 240 litres of oxygen measured at normal temperature and pressure. The gas was led by way of a reducing valve and a flow-meter to a face-mask, which, however, was later discarded for a tube direct to the mouth, for reasons given below. The whole apparatus weighed about 33 lbs., and was carried on a light steel tubular frame made by Bergans Meis of Oslo: this frame, incidentally, later came into use for general purposes as the well-known "Everest Carrier". The total oxygen content of the three cylinders at full charge amounted to about 1605 litres, to be used when climbing at two litres per minute. But in order to try and lighten this heavy load on the mountain, on prescribed physiological advice, Irvine and I modified the breathing apparatus, by substituting a needle-valve for the reducing valve, in addition to making one or two other minor changes; and we also cut down the number of cylinders carried to two, since a rate of consumption of two litres per minute seemed excessive, in view of the right degree of acclimitisation eventually attained by the party.

Now, various difficulties had arisen at home in the completion of the breathing sets, and much of the hurried work on them had been indifferently done. The journey of some 400 miles

across Tibet, on the back of yaks, did not improve the condition of the apparatus and many of the oxygen cylinders developed leakage. The result was that on arrival at the mountain and before any sets of breathing apparatus were repaired and available for use by the party, work on the pitching and stocking of the long line of camps up to that (Camp IV) on the North Col at 23,000 feet, had been carried out. And a further Camp V at approximately 25,000 feet, had been established by sahibs and sherpa porters, in spite of many sets-back on account of conditions and weather. The fact that during this period many of us had been living at altitudes of 21,000 feet, or over, for some three weeks certainly enabled us to acquire a high degree of acclimatisation. The subsequent achievement of Norton and Somervell, in attaining 28,000 feet, and Norton in particular, in his solo attempt to a point fixed by theodolite as 28,126 feet, reached entirely without the aid of oxygen, constitutes an outstanding record of its kind on the Tibetan (northern) side of the mountain. Mallory and Irvine on their last tragic attempt, from which they never returned, used oxygen in a somewhat forlorn hope that it might provide the extra energy for the final climb. How much they actually depended on it above 27,000 feet we shall never know; and when I last saw them during a clearing in the clouds, on the ridge at over 28,000 feet, it was impossible to decide whether they were using it or not; but they were moving steadily upwards. In "The Fight for Everest, 1924" (Norton), I have discussed our experiences in the use of oxygen, and related my own climbs with and without it on several occasions to above 27,000 feet. I emphasised that, due to my high degree of acclimatisation, I could get no benefit from its use and also that others of the party experienced the same thing. It is true that we puffed and blew, and were at times taking in as many as five or six breaths, or "gasps", for every upward step we took! Nevertheless the oxygen apparatus, when available, did not give any of us the relief expected. An interesting point, too, was that we could descend from extreme altitudes as fast as at lower (Alpine) elevations. Moreover it is significant that during the following expedition of 1933, four members, climbing in pairs (Wyn Harris and Wager; Smythe and Shipton) again reached a little over 28,000 feet, without the aid of a breathing apparatus. In fact we had come to the conclusion that an oxygen outfit should only be used as a useful clinical adjunct in case of frost bite or illness such as pneumonia, and should be discarded for actual climbing in view of its bulk and weight, apart from its demonstrated inefficacy to an acclimatised person. This indeed was our adopted practice in 1936 during the successful ascent of Nanda Devi (25,640 feet) by an Anglo-American expedition.

However, in 1938, if only to show absence of prejudice, we again provided ourselves, on this last pre-War expedition to Everest, with two types of oxygen apparatus. These were , (a) "closed circuit" model in which pure oxygen is breathed through a face-mask and the expired CO2 is absorbed by soda-lime; and (b) the "open" apparatus by means of which the climber breathes a mixture of oxygen and air, through a rubber tube, without the provision of a mask. In "Mount Everest, 1938" (Tilman) and in "Nature", (143, 1939, p. 961) Peter Lloyd has described these two models, and has related his and Dr. Charles Warren's trials with them above 23,000 feet on the mountain. Both Lloyd and Warren found, as had: others before them, that in the use of the close-circuit apparatus with mask, there is a great danger actually of suffocation! This is in part due to the formation of ice from frozen saliva, but other defects were apparent. The user of the face-mask found that he had to discard it, and then dispense altogether with the apparatus in order to keep pace with others not provided with this artificial "aid"! However, when using the open apparatus at an oxygen flow of two litres per minutes, providing the necessary breathing technique had been mastered, Lloyd found that at altitudes above 26,000 feet, his climbing speed was an improvement on those without the apparatus.

Mention might here be made of a point of considerable interest both practically and physiologically, namely, the difficulty of breathing when passing the zone of altitude of ca. 19,000 feet. So many climbers have remarked on the extra labour of breathing as one approaches that elevation, and of then suddenly experiencing the effect of a sort of "second wind" allowing of better progress above 19,000 feet.

We now come to the new phase of post-Second War Everest Expeditions, with approach from the south through Nepal. Shipton's reconnaissance in 1951 was unprovided with oxygen apparatus; but in 1952 the Swiss party made use of it. In reaching their highest point at ca. 28,210 feet, Lambert and Tensing reported their great exhaustion, which indeed, continued for some days after their descent. They concluded that the summit at 29,002 feet (no other altitude, incidentally is recognized by the Survey of India!), could only have been attained (physical conditions otherwise allowing) with the aid of a more efficient apparatus than their own. But it would seem that they had really never previously acquired an adequate degree of acclimatisation, owing to having depended at a lower altitude, and too early, on an artificial supply of oxygen.

In contrast, for the last British Expedition the leader, Sir John Hunt, had stressed the value of a period of acclimatisation which he prescribed for his party immediately prior to the main operation. Groups were dispatched from the first base camp, at Thyangboche, to climb on local mountains up to 21,000 feet or so, and try out the two types of breathing apparatus available, closed-circuit and open models. So that during the main operation no fewer than nine of the eleven members of the climbing party went from the advance base (Camp IV) at 21,000 feet, up the steep head-wall of the Western Cwm, to the South Col at 26,000 feet approximately. Three of them did so twice. Moreover, of the 25 high-altitude Sherpa and Bhutia porters, 19 carried loads of 30 to 40 lbs. to the South Col, and of these 6 went up on two occasions. The highest camp (IX), at about 27,900 feet, was stocked for the final effort by dint of a truly remarkable "carry" mainly on the part of sahibs, in which Sir John himself took no small part: three of the five Sherpas, who had been chosen for this highest task, failed through altitude sickness. This left the Europeans to carry the bulk of the stores; individuals were actually lifting 50 to 60 Ibs. at over 27,000 feet! By no means all of these astounding individuals were using a full-time supply of oxygen, and Hunt reports that six of them spent days and nights on or above the South Col without undue hardship; one member indeed of this stout band had four successive nights on that exposed and inhospitable spot. All this, as Hunt has rightly emphasised, is eloquent enough testimony to the value of the earlier period of acclimatisation.

As an example of the high degree of acclimatisation attained by at least two of the party, Hillary and Tensing, as early as 2 May, we have their remarkable exploit in going from the base camp at 17,900 feet, through the difficulties and hazards of the Khumbu icefall, to Camp IV, about 21,1000 feet in 4½ hours' actual travelling time, or a gross total of 5 hours. This was undertaken as a trial run for the "open-circuit" oxygen apparatus, which represented 27 lbs. of the 40 lbs.' load that each of them was carrying. They returned to base camp the same afternoon in a snow-storm which had covered their outgoing tracks, yet they were able to find their route through the complications of the ice-fall, in spite of a last hour in darkness. Truly an outstanding tour de force, as well as an example of skilful mountaincraft, apart from a telling demonstration of the benefits of acclimatisation! It was this particular model of "open-circuit" apparatus, of course, that was used by Hillary and Tensing in their later crowning triumph. Evans and Bourdillon, on the other hand, in their outstanding ascent of the South Summit, 28,740, (not, incidentally, the South Peak— Lhotse, 27,890 feet, over which there has been some unfortunate confusion and lack of precision, even in

Hunt's "Ascent of Everest"!), used the more weighty and cumbersome, though theoretically more efficient, "closed-circuit" apparatus. The latter proved in practice, however, to be far less 'handy', and to have indeed, a good many of the inherent drawbacks which we had experienced with the "closed" type of apparatus during the earlier expeditions. Perhaps the principal reason for Evans and Bourdillon's inability to go higher than they did was their excessive length of climb, only about 100 feet short of 3,000 feet, without any bivouac above the South Col.

Now, as a result of the successful ascent of Everest with the aid of oxygen, there has appeared a pronounced tendency for many people to be "sold" on it. Quite a number of mountaineers and others seem to be emphasising the necessity for the use of oxygen generally at high altitudes.[1] We may admit that, with the tempo of competition to reach the summit of Everest assuming such an unfortunate recent increase, Sir John Hunt was right in adopting an all-out oxygen attempt in his bid for success. But this success with oxygen does not carry with it any conviction that under optimum conditions, that summit cannot be attained without an artificial oxygen supply.

A good many experienced Himalayan climbers feel that this is the case. It is this point which, in my opinion, is of the greatest importance for the future of high Himalayan ascents. All the added expense, and extra 'bandobast', implied by oxygen should not be regarded by Himalayan expeditions, with the highest objectives as necessary, or even desirable, at least until a far lighter and more reliable apparatus can be evolved. And, be it noted, with present apparatus at anything from 29 lbs. to as much as 41 lbs. or more ("Ascent of Everest", p. 258) we are still a long way from what was claimed by the great protagonist for oxygen, George Finch, to be available as long ago as 1938. His own words were "A complete apparatus, therefore, holding sufficient oxygen for at least 10 hours at altitudes above 25,000 feet, need weigh only 16-17 lbs."! (Vide *Alpine Journ*. LI, May 1939, p. 90). But the basis for this statement remains obscure.

It is of special interest in this connection to note the achievement of the Americans high on K2 last year, and the opinion of Dr. Charles Houston, experienced mountaineer and physiologist, who was their leader. The party of eight climbed through bad weather, and arrived in good condition to establish their Camp VIII, at ca. 25,500 feet. They were held up there for 11 days in very severe storms, and finally had to make a remarkable and successful retreat down the mountain, but with the unfortunate loss of one man, who was carried away by an avalanche. Houston, an old Nanda Devi friend of mine, writes "I see no reason whatever to change my opinion that 28,250 feet is reachable by well-acclimatised men without oxygen." He adds "I am reasonably confident that Everest will be climbed within the next generation without oxygen, although I must admit that this is on the border-line of the possible." In the light of this mature opinion, apart from the experience to back it which comes from a long series of other high altitude expedition, the remark, of Pugh and Ward (Hunt: "Ascent of Everest", p. 270) would, therefore, seem premature: viz. "The physical strain of going above 26,000 feet is such that few, if any, are capable of more than one such ascent in an expedition, and complete recovery from such an experience takes many weeks."

Consequently, it would appear entirely appropriate that the present New Zealand Expedition under Sir Edmund Hillary should go forth on their high adventure unhampered by oxygen apparatus and all that it necessitates in additional labour and expense. May they have an abundance of success, and lots of fun!

Moreover, is it not possible that a Canadian expedition (as has often been mooted) may

1 The recent Presidential Address at the Royal Geographical Society is a case in point: vide Geographical Journal CXIX, Sept. 1953, p. 263.

before long take the field in some enterprise in that unexcelled region of the Himalaya? The range is immense, and there need be no undesirable competition, if such an expedition ,on its first essay, will be modest in its objective, and not demand one of the highest unclimbed peaks. It can have plenty of choice, and its fill of adventure, on one or more of the lesser virgins existing in almost countless numbers up and down the range.

THE 1953 AMERICAN ATTEMPT TO CLIMB K-2

By Peter Schoening

K-2, also known as Mount Godwin-Austen, is the world's second highest mountain; about 750 feet lower than Mount Everest. During the summer of 1953 the nine members of our Third American Karakoram Expedition set out to climb it. Although this was primarily an American expedition, we had one English member, Captain Tony Streather and one Pakistani, Colonel M. Ata Ullah. The American members were Dr. Charles S. Houston, (leader), Robert Bates, Dee Molenaar, Robert Craig, George Bell, Arthur Gilkey, and myself.

The expedition left New York late in May and flew halfway around the globe—first to the capital of Pakistan, Karachi, then to the west Punjab town of Rawalpindi, and over the western tip of the Himalayas and up the Indus River to land on the river flats near the small town of Skardu. At Skardu, Captain Streather organized the group of porters hired to carry supplies approximately 140 miles into base camp. The expedition first got under way on June 5th, crossing the Indus River, then passing from village to village up the Shigar River valley.

Although the expedition's primary purpose was an attempt to climb a mountain, the experience was actually much more— becoming acquainted with the people and customs of Pakistan. Many of the people in these small foot-hill villages had never seen white men before. Their primitive methods of tilling the land and raising crops seemed especially fascinating. Had the expedition ended at this point, I doubt if we would have been disappointed.

Our group trudged on branching up the Braldu River and then on to the last little hill village of Askolle, nestling among the mountains at 10,000 feet above sea level. Here the porters, now almost 180 in number, were, re-organized for the last stretch into base camp. Once on the Baltoro Glacier we were in the famous Karakoram Mountains, probably the most spectacular in the world. Mammoth towers and spires jut up on both sides of the glacier, some with seemingly vertical walls of six and seven thousand feet. Many of these have been described by the members of previous expeditions; but, of course, it is virtually impossible to describe successfully such rugged beauty. A few of the named peaks are familiar to most climbers, such as Paiju, Broad Peak, Mitre Peak, Masherbrum, and Gasherbrum with its almost 12,000 foot western face. The Trango and Lobsang towers were likewise very spectacular. We passed close by Mustagh Tower which from one view is tremendously impressive. Amazingly, however, Mustagh does have two ridges that seem feasible routes to the summit, and it may be one of the easiest climbs in the Karakoram.

Finally, on June 19th we reached base camp located at about 16,700 feet at the southern base of K-2. Here the porters were sent back so they might tend their fields and prepare the crops. We did, however, keep with us six special porters, Hunzas, who would help pack the loads on the mountain. These Hunza men live by the Hunza River in the very northern tip of Pakistan. They are very adventurous, strong, and healthy, so we thought they might be ideal to assist us on the mountain. They were to take the place of the Sherpa porters, more frequently used by climbing expeditions. Hunzas, though they live in mountainous country, are not skilled technical climbers. Consequently, they assisted in packing loads only as high as Camp III. The potential danger to the Hunzas above Camp III and the restricted camp sites higher on the mountain made it impractical to allow them to go higher, though they were quite eager to do so. We found these porters to be very fine men. With some mountain-climbing training, these Hunzas, like the Sherpas, become excellent mountain men.

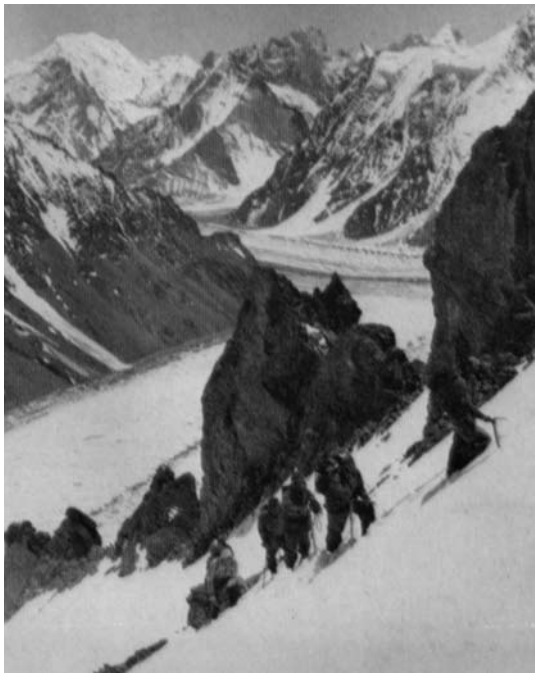
Right:

Just After Snowy Weather

Camp 3 about 20,300 feet.

Below:

K-2, 28,450 Feet As First Seen By The Expedition.



Above

Climbing Steep Snow Slope With Supplies, Just Below Camp 2.

Godwin Austin Glacier below.

Left:

Climbing Just Above Camp 2. About 19,500 Feet.

Camp I was located on the middle of the Godwin-Austen Glacier, near the base of the southeast ridge of K-2—the ridge we intended to follow to the summit. It took seven relays to reach Camp I, and prepare the push to Camp II and the supply pyramid up the mountain.

Every day the task was the same, with two scout climbers ahead establishing the route, and the remaining climbers relaying supplies to the next camp. As the pyramid went higher, the weight to be transported to the following camp became less, but altitude became greater, and other difficulties crept into the climbing.

Although K-2 does not seem to be technically difficult to climb, it is uniformly steep. Lower down, once we became accustomed to the holds, we could eliminate the climbing rope and climb free, with the exception of a few short leads where 'fixed' ropes on hand lines were used. Higher up, however, there was continual snow and ice over the rock, making the foot work tricky. It was cold: and we moved more slowly, thus necessitating more and heavier clothing. This in turn impaired freedom of movement while climbing. There was also the lack of oxygen which made the physical work very tiring. We usually packed only four or five hours each day to conserve strength.

Once above 21,000 feet we were in the so-called deterioration zone. Many high altitude climbers feel that the human body cannot survive indefinitely above 21,000 feet and will slowly deteriorate. The rate of deterioration depends on the height above the equilibrium altitude. Our leader, Dr. Houston, does not lean so strongly toward this deterioration theory. He believes that a great deal of deterioration is due to the severe conditions to which the body is subjected. By taking very palatable, nutritious food; by not working excessively; by acclimatizing properly; and getting sufficient sleep each night (we took sleeping pills); the deterioration rate can be cut to a minimum, he believes.

Acclimatization took time. Usually I became slightly ill when I went to the next higher camp for the first time. This illness would gradually lessen on succeeding relay trips. Packing loads seemed to be an important factor in aiding acclimatization time. Yet it always took time, and this is one threat to the high altitude climber. He must climb fast enough to avoid being exposed too long to deterioration before the summit bid. Yet he must climb slowly enough to acclimatize properly. One purpose for carrying oxygen is to balance these two factors. Dr. Houston does not think oxygen is necessary on K-2.

Though the packing to Camp I began on June 20th, it was not until August 1st that Camp VIII was placed on the lower edge of K-2's southeast shoulder at approximately 25,500 feet. On the following day, additional supplies were carried up to this lofty perch and all eight members of our climbing team crawled into the small two-man mountain tents, quite hopeful that the summit was about to be reached.

This hopeful feeling was justifiable. We had twelve days' food and gasoline and other camping necessities at Camp VIII.

All eight members were in good physical and mental condition, which is amazing in itself. We were only two days from the summit, and what we could see of the route looked no more difficult than that which we had just climbed.

The attempt was now in its final stages. A first and second assault team was ELECTED. Each team consisted of two climbers. The plan was to pack-up on the first day and move up as high as possible to leave the first assault team. On the following day this first team would try for the summit, and at the same time, the second assault team would be packed to the highest camp-site. Should the first team be unsuccessful, the knowledge it would gain could help the second to the

top. The only desire was to get one team to the summit. It was decided that the names of this first team be kept anonymous. After all, climbing is a team sport.

However, the "first good day" never came, for the great monsoon hit the mountain. Ordinarily, this storm is retained by the great Himalayan Range and does not go as far north and west as the Karakoram. Later, we discovered that the monsoons do break through to the Karakoram about one year in three and in varying degrees of intensity. Our year happened to be one year it hit, and it hit hard. Winds of indescribable fury lashed at the tents day after day and drove in the snow, making it almost impossible to get out of the tents. The fabric in one tent, an army model, partly failed, and then in one great gust the tent poles broke. Luckily we were together, so the climbers in that tent moved into the others.

The tents were constantly flapping, making it at times impossible to keep the stoves going. Without heat we couldn't melt snow for much-needed water, so our bodies became partially dehydrated. Many of the meals consisted of only the low-water-content foods we had carried on the mountain.

Day after day there was nothing to do but lie in the tents and hope for that day when the storm would subside. Finally after three days, the winds lessened, and we crawled out. It was then that Art Gilkey collapsed. Dr. Houston quickly diagnosed that Art had a blood clot in his left leg. This was certainly an unusual disease for a young active person like Gilkey, and a very serious one, especially at the extreme altitude. Why the blood clot formed was a mystery. Inactivity of lying in the tents for several days; the dehydration; and the high altitude may all have contributed.

The attempt on the summit had to be abandoned. The immediate problem was to get Art down the mountain. With Art securely wrapped in a tent and sleeping bag, we began dragging him down through deep snow that had accumulated during the preceding days of storms. After moving down less than 150 yards, we realized that the snow on this slope was potentially dangerous and could avalanche any moment. So we turned around and laboriously took Art back to Camp VIII.

Next day was again filled with the fury of the wind and driving snow. On August 7th part of the blood clot in Art's leg was dislodged and went to his lung. Art was now in a very serious condition and we were told he might die at any time.

On the morning of August 10th, Dr. Houston told us a clot had formed in Art's other leg and that immediate evacuation would be necessary if there was to be any hope of taking him off the mountain alive. It was semi-stormy outside, and some of us felt it practically suicide to venture out in this weather. However, this was the only chance.

Art put on his clothes; then he was helped out of the tent, placed in a double sleeping bag, and then wrapped in a few foam mats and a sleeping bag. The process of dragging and lowering him down the mountain began.

We had discovered a few days before that to go down the snow slope would be taking a big chance. A new route was discovered down a ridge, then down a steep couloir to the ice slope just across from Camp VII. Difference in height was about 500 feet. All went well until we reached the top of the couloir. The storm gained in intensity, and the driving snow and howling wind made it practically impossible to see or hear the other climbers. Bob Craig accompanied Art as he was lowered on a 200 foot rope down the couloir and then over a thirty foot cliff. Art was now down on the ice slope only about 120 feet away from the tiny platform cut in the ice that was Camp VII.

It was late in the day, and every climber's hands and feet were partly frost-bitten. We knew it was essential to get into the protection of tents to stop further freezing. Therefore, some of the

finer points in safe climbing procedures were sacrificed for speed in moving to Camp VIII. It was then that one of the climbers was either pulled slightly off-balance, or slipped, and began sliding down the steep ice slope. He pulled off his climbing partner; their rope tangled with that of another team and pulled it off. Finally Dee Molenaar, attached to Art Gilkey, who was lying prone on the slope, was jerked down the mountain. In an instant, five climbers were spinning and bouncing down the mountain. Very luckily, there was one good belay on Art Gilkey. Amazingly this belay held, and the climbing ropes tangled so that everyone was jerked to a stop. Temporarily, the party was safe.

Now there was the problem of getting the climbers who had been injured in the fall over to Camp VII. Dr. Houston had been knocked unconscious and suffered head and chest injuries, while others had frost-bite, and rib injuries from the climbing rope. George Bell's hands and feet were frost-bitten very severely and looked as useless as clubs. Art was anchored to the slope with two ice axes, and Camp VII was re-established by cutting out a small ledge about 2½ feet wide on the ice slope just out of view from where Art was lying on the slope. It took about 45 minutes to make Camp VII.

During this time we would yell to Art and he would answer, apparently alright. Finally, the two Bobs and Tony Streather roped up and went over to see what they could do to establish Art for the night. To their amazement Art was gone. The only possible conclusion was that he had been swept down the mountain by an avalanche. This was a terrible blow; Art had been so courageous and strong through the entire ordeal. His courage was beyond description.

That night as Camp VII was practically a nightmare. We sat crossways in the tents and waited for the morning. Miraculously, the wind subsided slightly; but for that, we could not have survived. On the following day we struggled down to Camp VI like wounded creatures, and then during succeedings days on to V, IV, III, and finally to Camp II where our fine Hunza porters met us with open arms, to help us the remaining distance to Base Camp.

A rock cairn was built in memory of Art Gilkey on the rock promontory where the Savoy and Godwin-Austen Glaciers meet; and a service was held. Art was certainly a great climber and a great inspiration during the climb on the mountain. It was a tragic loss of a fine man and companion.

Although all suffered frost-bite, only George Bell had permanent effects. George had to be carried out on a stretcher. After returning to the United States, he lost one and a half toes by amputation.

Now it is all over the big question still remains: Can K-2 be climbed? And if so how difficult will it be? Although I cannot speak officially for the expedition, I am sure the general opinion is that it can be climbed. We placed twelve days' food and gasoline and all our climbing members at 25,500 feet, just two days' climbing from the summit. We felt fine both physically and mentally at this altitude and felt confident that the summit could be reached. Our stumbling block was weather and then the illness. The other problems of organization, supply and acclimatization had been masterfully solved under the fine leadership of Dr. Houston. When ALL the problems are solved on one attempt, K-2 will be climbed.

FIRST 1953 ASCENT OF MOUNT ROBSON

By Don Claunch

Editor's Note: *As Mt. Robson had not been climbed since 1939, because of adverse conditions, the following articles of the three 1953 climbs will prove interesting to many members. A fourth climb was attempted but failed for lack of time.*—P. B. M.

In August, 1951, I was a member of an attempt on Mt. Robson, led by Cam Beckwith, past vice-president and climbing chairman of our club, Seattle Mountaineers.

Typically stormy and miserable weather for four days decided the matter. We reached a point no higher than a few hundred feet up the lower south hanging glacier on the standard route. The following August, Dave Collins, a young athletic climber, and myself, tried again by the same route, following the south glacier and climbing the steep rocks on the right side of the upper ice-falls as done by Rex Gibson and party, in their ascent of the mountain.

Though the rocks were steep and glazed with ice in places and a bitter gale was assailing us, nothing could be seen to stop us from gaining the final ice-cap. (The chute to the left, followed in the 1953 ascents, was then glare ice badly broken up, with steep ice-coated rock protruding—a possible route but not very attractive.) Unfortunately threatening weather moved in when we were almost on the glacier surface leaving no choice but to return, for this was no place to be caught in a storm. It was fortunate we did, for it snowed heavily up there and the ledges were coated.

On June 14th of this year I returned with Arthur Maki and Tim Kelley of Seattle. (Tim was a member of the party that succeeded in making the first ascent of Mount Cook in the Saint Elias Range this summer.) This time we ascended the 500-ft. 50-degree snow-ice chute, finding it in good condition. The surface was mostly composed of snow and only one rocky bottleneck was encountered. Then and later in July the chute seemed to be a fairly safe bet as far as avalanches were concerned as no extremely recent signs of big slides could be seen. We were still taking a big chance though, as any route on the south side of Robson is, in my opinion, always potentially dangerous because of falling ice and snow. Once on the surface of the glacier, clouds covered us and we worked our way around crevasses following compass bearing till the great bergschrund was reached.

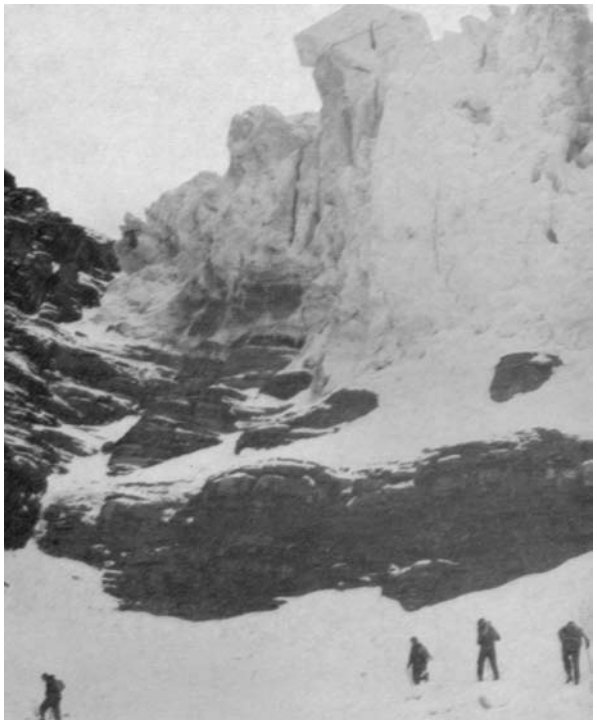
After a precarious ice-axe stand over the right end of the schrund the crest of the S.E. shoulder was attained where a terrifically cold gale struck us—in fact one of the most miserable I have experienced. With the weather getting worse the party worked its way up the continuously steep and icy S.E. arête. In a storm-bound struggle we reached a point about 250 feet from the top only to be stopped by the overhanging ice wall. Fog prevented us from finding a way around. Returning we were greeted by a blizzard which made the descent miserable.

With the mountain being quite clear of snow the day we arrived in June, I was afraid that July would be the last practical month to try the ascent this year because of bare ice conditions. However, our blizzard marked the beginning of a long period of continual precipitation and cold weather. The mountain was of course covered with new snow which made our following July ascent technically less difficult but more arduous.

On July 22nd I embarked towards Kinney Lake in a drenching downpour with four eager young climbers from California, all students at U.C.L.A. and one a member of the Sierra Club. They were Jack Lasner, Jon Gardey, Norman Sanders and Gerrit Bratt (Sierra Club), all fairly experienced.

Summit Ridge Of Mt. Robson.
Photo Jon Gardeys

Top Of The Schute And Southeast Erête. *Photo Jon Gardeys*



Lower Icefall.
Photo Jon Gardeys

Near The Summit Of Mt. Robson.
Photo Jon Gardeys

Leaving Kinney Lake in the afternoon, heavily loaded with at least a week's supplies we beat our way up the usual 3,000 feet of brush, snow, and shale to timberline, arriving early in the evening. The next day was largely lost due to pouring rain, but we departed at 2:30 p.m. for the 8,000 level. Rain and wet snow followed in flurries as the long slopes of talus and cliff bands were scaled, with the group arriving, early in the evening again, at the campsite situated on the yellow bands below the S.S.W. arête.

The next day it snowed about three inches at the site and camp was moved up a few hundred feet on the crest of the arête, to about 8,600 feet, this chore taking about an hour and a half.

The following two days we likewise sat around, being entertained by snow and hail plus a thunderstorm. Since an attempt had to be made on the morning of the 27th because of lack of food the company pushed on with equipment for a planned bivouac.

After climbing to the end of the arête, the lower ice cliffs were crossed to the left and the glacier surface was reached by climbing steep snow-covered ledges. Fog and new snow soon greeted the party and continued for the rest of the day—progress being aided by my knowledge of the route. Immediately knee-deep snow was encountered which made the ascent much slower than anticipated and quite exhausting. After travelling up the right side of the glacier to avoid falling ice from the upper ice cliffs the snow chute was again ascended and several steps chopped on a steep slope to gain the glacier surface. We emerged from here wet and numb, the weather having become almost unbearable. Crevasse weaving and travel in more than knee-deep snow brought us to the great schrund where we decided to camp at slightly over 11,000 feet.

After an unpleasant night with five in a two-man tent, the clouds miraculously disappeared and a world of dazzling summits revealed themselves. We left at 6:20 a.m. but our high spirits were soon lowered by waist-deep snow for several hundred feet along the schrund edge. A passage over it was found and some step-chopping on a steep bare slope put us on the crest of the S.E. shoulder where we saw a marvelous panorama to the east. More snow was piled up on the arête and no step cutting was required this time—crampons worked fine for the occasional icy spots. Finally a traverse to the left in soft snow again under the overhanging summit ice formation placed us under a 60-degree ice-slope. Gerry had completed a fine lead and Jon and I took turns chopping steps and completing the lead of about a rope-length. Two ice-pitons were used though one of them was next to worthless. I emerged on the summit crest and after everyone was belayed, we moved on to the highest point along the top, reaching it shortly after noon.

The long descent was made slowly and with caution, the party arriving back at Hargreaves' late next day. The bad weather had broken for good and we spent the morning of the final day lounging in the sun.

In my opinion this route under the conditions presented very little intrinsic difficulty from the technical standpoint—but it was not easy either. Some steep, moderately difficult rock was encountered in reaching the surface of the lower glacier; the snow chute was steep, requiring considerable care. Occasional step-cutting was required, especially on the shoulder and summit ice pitch; and the arête is steep and fairly exposed, requiring considerable caution, usually step-cutting, though none was experienced on the final ascent. Our trip consumed four climbing days round trip, the same as the party from Seattle who made the second climb this year a week later. In conclusion we would like to say that we think Mt. Robson is a marvellous ascent and well worth doing by any route.

THE SECOND 1953 ASCENT

By Dave Wessel

On August 1, 1953, I waited with Roy Hargreaves at Robson Station for the noon train from Vancouver. When it trundled to a stop five men stepped off, cast eager glances at the mist-shrouded slopes, and hustled a young mountain of camping and climbing gear from the train. The men were all from Seattle, fellow members of the Mountaineers, and I happily greeted my friends and previous climbing companions: Dr. Warren Spickard, Maury Muzzy, Vic Josendal, and Al Sangston, and was introduced to young Dave Collins, who had just made it back from a successful climb of Mt. McKinley.

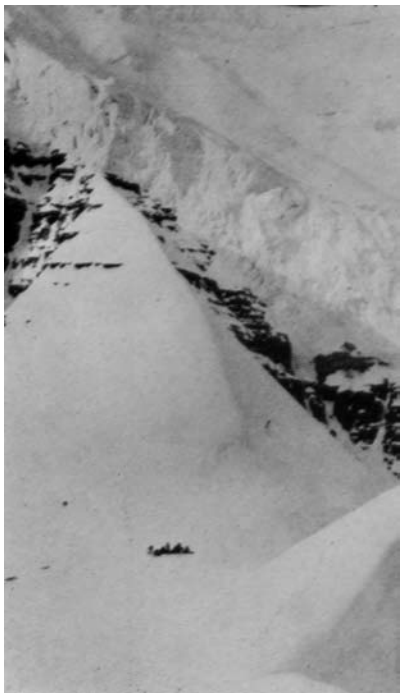
As we stumbled under 70-pound loads up the soggy trail to Kinney Lake I expressed much misgiving about the outcome of our enterprise, having just spent two weeks at the A.C.C. camp on the Whirlpool, where frequent storms had greatly inhibited climbing. However, the heavy clouds began to part and we caught glimpses of our mighty objective. We pitched camp in the edge of forest at the base of the slope up which 1923 A.C.C. members had carved a "route."

About midnight, a long rumble was heard above the patter of light rain, and Spick, my tent mate, announced in awed tones : "Big avalanche coming down the gully." Early in the morning we bundled on our packs and took off up the timbered slope. When the bush became thick we detoured north on a ledge into the great gully, which appears as a "Y" cleaving the mountain from summit to base. This gully was a forbidding thing, a jumbled ribbon of ice blocks and slick gouges like toboggan runs, slithering between elemental walls down to the valley floor, with its snout a scant 200 yards from our camp! No wonder the roar lasted a long time. This slide had begun at the summit ice cliffs and had crashed all the way to the bottom, nearly ten thousand feet below. Thankful that the slide had already happened, we went up the gully, constantly inspecting the sidewalls for cling holds in case another came down. At the base of a waterfall we turned onto a ledge which carried us out into cheerful sunshine. A brief lunch prepared us for the 500 feet of exasperatingly tangled brush. Above timberline the route angled sharply upward over sloping ledges and dinner-plate scree.

At one place, Spick inadvertently loosed a large rock and Al, who was just behind, found himself one moment riding herd on it, and the next moment sprawled on a cliff watching it and his pack bouncing away down the hill. A diligent search recovered almost all of Al's possessions, which had been strewn for hundreds of feet.

A final interesting cliff brought us to a delightful little shelf with a smattering of grass and running water and a magnificent view, and here (ca. 8,200 ft.) we set up Camp 1.

The morrow dawned almost clear—a heartening sign—and we hastened to climb to the ridge coming off Little Robson, and up it to the snout of the glacier. On our way we passed the tiny scree platform which had been the 1946 campsite of Frank Smythe, Rex Gibson and myself. Then a storm had forced us to retreat from this point. One at a time we hurried over blocks freshly fallen from the overhanging cliff of the inner icefall and roped up to climb a short shoulder of rock which led onto Robson's lower south glacier. While belaying a climber on this pitch, Al set his pack down for a moment, and with a movement of his backside dislodged it. Off it went for its second trip earthward! We watched in consternation as it tumbled over cliffs and down a snow chute, until finally, just before it should have disappeared into the abyss, it teetered to a stop. It was eventually decided that Maury and Dave should pick up what they could while the rest of us began kicking a route up the glacier.



Camp 2 Seen From The Top Of Little Robson.
Photo Dave Wessell

Avalanche Surface Of Lower Glacier.
Photo Dave Wessell

We found that the entire lower glacial basin had been swept by a recent avalanche, and most of the many crevasses were safely choked or bridged. This allowed us to climb straight upward instead of meandering, but clambering over such a rough surface is hardly less fatiguing than kicking steps in soft smooth snow. A more important factor was our relative safety, since the possibility of a large sweeping avalanche here was now remote. Before long the retrievers caught up to us with broken packboard and dishevelled contents, and we made our way to the base of the imposing upper icefall. Deciding to place Camp 2 up on the invitingly smooth and level col between Little Robson and the main massif, whence we could reconnoiter the west edge of the icefall, we ploughed a "stairway" up a steep slope; crossed a small crevasse.

From our level (ca. 10,300 ft.) we could look over a turbulent sea of distant ranges in the Rockies to the S.E. and the Cariboos to the west, while near at hand handsome Whitehorn loomed high above the valleys. An exploratory climb up a conical rise to the base of the icefall, convinced us that the only possibility was to cross the glacial basin, and ascend a steep couloir alongside the icefall until we found a break through it.

Supper was made up, as all breakfasts and suppers were, of concentrated rations packaged as separate meals back in Seattle, and took a long time preparing over the one remaining primus stove (our other had earlier parted company with Al's pack). Between excited contemplation of the "big push" and cold seeping through from underneath, I did not collect much sleep and was rather glad to emerge at 2:30 a.m.

At 4 a.m. we were on our way: first down the brittle stairway, then across the glacial basin and up toward the gully alongside the cliffs. This steep trough required careful cramponing and occasional sessions of step cutting. After a seemingly long time Vic, leading here, spotted the hoped-for break in the ice-wall. He proceeded to hack steps across a short, nearly vertical pitch. This was the first really technical difficult pitch and the rest of us felt our feet numbing with cold as we waited. But we appreciated the excellence of Vic's lead as we came to grips with the passage. An angling traverse toward the middle of Robson's upper face, around crevasses, and on steep open slopes got us to the warm sunshine and we thankfully called a rest stop. Already, nearly all the wide horizon of peaks was beneath our gaze—only Whitehorn and Resplendent rose a bit higher.

Next problem was the great schrund, which extends across the entire face. Luckily, we found that the crevasse was largely filled in and a slanting shelf brought us onto the smooth névé near the south arête. A more beautiful and impressive formation could scarcely be found than the sparkling white corniced undulations rising 1,000 feet to an awesome climax in the famous "mushroom" at the crest of the mountain. But the day waxed hot and the snow steadily softened, so we lost no time in continuing. The surface was unbroken wet snow with occasional patches of hard ice lying 6 inches underneath, and each hummock was steeper than the last. The airiness of this ridge prompted us to exercise great care in our movements. When we neared the crest it became obvious that any way over the mushroom had to exist west around the face, so we traversed the convex slopes, hoping that the snow had no inclination to slide. It didn't. At last we arrived at a point which appeared to offer a weakness in this last defence of Robson's south approach.

Dave Collins eagerly took the lead here, working up over 60 degree flutings of ice. An hour's step-cutting and an ice piton for belay established a route over the trickiest portion. Then, as the last man negotiated this pitch, Collins sang out that the summit was in sight!

Just at noon we gathered around the fluttering flag that had been left by Claunch. A tiny skiff of cloud brushed by as we congratulated each other, lunched, photographed, and untangled ropes.

Our horizon swept from the Brazeau summits in the east, to the Black Tonquin spikes with Mt. Fryatt, and others behind them, to the recently familiar Hooker Icefield peaks, to little known crests of the Rockies' west slope. Then across the "Trench" and beyond the twinkling thread of the Fraser river lay the mysterious Cariboos and Monashees. Around to the northwest, Mts. Sir Alexander and Ida dominated the skyline, while northeastward bare rock ridges diminished away to the great Canadian bush country.

At 12:30 the descent began. Above the wall we placed a rappel picket deep into the snow and used a rappel rope as a handline to back down the deteriorated steps. Then, using our uphill tracks, we hastened carefully across to the arête and down it, belaying almost constantly because of the deceptive stretches of hidden ice. As we passed under the great schrund lengthening shadows imparted to crystalline sculpturing its most beautiful aspect. But the surface snow was beginning to peel off in small slides and slush fell disconcertingly as we stood under feather-coated ice towers to belay.

Upon reaching the passage through the icefall to the couloir we set up a rappel picket-hand line combination, which took an hour and, as we found presently, gave time for the snow to firm up satisfactorily. With sighs of relief we emerged from the couloir into the glacier, paused for a drink, and trudged up our stairs, to arrive home at 8.

Next day, with last looks around, we left the glacier and ducked around "Al's Corner". Climbers on Robson soon become casual about exposure from overhanging ice, for they travel almost constantly under the threat of avalanches or toppling séracs on the final 4,000 feet. Thus far in our climb, falling ice and big avalanches had occurred only at night. But when we passed under the lower glacier snout, a little sérac crashed close to the last man. When the blurred images cleared, the last man was in the lead!

After a stop for lunch at Camp 1 site, we met Will Siri's Sierra group. Then with a look at the discouraging tangled bush and noxious little cliffs of the "regular" route we decided to descend via the snow gully, whence at long last we burst onto gravel flats.

Enchanting glimpses of a snow cap floating in blue over the treetops accompanied us down the trail next morning.

CALIFORNIANS ON MOUNT ROBSON

By William E. Long

Before we were to come down from Mount Robson we were to experience some rather close calls and have more than a little respect for the strength of such a mountain. Also we discovered that even the "King of the Rockies" can produce beautiful and pleasant conditions for the climber who will remain in the area long enough to see all aspects of the mountain's character; the radiance of the majestic upper faces as they glow with the fading rays of sun that has left the valleys dark in shadow; or the weird beauty of the shafts of light that stream through the clearing storm clouds.

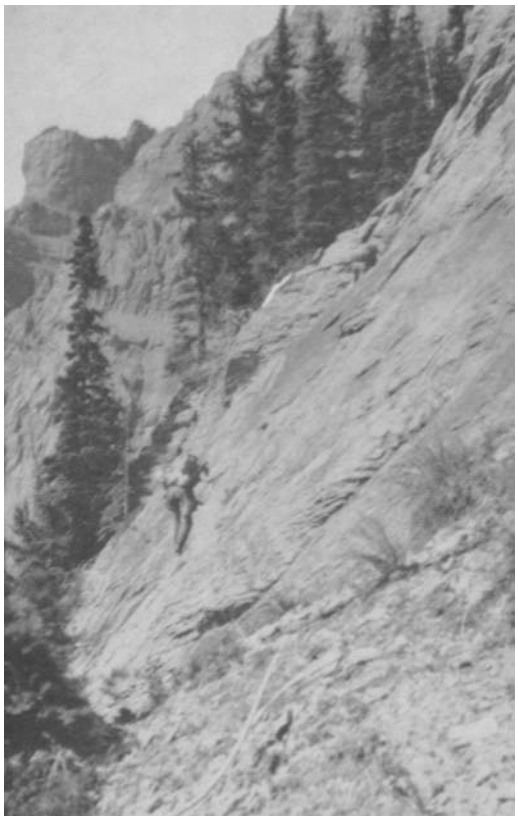
Composing the party were six men who have climbed and worked together in the mountains of Canada, United States and South America. The severe conditions we sought were to be a training and testing ground for our group, known as the California Himalayan Committee. Spring of 1954 was to see this group, plus two more, striving to climb Makalu, fourth highest mountain in the world. On Mount Robson were Al Baxter, philosophy professor; William Dunmire, graduate student in wild life; Richard Houston, physical science teacher; Will Siri, research bio-physicist at the University of California ; Allen Steck, manager of the Ski Hut in Berkeley, California; and myself, survival instructor in the Strategic Air Command advanced survival school. The experiences that befell us on Mount Robson were more than just to test and give us experience. This chance to be together in the activities that we most enjoy would strengthen our companionship, a factor most important in the undertakings ahead.

We realized that much time would be spent relaying our vast store of food and equipment from camp to camp. This was as we desired, for relaying experience was needed and a large variety of food and: equipment would allow us to determine which were the most satisfactory for mountain living. It is unlikely that such a large collection of gear will ever again be wrestled up the slopes of Mount Robson. Base Camp lay on the shore of Kinney Lake and was established after each of the members of the expedition carried two loads nearing the ninety-pound mark up a most welcome trail.

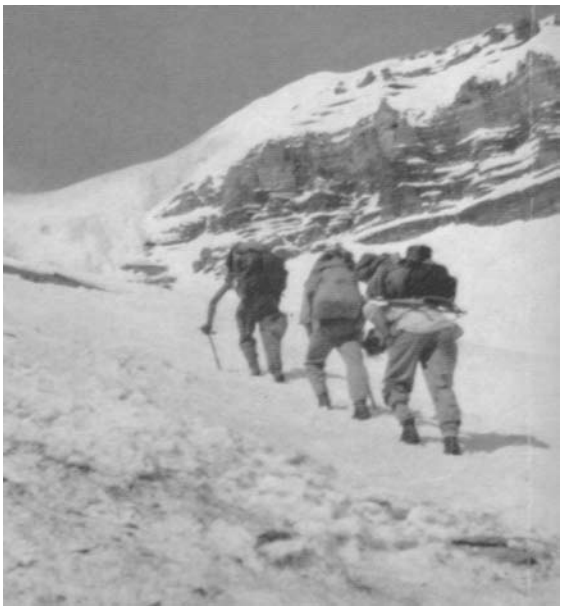
After breakfast and certain segregation and elimination of equipment we set off to pass timberline, nearly 4,500 feet above where we stood. Packs now were only about fifty or sixty pounds, heavy enough to slow us so much that approaching evening forced us to cache the loads about 500 feet short of the spot that was to become Camp One. Loads off our backs, we turned and nearly bounded back down the mountain to base camp. Next day the whole packing process was repeated so that all of the vast store of equipment would be at Camp One. During this day Al Baxter became sick and returned to civilization.

On the second day of packing to Camp One a pleasant surprise befell us. We were greeted by five men from Seattle who had just made a successful climb of the mountain in good weather and were on their way home. Later that day Camp One was established on the Great Shelf and afforded an ideal site with level turf and running water.

Our first project on the following day was to bring the equipment cached below to Camp One. We accomplished the work in less than two hours leaving us much time. Late in the morning we left Camp One and reached the lower glacier in the early afternoon. We were greeted by a sight that made us do some thinking—the whole of the level part of the glacier was scoured with avalanche tracks from the slopes of the glacier above. We chose a course near the edge of the scour marks that would allow us a fast retreat if something were to slide again down the glacier. Late in



Cliffs Below High Camp.
Photo A. Steck



Packing Up To Bivouac.
Photo A. Steck

The Party *Photo A. Steck*

(left to right): William Dunmire, Dick Houston, Al Baxter, William Long, Will Sire, Allen Steck.

the afternoon, we kicked steps up the steep snow that lies on the west side of the lower glacier and found the location for the High Camp in the col between the point known as Little Robson and the upper portion of the southwest face of Mount Robson on which lies the upper glacier.

We awoke to find cold wind and fog making the early morning uncomfortable. There was no precipitation and the fog later rose a bit, so we decided for a summit attempt. A short breakfast was soon finished. Just as we were about to leave someone said that we should have tea in the flasks to drink during the day. After some discussion the water was heated and the tea made, causing us a 15-minute delay—a most fortunate circumstance.

The route required us to descend the western side of the lower glacier and ascend the eastern side to a spot where access to the upper glacier could be had. A several hundred-foot cliff rises between the two glaciers. Avalanches rush over the cliff to gouge the tracks on the lower glacier. As we approached the two hundred yards during which we would be under the avalanche route we were stopped in our tracks.

With a quiet swish the entire width of the glacier became covered with clouds of white mists caused by rushing snow and ice that had broken loose from the glacier above. The avalanche lasted long enough to enable us to photograph its destructive sweep. How fortunate that we had remained in camp to brew the tea.

The only route that would allow us to reach the upper glacier was across this avalanche path. We crossed it. Tenseness filled us as we watched each man do a two-hundred-yard dash, carrying crampons and climbing equipment. Out of reach of the large avalanches, we pushed up the gullies and unwound a route that successfully reached the upper glacier. Now the business of finding a route up the glacier to the south ridge was at hand. With unhappiness we found that the mists were making visibility less than a hundred feet. It was at this point that the Seattle party's footsteps were a most welcome sight for at no point from 11,500 feet to the summit could we ever see more than the fog that surrounded us. The maze of crevasses or the falling away of the southeast face could not be appreciated in the least. We were following steps that led only into the invisibility ahead. Very close to the summit we were presented with the most difficult section of the entire climb, a 65 deg. ice face. Allen Steck led and showed that experience in South America and Europe had been well taken. In due time all were over the steep ice and in a few minutes we were staring at the American flag planted by the first party to climb Mount Robson that season. The cold, wet wind made lingering most unpleasant and the fog produced no view so that there remained little to do hut return to the steps in the fog which would lead us to camp. With the ascent over, there was little incentive to stay on the mountain in the storm that had formed.

Pride filled us that we had reached the summit of such a fine mountain. Yet, to a man, we felt that if we were ever to climb the peak again we would search out a route that might be more difficult but not so exposed to the uncontrollable, devastating strength of Mount Robson, highest of the Canadian Rockies.

CITLALTEPETL – THE STAR MOUNTAIN

Encounter With Altitude

By Frank E. Gaebelein

Mountains attract climbers for a variety of reasons. Some allure us because they are difficult. Others beckon because they are unknown and promise first ascents. With many a peak, it is beauty that captures the imagination. And not the least of mountain challenges is altitude; the highest summit in a range, in a country, or in the world—witness Everest—has a pull all its own.

Like others whose climbing has been confined mostly to mountains like the Rockies, Cascades, Selkirks, and Alps, I had long wanted to climb a very high mountain. Obvious limitations ruled out anything of Alaskan or Andean dimensions. Nevertheless, the urge persisted until leisure during a sabbatical year made possible its satisfaction.

For some time, the great volcanos of Mexico had been an attraction. They are very high, they are very beautiful, and they are comparatively easy of access. Several talks with Georges Estoppey, a fellow member of the American Alpine Club, plus some hours browsing in the club library, focussed interest on the Pico de Orizaba, highest summit in the Republic of Mexico. In 1941, Estoppey had made a successful ascent of Orizaba, during which he had measured its altitude, arriving at a figure of 18,696 ft.,[1] just four feet under the latest measurement by the Mexican government, 18,700 ft.

Here, then, was a mountain quite lofty enough to provide an encounter with altitude. Topped only by the Arctic giants, McKinley and Logan, its rank as the third elevation of the North American continent would add to the climb a special sense of achievement. To be sure, Popocatepetl and Ixtaccihuatl, both over 17,000 ft., were also possibilities. But they are considerably lower[2] than Orizaba, much nearer Mexico City, and much more frequently climbed.

The Aztec name for the Pico de Orizaba is Citlaltepetl, meaning "Star Mountain." Whether the designation comes from the way the peak shines a heavenly pink in the Alpenglow, or whether it describes the pattern made by the snow mantling the upper 4,500 ft.—the mountain is aptly named. Aztec legend has it that divine fire in the crater consumed the body of Quetzalcoatl, the serpent god. Situated on the border of the states of Puebla and Vera Cruz, Orizaba lifts its ethereal white cone far above the desert plains and forest-clad slopes. In Mexico City, Mrs. Gaebelein and I met my friend, Alfred R. Jackson, who had flown from Williamsport, Pa., to join me in the adventure. It was a few days before Thanksgiving, 1952.

Together Al and I called on Otis McAllister, an American who has lived over thirty years in Mexico. As founder of the Club de Exploraciones Mexico, McAllister is the father of mountaineering in the southern republic. He has made hundreds of climbs throughout the country, including many ascents of the high volcanos as well as scores of pioneer climbs of little known peaks. Mr. McAllister was generously helpful. He and his wife lost no time in accompanying us on a climb up Nevada de Telapon, a summit of about 14,000 ft. not far from Mexico City. The outlook from Telapon showed us, along with spectacular views of Popocatepetl and Ixtaccihuatl, a pointed mass of white that seemed floating on the lavender horizon far to the south—our first glimpse of Orizaba, about a hundred miles away.

Knowing the inadvisability of attempting a high climb without more acclimatization, we

1 Cf. "Climbing the Pico de Orizaba," by Georges Estoppey, *The American Alpine Journal.*

2 Ixtaccihuatl is 17,323 ft. and Popocateptl 17,894 ft

set out again a few days later—this time for Nevada de Toluca, 15,036 ft., a mountain notable for its sapphire-colored lakes which, located at nearly 14,000 ft. may well be the highest bodies of water in North America. Such sights, however, were not for me that day. As we were on the way to Toluca, the classic ailment of travellers in Mexico (a brief but violent gastric upset known colloquially as "the touristas") struck with the result that I took to a hotel bed in Toluca, while my companions saw the lakes and ascended the mountain.

Early on December 5, Al and I stepped on the train at Mexico City, carrying rucksacks, ice-axes, and crampons. McAllister had written ahead to the Jimenez brothers, Ricardo and Crisoforo, Indians living at San Andres at Orizaba's base, who were to guide us.

About two o'clock, the train left us at the little station some five miles from San Andres. Dust on the rutted road was inches deep as the taxi rattled along. But our eyes were on the mountain rising over 10,000 vertical feet behind the plastered walls and houses like a gargantuan backdrop. With a jerk the driver drew up in the square beside the large church. Pointing to an Indian, selling ice-cream from a little pushcart, he said, "Crisoforo Jimenez." So this was a guide! We got out and by a mixture of English, Spanish, and gesticulation learned that he and his brother, Ricardo, could not start for the mountain until the next morning because the horses were not on hand. Apparently Ricardo was out catching them. San Andres,[3] which is definitely not a tourist center, showed us life in a Mexican town as it really is. We took our gear to the Fausto, the single hotel, which has a picturesque patio. The night, however, left several reminders which kept on itching for days.

After breakfast we went to the white-washed adobe home of the Indians, where our little caravan was being organized. It was made up of Ricardo and Crisoforo Jimenez, a young friend of about twenty, an urchin of eleven or twelve, son of one of the brothers, two horses for Al and me to ride, a mule, a burro, and a small black dog. Duffle and climbing gear were loaded on mule and burro, we mounted the horses, and were off on the twenty-eight kilometre journey to timberline.

The dusty road zig-zagged up the hills. The Indians trotted cheerfully beside the animals, taking turns sitting on the rump of the burro, all the while shouting at the mule, which had a mind of its own. We passed through several villages, the single streets of which straggle the lower slopes of the mountain. Leaving the last village, the path wound through open fields where potatoes were being grown and then entered woods in which charcoal was being burned. All the time, details of the mountain were becoming plainer. Ahead and to the right loomed a bare, rounded summit, which we identified as Sierra Negre, recently measured as over 14,000 ft. Between it and Orizaba some jagged rock peaks, more than 15,000 ft. high, were dwarfed by the glistening cone of the great volcano, rising in its snowy parabola. As the horses jogged on, Al and I got off and walked a few minutes each hour to avoid stiffness that might hamper climbing and also to give needed exercise in the thin air.

It was late afternoon when we entered a valley between Sierra Negre and the slope of Orizaba, crossing at this point the border of Puebla and Vera Cruz. In a little while we halted, and scrambled up a steep hillside to a large cave, picturesquely called the Cueva del Muerto. It is situated beneath overhanging rocks on a long shelf about thirty feet wide just below timberline.[4] A fire was made and, the night being clear, sleeping bags were placed on piles of dry grass in the open instead of inside the cave, the Indians spreading their blankets close to the fire. Al and I cooked supper. Then in the cold night air we sat huddled round the fire, talking with the Indians as well as language difficulties permitted. My A.C.C. badge interested them, and they marvelled

3 San Andres is 8,625 ft. above sea level.

4 We estimated the altitude of the Cueva at a little under 14,000 ft.

at the design with its ram's head and colored shield. Looking at the myriads of stars, shining so brightly in the frosty sky, it was natural to point upward and say, in our meagre Spanish, "God is great." Instantly our companions uncovered their heads and replied reverently, "Si, si." So we talked briefly of the Creator and of His Son, the "Divino Salvador," whose redemptive mission is for all men everywhere.

Rising time was set for 2:30 a.m. Sleep came slowly, while I lay on my back, watching the skies through the cold night air. After midnight, a figure leaned over me. It was Al, explaining that he was in the grip of "the touristas." I handed him some medicine and he stumbled back to his sleeping bag.

When we arose, the tea in my canteen had frozen. We put on all our clothing, including two suits of long underwear, three pairs of woolen socks, extra sweaters, windbreakers, gloves, and, after a quick breakfast, mounted the horses. As we rode upward across boulder-strewn slopes, the moonlight seemed bright enough to read a book. Despite the jolting of the horses and our heavy clothes, we shivered in the cold. The ride of about forty minutes gained a few hundred: feet of altitude. Then the terrain became so rough that we dismounted at a pass called Puerto de las Azufreros, leaving the horses. By this time, Al was thoroughly wretched. But he made a game attempt to climb, only to realize that "the touristas" had cheated him out of this summit. So with Crisoforo he returned to the cave, while I went on with Ricardo and his young friend.

There was no question of Ricardo's fitness. McAllister has trained him and Crisoforo well. Living at some 8,500 ft. and having made a good many ascents, they have no trouble with altitude. They are strong, patient, cheerful, and co-operative; we found them delightful companions.

Sunrise revealed our destination. There, about 5,000 vertical feet above us, were the tawny cliffs[5] of Orizaba, topping the vast snowfields sweeping down from the peak. Foreshortening dwindled the cliffs to the size of a large boulder and made the climb look deceptively short. Strips of dirt and volcanic rock streaked the snow at intervals, but their area was insignificant compared with the great expanses of névé . We began our upward trudge on the loosely piled rock. Before much altitude had been gained, however, we took to the snow and put on crampons. To the right of the pass where the horses had been left were the 15,000 ft. pinnacles we had seen the afternoon before. As we mounted slowly, I measured progress by these summits, which looked a good deal like the Untergabelhorn at Zermatt. Gradually they slipped below us.

Now the sun shone full strength in a cloudless sky. Dark glasses and sunburn lotion provided protection from the intense radiation. Ricardo and his young relative wore heavy straw hats, tied on with white cloths swathing cheeks and neck with a nun-like effect. Climbing was without technical problems; a rope quite unnecessary. Though the gradient was steepening, one could hardly have slipped had he tried, the snow being eroded into deep, cup-like depressions.

From the very beginning, altitude was a hazard. I took the slope very slowly, and paused to get my breath frequently. It was encouraging to see over Orizaba's snowy shoulder, Ixtaccihuatl with its long, flat top, and Popocatepetl with its shapely cone. Looking across at them, I could see that we were well over 16,000 ft. On we went. Finally, Ixtaccihuatl and then Popocatepetl sank below us. Now the altitude was really trying. I adopted a rhythm of thirty steps in succession, taking several deep breaths with each step, and then a rest of several moments, leaning on my ice-axe.

Ricardo kept pushing ahead, calling for haste and pointing upward, to wisps of cloud blowing past the yellow cliffs. Instead, I laboriously caught up with Ricardo, and made him understand that

5 The cliffs are just under the summit, which on our side of the mountain was hidden.

Mt. Orizaba, 18,700 Feet.
Photo By Permission Compania Mexicana Aerofoto, Mexico, D.F.

I was determined to rest then and there. For about fifteen minutes I lay sucking an orange, while the young Mexican reclined on another rock below us. Then we stood up and plodded on. Though mists continued to float past the cliff, we were still in the blazing sun.

We were now at about 18,000 ft. and nearing the cliffs, which resembled the rocks atop Mt. Shasta. Suddenly my eye was caught by a flight of birds streaming from the cliffs. No, they were not birds but a stone fall, shooting off into the snow. Ricardo's route passed through the place where the fallen rocks lay, but I diverged a bit to the right. Then, above the dangerous area, we headed for the upper part of the cliffs and began climbing the steep icy snow between the rocks and the crater rim. Here our young friend was sick a second time, and I joined him in his misery.

Recovery was swift, spurred on doubtless by the nearness of the summit. In just a few moments we were perched on the snow- at the edge of the crater, just over a large iron cross leaning against the rocks. The time was one o'clock. Above us was an easy slope, culminating in a small dome of snow. Ricardo hastened up with his young friend. In a little while I joined them. Set upright in the snow was a niece of hollow iron pipe, inside which a bottle dangled on a string. We pulled out the bottle, finding the paper stuffed in it so difficult to extract that we dispensed with writing our names. The sun was still shining. Ground views, however, were largely obscured by the swelling clouds, though we caught a few fleeting glimpses to the east. Views of the crater with its disintegrating cliffs of yellowish rock were startling and wild. We took some pictures. Back at the iron cross, we ate briefly. Great banks of clouds were now advancing from the west. They were grandly beautiful, though menacing in their towering bulk. It was time to go down.

No sooner had we rounded the cliffs than snow squalls came. Because of the deeply eroded névé , the descent was sheer drudgery. Glissading being impossible, there was no alternative to the endless downward steps. The thin air soon asserted itself. I had to rest often, as we lunged down through the mists. Visibility was so poor that I wondered how Ricardo would find the clothes discarded in the morning. He went unerringly to the spot.

The slope levelled off sufficiently for us to remove our crampons. The clouds had blown away. At last we saw below us the tiny forms of the horses. The thought of riding even the short distance to the cave was a stimulant. When we reached the horses, the eleven-year-old urchin, a patient little figure in serape and straw hat rose from the rocks and handed us the bridles.

Al, still weak from his illness, welcomed my return to the cave by opening can after can of fruit juice. Never had grapefruit and orange juice tasted so completely satisfying. They were just what thoroughly dehydrated tissues were clamoring for.

But Al's plane was leaving Mexico City within two days, and we had a long way to go. Hurriedly we packed and set off for San Andres, riding through the dusk with the snows of Orizaba catching the sunset light.

By ten o'clock, we were at the Jimenez dwelling. Tired as we were, the thought of a second night in the Fausto was unbearable. So one of the local taxi drivers was routed out, and we bargained for the ride to the city of Puebla. For me it was the end of a strenuous day: from the cave to the top of Orizaba, back to the cave, down to San Andres, on to Puebla—all this in twenty-four hours.

By Alpine standards the mountain, altitude aside, is not difficult. A good many others have ascended Orizaba; still others, not so blessed with favorable conditions as we were, have suffered real hardship and failed to reach the summit, for the Pico. when not in a benign mood, can hurl at climbers some dangerously cruel weather. The ascent had been one of great beauty. I had had an elementary introduction to what extreme altitude is like; as a result a little measure of insight into one of the difficulties of climbing very high mountains had been gained.

IN MEMORIAM

MRS. CLARA A. COLEMAN

Mrs. Clara Coleman died suddenly in Calgary on October l0th, 1953. She collapsed at her place of employment and passed away a few hours later.

Her valiant spirit will be remembered by all who knew her, for her achievements were a result of her courage and determination in the face of personal tragedy and poor health. She lost her husband soon after her marriage in New Zealand, and her only son was tragically drowned at Calgary, when only ten years old. Yet Mrs. Coleman kept her faith in people and her interest in many activities.

She was a member of the Anglican Church; she also belonged to the Calgary Sketch Club and the Allied Arts Centre. Mrs. Coleman was also interested in classical music and good literature. She was the Photographic Secretary of the Calgary Section, A.C.C., for many years. Although physically frail she took an active interest in the A.C.C. and continued her skiing and mountain walking until the end of her life.

Mrs. Coleman was born in Waitotara County, North Island, New Zealand, in 1889. She came to Canada after the Great War and joined the A.C.C. a few years later. Her first camp was Mt. Assiniboine in 1935, where she made the ascent of Mt. Magog. Mrs. Coleman also attended several other summer camps, including the Little Yoho, where she climbed Mt. Marpole. One of her greatest pleasures whilst at camp was to make sketches in oil or water colour of the magnificent scenery she so much enjoyed. Although she was very frail she managed to attend the 1952 camp which was again held at Mt. Assiniboine, and this was her last camp in the mountains she loved so well.

Mountain climbing is a challenge. Life too is a challenge; in the words of Brig. Sir John Hunt in his concluding chapter of "The Ascent of Everest"—"There is no height, no depth, that the spirit of man guided by a Higher Spirit cannot attain." —J.E.S.

D. J. MEL MCGEARY

Mel McGeary was a life member of the Club, which he joined in 1919 while resident at Saskatoon. This was largely due to his contact with Mr. Andrew S. Sibbald, then living in Saskatoon and a very ardent mountaineer and subsequently Club President. Mr. McGeary was a whole-hearted mountaineer and not only attended nearly all the Club camps while he was in Canada, but also did quite a lot of climbing in small personal parties up to about 1928 in the Selkirks and as far north as Jack Pine Pass. In the latter district, after the Robson Camp in 1924, he made a second ascent of Mount Bess and had the experience of a night out on the mountain on his way down.

He was a good photographer of the mountains and before the days of color photography, he took his pictures in black and white and hand painted the glass slides and had them available to illustrate mountain talks by Club members. He was always very co-operative and did many a good turn quietly.

He was a very valuable club member and those who knew him will regret very much his sudden passing from angina in May, 1953, at his home near Boston, where he had lived since about 1930, having left Canada in 1929, and where he had built up a nice special shoe business. He had always hoped to come back to Canada for at least another club camp, but the opportunity never

came. He leaves a widow, one son in Winnipeg, and two daughters, both married and living in the United States, and to all of whom the Club extends sympathy. —H.E.S.

(MISS) GRACE M. MCDONALD

Miss McDonald was a life member of the Club, which she joined in 1920. She was born in the north of England, but came to Winnipeg, where for some time she resided with an uncle. Later, she moved to the Coast and resided in Vancouver and later in Victoria, where she was employed in one of the banks. She attended many camps and enjoyed the camp activities. She had the good fortune to take a trip around the world and then visited her brother in India. She passed on late in 1952. —M.A.

JOHN B. KAY

This gentleman, our oldest club member, passed on late in 1952 at Victoria, B.C. He was born in Toronto, attended Upper Canada College and was its oldest graduate when he died, his age being 94 years. He was associated with an outstanding mercantile house in Toronto dealing in house furnishings and drygoods—his connection therewith coming through his father, after whom the business was called. Mr. Kay himself was an expert in oriental rugs.

He joined the Club in 1909 and was a faithful member of the Toronto section and attended many of the Club camps during the earlier days of his membership. He was an ardent outdoor man and climbed considerably at the camps and enjoyed the outdoor life to the full. In his later days, he moved to Victoria, B.C., but did not attend any camp in recent years. He had one son, who was killed in the First Great War and he left two daughters and a widow, to whom the Club's sympathy is extended. —N.P.

HENRY S. CROSBY

Mountaineering and aviation were the hobbies and engineering the profession of Henry S. Crosby, of Minneapolis, Minnesota, who died on March 19, 1953. The private plane which he was piloting suffered mechanical failure and he lost his life when it crashed in a street at Trumansburg, New York.

Minneapolis was the background for Mr. Crosby's younger days as well as for his business and family life. Born on May 29, 1904, he graduated from Yale in 1926 and Massachusetts Institute of Technology in 1929 The engineering problems of flour milling plants, machinery and equipment filled his professional career. The Washburn Crosby Company, for which he commenced work in 1929, soon grew into General Mills, Inc., a nationwide flour milling and manufacturing concern. Mr. Crosby progressed from draftsman to Chief Engineer, and in 1947 was elected Vice-President in charge of Plant Engineering.

During World War II he spent nearly three years with the Army Air Force, doing engineering work in the aircraft production program, and was promoted to the rank of Major.

It has been said that Mr. Crosby "exemplified the highest standards of his profession," and this is well proved by the devoted civic service he gave to the Dunwoody Industrial Institute in Minneapolis. As a member of the Board of Trustees since 1933 and as President from 1948, he earned the undying respect and affection of his associates.

The mountain peaks of the Canadian Rockies, far beyond the horizon from Minnesota,

provided a lifelong fascination for Mr. Crosby. Under the characteristic inspiration of his father, Mr. John Crosby, on early camping trips he learned to know and to love the areas of Lake Louise, Lake O'Hara and Mt. Assiniboine. Under the expert care of George Harrison he learned the trails and the passes. Under the faithful guidance of Rudolph Aemmer he learned the steps to some of the greatest summits of those areas. When he was twenty they climbed Hungabee, and two years later—-Mt. Assiniboine. Victoria and Lefroy were also on their list. In 1934 they made a first ascent of Mt. Aye (10,640 ft.) and of necessity spent a night on the mountain. In addition to climbing, Mr. Crosby made winter trips to ski in the Assiniboine area.

During more recent years he had the pleasure of taking his own family to the Canadian mountains and teaching them the fundamentals of climbing. In this way his love for the mountains as well as his many other fine qualities will be carried on by those who succeed him. He was survived not only by his father and mother, Mr. and Mrs. John Crosby of Minneapolis, but also by his widow, Margaret Crosby, and their four children, who live at Wayzata, Minnesota. —J.D.L.

BOOK REVIEWS

POCKET GUIDE TO THE TREES AND SHRUBS OF BRITISH COLUMBIA

by E. H. Carman, B. C. Forest Service Publication B28 2nd ed. 1953. Price 75c.

This trim pocket guide was prepared to help "woodsmen, students and others" identify the trees and shrubs of British Columbia. It is not a bulletin which will be much used by the young or casual naturalist for it is not illustrated and the botanical descriptions possess much of the conciseness of those in formal manuals. On the other hand, there is a minimum use of botanical terms and those used are defined in a glossary. This guide, then, is likely to be extensively used by those who have had a good introductory botany course or its equivalent.

So many additions and modifications have been made in this new edition to the species list, descriptions and ranges, that it bears little resemblance, except in title, to the 1937 publication. The layout of type and keys is excellent and the size handy. Errors in English and in fact are few Disagreement on points of classification are, here and there, to be expected, but quite generally Mr. Carman's treatment should be approved. Undoubtedly the bulletin provides the most complete of available descriptive statements on the woody plants of B. C.—V. C. Brink.

It is suggested that the three reviews following be read together. Mr. Murray's book outlines all Everest Expeditions in brief terms. Sir John Hunt describes the final and successful one but through limitations of space runs briefly through Nepal. Mr. Tilman describes Nepal itself in three regions of that country, the last the region of Everest. The three books together make almost a co-ordinated picture of the adventure on Everest from the south, at the same time outlining the many years of adventure from the north.—Ed.

THE ASCENT OF EVEREST

by John Hunt, first printing 1953: pp. 300, plus 8 full page pictures in colour and 48 pages of photographs. Hodder & Stoughton Ltd., London; price 255.

Brigadier Sir John Hunt, C.B.E., D.S.O., leader of the successful 1953 Everest Expedition, succeeded in writing this very fine book in a little under a month, a feat as remarkable as his fine leadership of the expedition that won the summit. The keynote throughout the expedition was organization of the highest order, planning and yet more organization. The same applies to the book. It is admirably arranged and the pictures in themselves enable the reader to follow the expedition's work and movements and to enjoy with them the magnificent views of the high Himalayas and the countryside of Nepal. The arrangement of the photographs in groups of eight or ten spaced through the book enables the work of the expedition to be followed pictorially without thumbing pages and they are well described, along with the colour pictures, in the Table of Contents. There are about 70 photographs in the 48 pages of illustrations, besides the eight fine colour pictures, interspersed in the book. There are also a number of pen-and-ink sketches, many of them of a caricature nature, and there are some sketch maps but—and this is my only criticism of this excellent book—these maps are hard to find. There is not mention of them in the Table of Contents and the one pertaining most directly to the assault—high camp layout—appears against page 14 of the book instead of against the Diary of the Expedition, Appendix I. The diary is excellent but it requires this sketch

map to follow it, as it also requires the perspective sketch against page 125. I could have used, also, a folder type map of a general nature, attached to the back page. But these are quite minor criticisms. How Sir John Hunt managed to get this book together in the time is truly amazing. It is without question the best book I have ever seen on mountaineering.

At the outset, Hunt makes it clear that he is setting out to describe the 1953 expedition; there is little space to describe previous expeditions, or the pleasant journey through Nepal in the approach march. At the same time, he gives and accentuates, full credit to previous expeditions, in particular to the Swiss expedition of 1952 which so generously put at his disposal all its information. The book commences with a foreword by the Duke of Edinburgh, with a short preface by Hunt, and then launches into some 50 pages of most interesting organization and planning, before the expedition ever started; all done without knowing if the Swiss expedition, then taking place, would succeed or not. The thoroughness and selflessness of this preliminary work makes very good reading and it opens one's eyes to what must be done to succeed in such a major adventure. Again, I marvel at how he has crammed so much information, in so pleasant a style, into this book of relatively small compass.

The movement to Base Camp at Thyangboche of the multitude of stores required, and the personnel, is briefly but interestingly described. From there, Hunt tells of the intense training carried out not only in acclimatization but in tests of open-and closed-circuit oxygen apparatus—in more detail in Appendix V by Tom Bourdillon. At the same time establishment of Second Base Camp at 17,900 feet on the Khumbu Glacier was in progress, for completion by mid-April. This was carried out in accordance with the plan evolved long before the expedition ever started from Britain. On the ground, further planning was continuously carried on to adapt details to circumstances, coupled all the time with acclimatization and reconnaissance. The advance through the vicious ice-fall of the Khumbu Glacier, changing almost daily, forms the subject of a long and thrilling chapter. Well it might, for had that route failed (it required a continuous maintenance party) so would the expedition have failed. It was the key. Thence upwards through the easier part of the Cwm, up the Lhotse face and eventually to the South Col between Lhotse and Everest (Camp VIII) establishing camps as they went along, stockpiling, manning always with a party in support, and the ultimate manning with the assault parties. All this is vividly described and illustrated.

Finally, the assault. The first assault party reached Camp VIII (South Col, 26,000 feet) on May 24, halting May 25 while the second party reached Camp VII. On May 26 Bourdillon and Evans made their try for the summit but it was too far—they had to turn back from the South Summit—and on the same day Hunt and a Sherpa carried loads to 27,350 feet where they dumped them. These loads were to be picked up, and added to those they already carried, by Hillary, Tenzing, Gregory, Lowe and another Sherpa on May 28 and brought up to 27,900 feet where Hillary and Tenzing remained in Camp IX Ridge Camp for the second assault on May 29. The colour frontispiece shows Tenzing on the summit. Meantime, others had been coming up to Camps VII and VIII in support, and for a third assault if necessary—truly a marvellous piece of organization. All this is most clearly and graphically told by Sir John Hunt, and the victorious assault is described by Sir Edmund Hillary

The appendices round out this very fine book. They deal with food, assault loads, tents, equipment, clothing; and the method of organizing the expedition. That such detailed and comprehensive appendices were possible so soon after the event yet again points up the most careful and meticulous organization that achieved success.

—E. O. W.

THE STORY OF EVEREST

by W. H. Murray, third edition 1953; pp. ix 198 with bibliography and index. 15 maps and diagrams and 24 pages of photographs. J. M. Dent & Sons, Ltd, London: Price 15s net.

This is a recapitulation, and a very good one, of the various Everest Expeditions, from 1921 until the summit victory of 1953. The book was originally published in 1953 before the Everest Expedition had achieved success, but was reprinted in 1953 and a third edition, under review here, also appeared in 1953 after the summit achievement. So this third edition covers in one quite small volume the whole history of the Everest adventure.

W. H. Murray's book "The Scottish Himalayan Expedition" was reviewed in these pages last year and he is well known as a member of Everest reconnaissances. He refers to Mr. Eric Shipton, who returned unexpectedly from China . . . "this was the arrival of the right man at the right moment. We asked him to lead the expedition because no one alive knew Everest better than he. Later on, when we reached Nepal, we were joined by two New Zealanders, E. P. Hillary and H. E. Riddiford. Ward and Bourdillon had first class Alpine experience . . ." To sum up, the succeeding Everest expeditions requires an author who not only has facility in writing and in selecting the appropriate material, but also one who is relatively young and knows the terrain and the personalia. Mr. Murray has these attributes.

In the fourteen chapters, he deals with the preliminaries—leading to the decision to attack from the North Col—followed by the first attack of 1922 and that of 1924 which involved casualties culminating in the death of Mallory and Irvine and then the renewal of the attacks from the north. "The last attempt from the north had been lost. The world was soon to plunge into war and the frontiers of Tibet to close." The remaining two chapters cover "Mount Everest from Nepal" in some detail, but naturally (in the space available) only in outline from this side. The turn to the Nepal side was made partly because conditions of climbing were likely to be better, but mainly because (after the war) political conditions were reversed. It had been impossible to enter Nepal before and Tibet was relatively open; now Tibet was closed and Nepal relatively open. This is all dealt with in this excellent summary of over thirty years of effort.

The mapping (sketch) is excellent as are the illustrations. It is a fine summing up, as he himself calls it, of "The Story of Everest."

—E. O. W.

NEPAL HIMALAYA

by H. W. Tilman; pp. X, 272 including bibliography and index, with sketch maps and 61 photographs; Cambridge University Press, 1952. Price 25s net.

Before the war, all expeditions to the high Himalaya by which Nepal is bounded on the north, approached through Tibet. Nepal at that time was practically closed to Europeans and other foreigners. The interior ranges of Nepal were to all intents unknown except to the Nepalese. Since the war, the position is reversed, for there is now no ingress to Tibet while the Nepal Government has been generous in allowing mountaineering and kindred expeditions to visit the country. Mr. Tilman records three journeys undertaken by him, the first in 1949 to the east central region of the high range, and the other two in 1950 eastwards of the previous year. The last expedition was to the Everest region and covered some of the ground later covered by the Everest reconnaissances and expeditions.

There are few better qualified than Tilman to write about big mountains. On this occasion however, his interest and writing is more about mountain valleys and mountain travel than actual

mountaineering. He writes amusingly and factually on life in the mountains of Nepal. Because Nepal is so little known to us in the west and because we have so recently had before us books dealing mainly with purely mountaineering matters—like Annapurna and the Ascent of Everest—that had no space for descriptions of the valleys and the life, the book is doubly interesting. An appendix by Mr. Polunin deals with the natural history of the region covered in 1949 and includes a surprisingly long list of plants collected which however he states "is in no way complete." Nevertheless, about 170 plants are listed. The sketch maps are adequate and the illustrations nice; all are in monochrome and, like the printed matter, deal more with life in Nepal than with the mountains.

In 1949 and 1950 the author entered Nepal by way of Raxaul, leading to Katmandu but in the latter year, he also re-entered by Jogbani, for the Everest trek. This is a couple of hundred miles to the east and necessitates leaving Nepal and returning to it for a speedy journey, devoid of "ridge-hopping," for the valleys are mostly north-south in this hill domain. It is of interest that what may possibly be the world's highest dam is under organization, perhaps construction, not far from Jogbani. This is the dam across the Kosi River of which the three main branches, uniting just above the dam, are the Sun Kosi from the west (1949 region) ; the Arun from behind (north of) Everest; and the Tamar from the west slopes of Kangchenjunga. Of these, the Arun cuts straight through the main Himalaya. Mr. Tilman comments on this project in his most interesting book.

—E. O. W.

PLEASE: To help the work of the editor and the editorial committee will ALL contributors have material in by NOVEMBER 1st, 1954. Typed double space.

Print all photographs for illustrations on GLOSSY paper not less than 5x7. PLEASE title them by pasting name on the bottom of the picture, and state photographer's name.

Thanks.

EDITOR.

ALPINE NOTES

FIRST ASCENT OF "EAST WHITE TAIL PEAK"

By R. C. Hind

At Vermillion Crossing in Kootenay Park a new sign has been erected pointing out Mt. Verendrye. Unfortunately this sign does not point at Mt. Verendrye but at a much more spectacular peak to the south of it, which much impressed Jim Tarrant's party when they climbed Verendrye last summer. This peak has two widely separated summits, although this is not apparent from Vermillion Crossing. The name "White Tail Peaks" is suggested.

On Aug. 15th Jim Tarrant, John Manry, Bruce Fraser and I left the Vermillion Crossing camp ground at 5 :45 a.m. and walked up the trail along the creek draining the east side of White Tail and Verendrye. Where the trail ends, the creek was filled with avalanche snow and we made our way without difficulty to a small glacier on the south-west of our peak, where we roped and climbed by 10:15 to the col between East White Tail and an unnamed peak to the south. Here John suffered severe cramps in his knee and decided to wait for us.

Jim, Bruce and I continued up the ridge over one difficult pitch, until a vertical cliff forced a traverse to the left on a wide ledge to a long couloir. This is mostly firm rock with a few snow patches. One or two tricky pitches and three or four hundred feet of scrambling led us back to the ridge above the cliffs. The final tower looked very impressive, but did not present much difficulty, though one or two pitches presented very small holds. The summit was reached at 1:30 p.m.

A large gap separates the two peaks and it appears that West White Tail could be best climbed from the Verendrye col. A small cairn was built and we left the summit at 2 p.m., arriving at Vermillion Crossing at 7:45.

MT. CHEVRON

By Mary Wilshire (Edmonton Section)

On July 11th, 1953, Dr. Jo Kato accompanied by Vic and Mary Wilshire set out to climb Mt. Chevron. We believed this 9300-ft. peak to be unclimbed as we had been unable to find any trace of any previous ascent mentioned in the records.

Spending Friday night at the Pocahontas Disaster Point hut, we arose at 3:00 a.m. and drove to the Edith Cavell viewpoint, where we left the car. The weather looked very promising as we set off at 5:15 following the Amethyst Lake trail. We continued on this trail for three miles to Verdant Creek, then turned south and bushwacked parallel to the creek up to Verdant Pass over alpine meadows on the lower west slopes of Edith Cavell. We proceeded south-west on the meadows until we reached the base of Mt. Chevron at 8:30 a.m. where we stopped for breakfast. The day was turning very warm and mosquitoes were having a hey-day.

Leaving the foot of Mt. Chevron at 9:00 a.m. we commenced climbing up the east slope which was covered with snow patches and loose rock. Turning north we followed along on the snow-corniced south-east ridge until we cut through to gain bare rock. We climbed the south ridge on easy rock to within 200 feet of our goal where we roped to cross the steep unstable snow patch which led to the summit. We reached our destination at 12:00 noon.

No cairn was in sight, and we spent a very enjoyable time building one, eating lunch and viewing the superb scenery. The day was bright and hot which added much to our enjoyment.

Leaving the summit at 1:30 p.m. we followed the same route on the descent, enjoying a very fine glissade on the east snow slopes. We reached the car at 7:30 p.m., very tired, but feeling we had had a good day.

This climb turned out to be an easy one, but an excellent vantage point from which to view the Hooker group, Cavell, the Ramparts and Robson. Chevron is a mountain with two summits. The slightly lower north peak we believe is still unclimbed. The total time taken for the climb was 6 hrs. 45 mins. for the ascent and 6 hrs. for the descent.

THE ATHABASKA VALLEY

By Dr. A. MacIntosh

Early in July 1953 Gus Landt and I started from Sunwapta Falls with Frank Wells, our outfitter, Dora Wells and Les Prosser, the wrangler, for two weeks up the Athabaska. Our first camp was on the east side of the river a mile or so above the Chaba Junction; our second opposite Lynx Creek on the west side; and our third on the east side of the valley opposite Mt. Columbia, Bill Field's old camp for his glacier observations.

While we were waiting at Camp One for Walter Perren to catch up with us, Gus and 1 went to Gong Lake, lying a couple of thousand feet above the Athabaska, and hiding coyly among the group of peaks north of Alberta which have been so seldom visited. Another day, Gus, Frank and I went up the Chaba and over to Fortress Lake, to the deserted trapper's cabin from which one looks up that beautiful expanse of green water toward the Whirlpool area. On this jaunt the least of the fishermen caught the biggest trout.

Blackfriars (10,300) lying in the southwest angle of the junction of Quincy Creek and the Athabaska, unclimbed and not officially named according to Ray Thorington's guide book, dominated the view from Camp One.

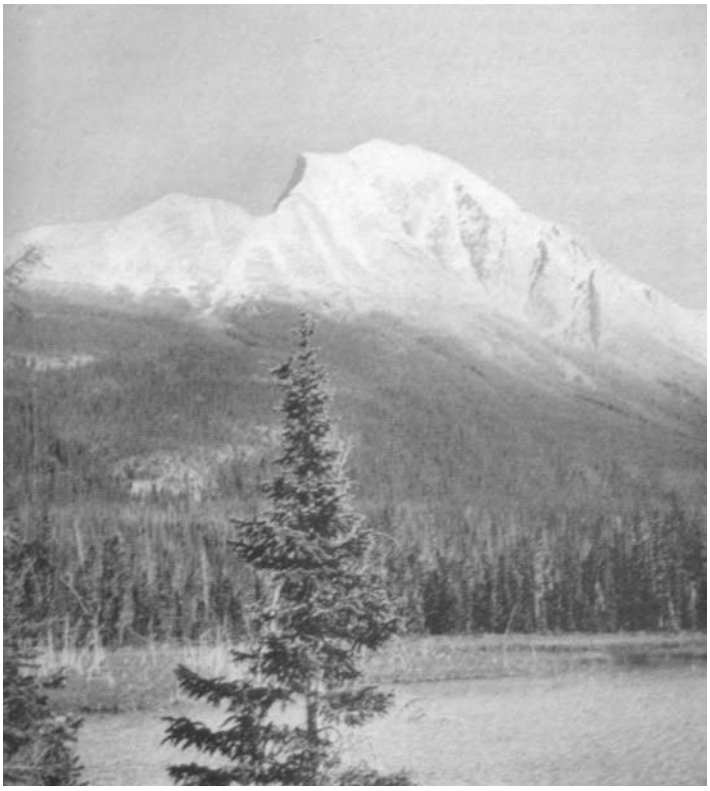
When Gus, Walter, and I set out to climb it on July 8, Frank Wells took us two miles or so up the Athabaska and left us on the west bank after a damp crossing. We started straight up the east side of the mountain soon coming out of the heavy timber into relatively open country. At timber line the route traverses around the northeast ridge and continues for a considerable distance on the north side gaining altitude to a platform from which a ledge system crosses a sheer circular face of two or three thousand feet. Walter and I crossed this face, ascended a long snow couloir, partly on the snow, partly on the rock, to a heavily corniced saddle which took us across to the summit ridge itself. From the saddle this ridge is steep at first but well broken up. After two or three hundred feet the slope eases and the summit is reached with little effort.

Surely the view from this point must be one of the grandest in the Rockies. The Athabaska sweeps from its source at the Columbia Glacier down the magnificent valley rimmed by Columbia, King Edward, the Twins, and Alberta. To the east Gong Lake nestles high above the river as if to keep from falling out into the Athabaska. To the west the Chaba and Fortress Lake, with Clemenceau and the mountains of the Whirlpool beyond. The "glittering mountains" indeed!

One bright sunny day succeeded another as we drew closer to Alberta and then reached the base of the Columbia. The bad weather held off until we were lodged in a high bivouac in an attempt on Columbia and then broke. We were driven back to Camp Three and to the start of the return journey.

But we still had some days along the great river between those towering valley walls.

Gong Lake From Blackfriars Summit.
Photo MacIntosh



Blackfriars From The Chata Valley.
Photo Landt

The Upper Athabasca From Blackfriars — Alberta, The Twins, Columbia.
Photo MacIntosh

ASCENTS IN THE CLEMENCEAU ICEFIELD REGION

By George Bell

One of the less accessible regions of the central Canadian Rockies is that of the Clemenceau Icefields, some twenty miles north and slightly west of Mt. Columbia. In 1927 Ostheimer and Fuhrer (believe Journal of ACC in 1927 or 1928) make a remarkable number of climbs around the Icefield and it has been visited by three or four parties since then. During July of 1951, George I. Bell, W. V. Graham Matthews, and David Michael Jr. of the American Alpine Club, and John Rodney Rousson of The Alpine Club pioneered some new routes on peaks near the Icefield. These included the first ascents of Mt. Shackleton (10,800) and Mt. Somerville (10,050), new route on the northwest ridge of Tusk Peak (10,960) and the west face of Mt. Columbia, and a sporting but unsuccessful attempt on the north face and northeast ridge of Mt. Clemenceau.

The trip was planned by Andrew J. Kauffman (AAC) who had unfortunately to withdraw at the very last instant. A De Havilland Beaver aircraft furnished an airdrop on the upper Clemenceau Glacier and on July 9 deposited personnel on the shores of Fortress Lake. The climbers then packed to the West Chaba Glacier, up this glacier, across a high (ca 9,600) ridge to the Peary Glacier; descended to the Younghusband Glacier, and in due course ascended the Clemenceau Glacier to the drop area. From Fortress Lake to the Clemenceau Glacier was about one and a half day's march. A camp was established beside the glacier's lateral moraine and just across from the towering eastern precipices of Mt. Clemenceau.

On July 14, Michael and Bell made the ascent of Mt. Shackleton. Leaving camp at 7 a.m. they crossed the Clemenceau glacier and fell to work on a difficult icefall, which descends between Mt. Duplicate and Tusk Peak and leads to Shackleton Three hours and step cutting were required to force a route through the left side of the icefall. Mt. Shackleton is a long ridge with three summits, separated from one another by nearly a mile but differing in altitude by scarcely 50 feet. Michael and Bell passed a series of crevasses and ascended to attain the ridge about 500 feet below and west of the western summit. From here the ridge offered a fairly exposed but straightforward route of ascent and they continued over the western summit to reach the central and highest summit about 4 :00 p.m. The descent was made in about 3½ hours by the same route.

On July 18, Bell and Rousson made a new route on Tusk Peak, ascending by the northwest ridge. The route was afflicted with rotten rock and much scree in its lower portions, but offered interesting climbing in its upper thousand feet. They descended by the south ridge and west face, which had been used by Ostheimer and Fuhrer on the first ascent.

The most challenging climbing of the trip was encountered on two attempts to scale the north side of Mt. Clemenceau. To the north, Clemenceau drops in a steep face for about 6,000 feet. The face is roughly bisected by a ridge which runs down and to the west from a great buttress on the northeast ridge. Tiger Glacier, which cascades down from upper north face is thus forced to the west by this ridge. The lower north face was ascended toward its western end without undue difficulty. The climbers then followed the broad bisecting ridge toward its junction with the northeast ridge. Near this junction the slope steepened, changing to ice, and crampons were very useful. From the top of the northeast buttress they followed the ridge upward, and on the second attempt two climbers reached a point a few hundred feet below the summit, before retreating. Here difficult and dangerous cornices obstructed the ridge.

On July 27 camp was moved across the Clemenceau Icefield and placed in a pleasant meadow east of Mt. Tsar. On July 29, Rousson and Bell made a first ascent of Mt. Somervell, just

north of Tsar, climbing a couloir on the east face and then following the south ridge to the summit.

In a long day of backpacking, camp was moved into the upper Athabaska valley just north of Mt. King Edward. On this trip it was noted that the Alberta-British Columbia Interprovincial Boundary Map is completely erroneous in the region "Headwaters of Tsar Creek." On August 4, Bell and Michael inadvertently made a new route up the west face of Mt. Columbia. Starting from a bivouac at 9,000 feet on the south side of Mt. King Edward, they ascended the south side of the main west face of Columbia as directly as possible. Thanks to a week of fine weather preceding the climb, the rock was mostly clear of snow and ice and no serious difficulties were encountered save for an orange band of cliffs near the top. This was ascended by an inconspicuous shallow chimney with a large bulge above it. Above this band, a short diagonal traverse to the south led to the main south ridge perhaps two hundred feet below the summit. Total climbing time on the west face was only about three hours, but it could be much longer with less ideal climbing conditions.

On August 6 the party, filled with many pleasant memories of the trip, reached the Banff-Jasper highway via Habel Creek.

WEEK IN THE BUGABOOS, SEPTEMBER, 1953

By Peter Robinson

At the end of August, while five of us were traversing through a portion of the Northern Purcells, Jim and Jane Cooke, and Larry Worth from the Dartmouth Mountaineering Club; and Harold Walton of the Boulder section of the Colorado Mountain Club were fortunate in getting a ride to Bugaboo Cabin from Spillimacheen, B. C. with the Iowa Mountaineers. They came to meet us at Boulder Camp, the end of the traverse.

On August 30 a large party went up the west peak of Eastpost Spire (9200 feet) after being turned back by fog and snow on Pigeon. Nick Clinch and Gary Driggs from the Stanford Alpine Club were descending from the fourth ascent of Snowpatch Spire when our traverse party reached Boulder Camp that evening. On August 31 and September I the rest of the traverse party and the Iowa Mountaineers pulled out for Spillimacheen while I remained with the others for a week of climbing in the Bugaboos.

On September 1 we traversed Crescent Spire from west to east in a snowstorm after some interesting rock climbing to reach the Bugaboo-Crescent Col.

The bad weather broke on September 2 and we made a late start (9 a.m.) to make a first ascent in the spires on the north side of Warren Glacier. "Mount Kelvin" (ca. 9700 feet)[1], the granite spire north of "Wallace", was not difficult, but the approaches were long and involved from the col south-east of "Wallace" along the bergschrund on the east face of the latter and up to the Wallace-Kelvin Col. Reaching the summit at 4:45 p.m. we were able to gaze upon a panorama of marvellous splendor. Every peak from Bugaboo Spire, Howser Spire, and the Four Squatters in the south to Mount Conrad and the Selkirks in the west, and the Goodsirs in the north-east, was coated with fresh snow. We descended to the west terrace glacier by a spectacular crack in the south-west face, then climbing up steep snow onto the west shoulder of Wallace in the last twilight. Since I had been on the shoulder the year before, we were able to move along in the dark and eventually get down onto Warren Glacier, reaching the lake at midnight. Crossing the glacier we descended from Bugaboo-Snowpatch Col on crampon points by the light of a crescent moon and reached camp at 3:30 a.m.

1 *All guidebook altitudes in this region should be viewed with suspicion. Hence determinations for new peaks are subject to the same errors.*

SPECIAL NOTE FOR
THE CAJ DIGITAL EDITION

An oversized fold-out photo, "Panorama from the Summit of Mount Kelvin," by P. Robinson, was included in the hardcopy version of the 1954 *Canadian Alpine Journal*. It is not included in this digital version due to size restrictions.

Meanwhile Dick Irvin, Bill Doub, and George Whitmore from the Sierra Club made the first ascent of Pigeonfeather East and second ascents of Turret Peak and Unnamed 9550 feet. September 3 while we were recovering from "Kelvin" they climbed Crescent via the south ridge then traversing to Brenta.

Harold, Larry and I joined Dick, Bill and George on September 4 to make the fifth ascent of Howser Peak (10,950 feet[2]) approaching by the schrund west of Marmolata, climbing the corniced east ridge, and descending the precipitous north corner. It was on this climb that we saw the striking dark "eyebrows" on the west face of Mount Farnham, highest peak in the range. This proves that Mount Farnham is the "Eyebrow Peak" named from near Bugaboo Pass by Wheeler in 1910. The high peak now named Eyebrow Peak is really "Mount Aurora".

The following day the same six of us enjoyed a perfect final day climbing Bugaboo Spire. Three of us led the famous gendarme and found it very exciting but not extremely difficult with Bramani soles. Although the south ridge of Bugaboo was snow-free, the plastered Howser Spires and Pigeon would have been out of the question.

On the next two days we all moved down to Bugaboo Cabin and walked to within ten miles of Spillimacheen where some lumbermen gave us a very welcome ride. At Spillimacheen we split up: Jim, Jane, Harold, Harold, and Larry going to Lake Louise for a successful ascent of Mount Victoria while Dick, Bill, George, and I attempted Mount Sir Donald from Glacier.

SECOND ASCENT OF MT. TEMPLEMAN

By Leon Blumer

It was a mystery to me to find a shapely 10,000-ft. peak, un-climbed and so close to Trail, my present abode. So our small party from Trail set out to claim a first ascent, one long weekend last autumn.

Our trip was nearly doomed from the start. Loren, one of our strongest members had overturned a load of timber on the highway about 30 miles from Trail. In the early hours of Saturday morning he arrived and announced his inability to leave till Sunday. We left by car about 5:30 a.m. and quickly put the miles behind us. Other members were Ernest Vyse, 15 years old, and Marvin Goldberg, both already impatient at the delay. We pressed quickly through the beautiful Lardeau Lake country, along a road one car-width clinging precariously to 400-ft. cliffs that dropped straight to the water. About midday we reached the track turn-off about 5 miles from beautiful Trout Lake.

Here we would have to walk along a bush track fit only for jeeps and strong trucks. We had a quick lunch and started our 15-mile walk. It was a fine sunny day so we soon stripped down to our shorts. After a few hours of plodding we could see tantalizing views of rocky peaks at the head of the valley. A few miles further on we heard the sound of a truck. In it were four hunters who readily gave us a lift of five miles and 3000 vertical feet. The road gradually deteriorated but the truck did some remarkable stretches of mud, wash-aways and logs. One slip sideways and we would have crashed into the forest below. One stretch was just too much, so the hunters decided to camp while we pushed on in the twilight. Here Marvin discovered that in his haste to board the truck he had left his ice-axe by the roadside. This was a bitter blow, only two climbers being left for the actual climb. We pushed on and just before total blackness descended we found a campsite in a beautiful little field through which flowed a small stream.

2 *All guidebook altitudes in this region should be viewed with suspicion. Hence determinations for new peaks are subject to the same errors*

We left about 7 a.m. after a good solid breakfast, in the wake of the hunters, walked slowly to the pass and looked into the rising sun. Nearby we gazed at sheer rock peaks rising from green pastures. Below us the pass dropped to the Duncan-Beaver River trench. There was even a steep sizeable-looking glacier nearby on 9800-ft. Mt Abbot, climbed only two years ago. To our left there were two long rock peaks which the map proclaimed to be parts of Mt. Templeman, the actual peak hidden over a col between the two. A track led to a deserted mine, then a flat glacier and rocks. We reached the col about 10 a.m. The sight of the actual peak was exciting; only a mile away and quite pyramidal and steep. The only possible ridge from our direction seemed to rise vertically up the face from a dirt ridge the other side of a small glacier. It looked a difficult peak. To get to the small glacier we had either to ascend the small peak on our left and traverse its pinnacled ridge or drop over the hanging glacier of our col and traverse ice and scree slopes. We chose the latter, Marvin belaying us as best he could while we crossed a crevasse to the lip of the leaning cornices and then down their edges to the ice. It was a 45 degree slope which required about 30 feet of step-cutting.

From the edge of the ice we took to a scree slope rather like soft black coal. We kicked steps in this stuff and soon found ourselves on the névé . After walking around one or two large crevasses we headed for the long ridge, crossing a large bergschrund by balancing gingerly on a block of ice spanning the gap. There was a small amount of rock climbing to the ridge and a walk along its narrow crest.

About noon we reached the beginning of difficulties and left our axes 100 feet up the ridge. Its airy knife-like ridges of loose rock were extremely interesting but not too severe. A few hundred feet below the summit we thought we could see a small rock cairn. We almost raced along the curving crest to the snow patches. It was true. I lost my acquired English calm and swore for five minutes in good Aussie language.

The Selkirks to the northeast unfolded in splendour. The sheer rock peaks of the Bugaboos looked even more impressive from here. Down in the next valley we admired some striking rock spires about 9,500 feet high, two of them having been climbed a few years ago. We pin-pointed an unclimbed 10,000-ft. peak only 10 miles away, but rather difficult of access. Even peaks of the Rockies upthrust their distant heads. Ernie, searching in the snow, found at last a green-pointed rock piton holding a waterproof bag containing names of three Americans, one a girl. Sierra Club (California) members, they had beaten us to it by six weeks. According to our reckoning their S.W. ridge looked even more difficult than our south ridge. We wondered whether we had all ascended the same ridge and drank a toast to their efforts from the lemonade, flash. Templeman's north face was impressive, a crampon and piton job probably, waiting to be done in 50 years' time, if ever.

At 3:30 p.m. we turned to go. It was a careful descent. We discovered two small cairns on the way down, either belonging to the previous Canadian attempt or the American party. We collected our axes and raced down the scree slopes to the glacier.

LYNX CREEK VALLEY – 1953

By John D. Mendenhall

The beautiful country so well described by Charles Wilts[1] lured five climbers in the summer of 1953. Gil Roberts, Ray Van Aken and George Harr were veterans of previous trips, while Ruth and I visited this enchanting area for the first time.

Our route of approach was identical with that followed in 1951[2] and our climbing camp

1 *Canadian Alpine Journal,* XXXVII, 1949, p. 131. *Canadian Alpine Journal,* XXXV, 1952, p. 28.

2 Canadian Alpine Journal, XXXV, 1952, p. 28.

was occupied on July 30. To the south rose the mighty battlements of Alberta, twenty-four hundred feet of crevassed glacier capped by three thousand feet of grim rock and snow. North of us were two unclimbed peaks, one a defiant fortress of rock, the other with a curving, corniced arête, both circa 10,000 feet. For the first we propose the name "Thorington Tower," and for the second, "Mt. Palmer," to honor the authors of "A Climber's Guide to the Rocky Mountains of Canada." It is felt that this comprehensive work, as well as the many other writings of Dr. Thorington, have been very instrumental in helping many to enjoy Canada's great mountains.

An attempt on the Thorington Tower was scheduled for July 31, but snow and rain caused such a late start that Mt. Palmer, to the west, was selected. A long couloir, then snowy rocks, were ascended as the weather deteriorated. The air was uncomfortably charged with electricity as we roped up for the mist-shrouded arête. Steering a course between cornices and cliffs, we climbed interminably until the summit was reached. The view through rifts in the clouds was impressive, but an electrical "bee sting" on the writer's head caused a rapid, orderly retreat.

The next day was spent in bailing out leaky tents, with interludes of reading and chess, as snow fell heavily on the peaks above.

August 2 dawned clear. Our plans for a full-strength assault on the Tower seemed unwise in view of the fresh snow, so Ruth, George and Ray left for the apparently unclimbed peak west of camp, while Gil and the writer prepared to climb as far as possible on the Tower.

The other party reached their summit after a fatiguing climb, only to discover that the Harvard Mountaineers had in 1927 gained the top from the Athabaska Valley. The views were superb, needless to say.

The Tower party moved cautiously up out-sloping ledges covered with fresh snow. Eventually serious work began on the sole breach in the cliffs—a verglas-encrusted section of rock. The leader nervously chipped ice and drove pitons until almost all the rope was out. The second climber led past, up into a cave. The first climber, thankful to be off the ice, led another rope length above as the clouds swept in. Mindful of bad weather, the rather late hour, and obviously greater difficulty above, the climbers rappelled back to the base of the cliffs.

Far more time than was available would be required to get the Tower in good condition, so the party prepared to depart. With the need for rationing past, the first full meal was enjoyed. The next day the climbers reluctantly started the long trek back over the glacier, with many admiring glances at the fine summits guarding the area.

CLIMBS IN THE NORTHERN PURCELLS

By Robert West

In August, 1953, a party from the Harvard Mountaineering Club visited the Spillimacheen and Carbonate Ranges of the Purcell Mountains. The climbers, Winslow Briggs, John Humphreys, Peter Ray, and Robert West, approached the area by means of the lumber road along the Spillimacheen River from Parson Station on the Columbia. From a base camp on McMurdo Creek in the Spillimacheen Range, the party climbed David Peak (9,300 feet) and Coney Peak (9,300 feet), and made first ascents of Twin Towers Peak (9,300 feet), Beverly Peak (9,150 feet), and Silent Mountain (8,500 feet).

To reach the Carbonate Range, the climbers then backpacked southward across the Spillimacheen Range, utilizing a pass at about 9,900 feet elevation west of David Peak. After crossing Bobbie Burns Creek, the party camped on a large plateau near the Lower Carbonate

Peaks From David Peak, Spillimacheen Range. *Photo Peter Ray*

Mt. Coney (left), Twin Towers (right). Southern Selkirks in the background.

The Four High Peaks Of The Carbonate Group. *Photo Peter Ray*

(Left to right): Malachite Spire, Houseman Spire, Richards Peak and Carbonate Mt.

Glacier. The four highest peaks of the range are located around a high snowfield, the Upper Carbonate Glacier, which was reached by means of an arête leading to the northwest corner of the snowfield. From the upper glacier ascents were made of Carbonate Mountain (10,150 feet), Richards Peak (10,000 feet), and Horseman Spire (9,900 feet). Major peaks remaining unclimbed in the range include Malachite Spire (9,900 feet), Battlement Mountain (9,600 feet), and three smaller 9,ooo-foot peaks west of the principal glacier system.

SOME NEW ROUTES

By Hans Gmoser

MOUNT EDITH, VIA THE EAST FACE
("Fellow Trail"—Height 1,100 ft—Grade IV.)

Follow the Edith Trail until the mountain first comes into view. Cut off to the left and up towards the rocks. From here scramble over easy rock for about 300 feet up to the first talus slope. From the foot of the big gully, traverse about 250 feet to the right until a corner is reached. Pass around the corner and climb up about 25 feet on a 30 degree ledge. A steep slab (80 degrees and very difficult) slightly to the right is then crossed, then straight up where the ledge continues. Follow the ledge which leads almost vertically through the face. After about 160 feet, traverse 20 feet to the right and up 15 feet in a small crack (very difficult) to the end of the actual face. The right edge of the gully is then followed up to the plateau on the south ridge. From here the route follows along the south ridge to the summit. This climb was first made on May 10, 1953 by Franz Dopf and Hans Gmoser of Linz, Austria, and Phillipe Delesalle of Lille, France.

FIRST ASCENT OF "SUNBURST PEAK" VIA THE NORTHEAST FACE
(The Northeastern Peak of Mt. Wedgwood)
("Elizabeth Route"—Height 1,500 ft.; Grade V.; Time: 5 hours)

Fifty yards to the left of the lowest point of the face overlooking Sunburst Lake, a crack leads up one rope length, bearing slightly to the right. From here follow the crack another 200 feet. The route then continues over a rotten overhang and around a corner to a good belay point, then up one rope length (quite exposed) to a small ledge. A traverse is then made 30 feet to the right on the ledge (piton for belay). From here climb straight up to the ''Black Band" which can be seen very plainly from below. Traverse to the right to a small platform on the ridge. Follow the ridge to a wide talus slope, which cuts right across the face. Thirty feet to the right, a wide chimney leads up to a small platform. Climb 100 feet in a narrow chimney, then around a corner to the left and up on easy slopes until a gray slab (65 degrees) is reached. The slab is crossed to the left then up the end of the big gully which cuts down between the north and northeast faces, then over easy ledges to the top.

This climb was first made on Aug. 18, 1953 by Franz Dopf and Hans Gmoser of Linz, Austria, who have named the climb the "Elizabeth Route" in honor of Miss Elizabeth Rummel, for her kind hospitality.

MOUNT YAMNUSKA VIA THE SOUTH FACE
("Grillmair Chimneys"—Height 600 ft.—Grade IV).

From the eastern end of the cliffs, follow westwards along their base until the first scree slope is reached, then scramble up to the rocks. Here a system of chimneys cuts right through the face. One rope length up a little platform is reached. The route then follows over a short

overhanging crack into a wide chimney. This is climbed for about 150 feet and, passing through a hole, another platform is reached. Another 100 feet is then climbed in different variations. From here the route goes up a very narrow chimney for 25 feet then up another 50 feet on the right hand side, then traverse left back into the chimney, and then over large easy boulders to the base of the final chimney. This chimney is climbed for 150 feet (quite difficult) into a large cave. From the back of the cave another short chimney cuts through to the top.

This route was first climbed on November 23, 1952 by Leo Grillmair, Isabel Spreat and Hans Gmoser.

MOUNT YAMNUSKA (SOUTH FACE)
("Calgary Route"—Height 700 ft.—Grade V.)

This route follows the slanting crack which goes up 300 feet to the west of the main peak. The first section is fairly easy and runs up a wide gully which becomes steeper and ends with a 20-ft. slab. Above the slab, the crack is blocked by a large overhang. Climb 15 feet on the right and from there traverse 15 feet to the right on to a small platform just large enough for one's feet. Now climb straight up (very difficult—2 pitons in place) and below the last piton traverse to the left, back into the chimney.

Continue up the chimney and below a large overhang, pass through a hole into a cave. Climb up the left wall and out of the cave and continue further up the chimney until it becomes steep and extremely narrow. From here two rope lengths of very strenuous climbing lead to the summit ridge (rope up rucksacks). From this point the summit is reached in a few minutes of easy climbing.

TRIPS

By Leon Blumer

VALHALLA RANGE, SLOCAN LAKE AREA

Early May: Gordon Hartley and author followed Jack Atkinson's old blazed trail up Mulvey Creek in an attempt to reach the pass between Mts. Gimli and Gladsheim. Returned due to lack of time.

Late May: Same party on another week-end trip walked 12 miles up old forestry track on North bank of Gwillam Creek. Climbed up south valley beside waterfall and left packs at snow level about 7000 feet near natural camp cave. Pushed on to 8000 feet col but were turned back by hail, snow and lightning. Next morning returned to col and traversed an 8500 ft. rock peak down snow slopes to camp. No cairn on summit.

July: Another party from Trail returned to same camp cave, reached col early Sunday morning. Party of Herman Schnidig, Leon Blumer and Gordon Hartley descended very steep rock and tree cliff to snow and ice slopes en route to Gladsheim. Halted by a steep vest-pocket glacier in a cleft with sheer 200-ft. walls.

Roped and ascended an 8,700 ft. rock peak up steep snow slopes. Left small cairn but no names on summit. Returned to cave in hailstorm. Arrived Trail Monday noon exhausted. Other members, Ruth McKinnon, Marvin Goklberg.

Oct. 12: Ruth McKinnon and author attempted Mt. Gimli. Carried too much gear including rifle. Camped in good cave, no water. Followed easy ridge in heavy mist. Arrived unexpectedly at a col within one mile at Gimli overhanging sheer north faces of ridge. Miss McKinnon tired so author climbed ridge to survey future route. Returned down face.

KOKANEE GLACIER PARK

June: Ernest Vyse and author traversed rock ridge of mountain 9128 feet south of Grant's Kneecap.

Late Oct.: Ruth McKinnon, Jane Bulling, and author attempted traverse S.W. rock ridge of Mt. Esmerelda. Party unfit, snowstorm, rocks glazed, freezing feet, Chamonix-like gendarmes. There is excellent rock-climbing in Kokanee Glacier Park.

THE HEIGHT OF EVEREST

By N. E. Odell

Professor of Geology, University of Otago, N.Z.

In view of the outstanding news from Mt. Everest, and the crowning achievement of the British party, aided so notably by N.Z. climbers, it may be appropriate briefly to comment on the question of the elevation of this culminating peak of the Himalaya.

In spite of all that is claimed in some contexts to the contrary, the officially accepted height of Everest is 29,002 feet. The latter mean value for its altitude was computed by the Survey of India as long ago as 1852, and no later values, such as that of 29,141 feet, obtained from further field observations made between 1881 and 1902, have been accepted as more reliable or nearer the actual height. It is not true that 29,141 feet is a later 'corrected' figure, as has been stated in some quarters. The reasons for this are somewhat complex and technical, but they are mainly due to the various factors that enter into the calculations, each of which factors is not easy to assess, and whose adopted values must necessarily make for considerable differences in the final computation.

Briefly these factors are, (a) the acceptable surface, or "datum", above which the height is to be measured; (b) the effect of refraction of the air through which the rays from peak to instrument pass; and (c) the disturbing influence of the local force of gravity upon the instrument and its levels. All these factors, moreover, can vary from time to time, and from place to place.

Although there are certain geological and geophysical reasons for the assumption that the Himalayan range, at any rate in part, may be slowly rising, we are quite uncertain of the amount of possible rise; nor did the recent Swiss Expedition make, or could they justifiably make, any claim of having measured that rise, as has been said. Professor Lombard the geologist, incidentally, has assured me that this claim was the invention of a newspaper man, who entirely misunderstood Dr. Wyss Dunant, the leader of the expedition.

One further item of 'debunking' is perhaps apposite. The picturesque and oft-quoted story that an Indian computer had been responsible in the first instance for the determination of the supreme elevation of Everest, when he announced the fact on rushing into the Surveyor General's office, is quite incorrect and apocryphal, and has been denied repeatedly by the Survey of India. A good story, however, inevitably dies hard!

As to the word Cwm, which has puzzled many people, the following notes may assist you:

> "Cwm"—A Welsh word, which means a high mountain valley, and is synonymous with the Celtic (Scottish Highland) "corrie", as well as the Alpine term "cirque". Cwm is not, strictly and geographically speaking, synonymous with the English word "combe", coomb", or "coombe", as suggested in some contexts, since the former, (and its equivalent 'corrie') is always a previously

glaciated mountain valley, whilst combe, etc., in southern England, refers to any small valley sculptured by means of stream action alone.

The word Cwm had already become a recognized geomorphological (physio-graphical) term in many quarters, long before George Mallory, who had known its significance in the mountains of North Wales, applied it to the Western Cwm of Everest, during the Reconnaissance Expedition of 1921. Cwm, for instance, is used in several of the scientific reports of Antarctic Expeditions, notably the "Terra Nova", 1910-1913

Cwm is pronounced somewhere between "comb" and "cum", the vowel "W" in Welsh having a sound which might perhaps be written "o".

Personally, I prefer the use of "corrie" for the corresponding single mountain feature, and "cirque" for the usually larger, and often composite, variety in many alpine regions.

CANADA'S MOUNTAINS

(Tune: "The Mountains of Mourne")

O Canada's mountains are rugged and tall,
So many there are you can't count them at all,
Their glaciers and snows touch the sky's azure blue,
Their sheer rock cliff-sides reflect every hue,
Their magnificent summits—all corniced snow—
Look down on the green wooded valleys below.
There's no place on earth where I'd rather be
For Canada's mountains are heaven to me.

O Canada's mountains are friendly and kind,
They bring rest to the spirit and peace to the mind.
The wild glacial torrents—they sweep away care,
And all troubles and ills float away in the air.
The flower-strewn meadows with beauty ablaze
Fill you brimful of joy and contentment for days.
There are glories afar—even over the seas—
But Canada's mountains surpass even these.

What joy 'tis to climb in these mountains so tall,
What fun in the summer, the winter, the fall.
To see the green trails and the heights high above
Makes you want to soar up on the wings of a dove.
But the hard work of climbing, it purges the soul,
As you strive ever on till you come to the goal.
All who climb to these heights or these green trails have trod
Are closer to nature and nearer to God.

Written in camp on July 30th, 1953, by Lynda R Woods at the request of E. R. G.

NEW ASCENTS AND VARIOUS EXPEDITIONS

———

Rocky Mountain, Main Range

Vermilion Pass Area

"E. White Tail Peak" *(ca* 9,000 feet). First ascent, August 15th, 1953. Bob Hind, Bruce Fraser, Jim Tarrant.

Banff Area

Mt. Edith (8,380 feet). New route via east face, May 10th, 1953. P. Delasalle, F. Dopf, H. Gmoser.

Mt. Yamnuska. New route via south face, November 23rd, 1952. F. Grillmair, I. Spreat, H. Gmoser.

Assiniboine Area

N.E. Peak of Mt. Wedgwood *(ca* 9,000 feet). New route via northeast face, August 18th, 1953. F. Dopf, H. Gmoser.

Jasper Area

Mt. Chevron (9,300 feet). First ascent, July 11th, 1953. Dr. Jo Kato, Mary and VicWilshire.

Lynx Creek Area

"Mt. Palmer" *(ca* 10,000 feet). First ascent, July 31st, 1953. George Harr, John and Ruth Mendenhall, Gil Roberts, Ray van Aken.

Quincy Creek Area

"Mt. Blackfriars" *(ca* 10,300 feet). First ascent, July 8th, 1953. Gus Landt, Dr. A. Macintosh, Walter Perren (guide).

Hooker Icefield Area

"Terra Nova Peak" (ca 10,000 feet). First ascent, July 29th, 1953. Bob Hind, Stan Pearson.

"Mt. Bowers" *(ca* 10,000 feet). First ascent, July, 1953. Club party.

"Mt. Sir John" *(ca* 9,800 feet). First ascent, July 25th, 1953. Rex Gibson, Cyril Jones, Walter March, Harold Peckham.

The following peaks were also climbed by Club parties during the 1953 summer camp, and in most cases these were second ascents:

Mt. Brown (9,156 feet), **Mt. Ermatinger** (10,080 feet), **Mt. Evans** (10,460 feet), **Mt. Hooker** (10,782 feet), **Mt. Kane** (10,000 feet), **Mt. Gates** (10,220 feet), **Mt. Scott** (10,826 feet), **Mt. Serenity** (10,573 feet) .

Clemenceau Area

Mt. Shackleton ((10,800 feet). First ascent, July 14th. 1951. George L. Bell, David Michael Jr.

Tusk Peak (10,960 feet). New route by northwest ridge, July 18th, 1951. George I. Bell, J. R. Rousson.

Mt. Clemenceau (12,001 feet). Two attempts on north face and a successful ascent by the standard route, July, 1951. Bell, Rousson, G. Matthews, D. Michael.

Mt. Somervell (10,050 feet). First ascent, July 29th, 1951. Bell and Rousson.

Mt. Columbia (12,294 feet). New route via the west face, August 4th, 1951. Bell and Michael.

Selkirk Range—Northern Group

N.E. Peak Mt. Chapman (9,900 feet). First ascent, August 6th, 1953. A. C. Fabergé, R. A. Schluter.

Mt. Chapman (10,150 feet). First ascent, August 8th, 1953. Same party.

A Harvard Mountaineering Club party of 14 members led by William Putnam, Graham Matthews, David Michael, Roger Gregg, Art Read and John Hodgson, together with Francis,, Aspinwall and Bernays, made a number of climbs in the North Selkirks during July, 1953. These ascents are listed below. The names are unofficial. First ascents were made of the following:
"Mt. Sir Andrew", "Mt. Sir Henry", "Stickle Peak", "Magog Peak", "Ygrasil Peak", "Fria Peak", "Mt. Sir Benjamin", "Gibraltar Peak" (9,590 feet), **"The Toadstool", Silvertip Mt.** (9,540 feet), **"Lesser Blackfriar Peak", "Ravelin Mt.",** (8,950 feet).

New routes were made on the following peaks which had been previously ascended :
"Enterprise Peak", "Mt. Colossal", "Pioneer Peak", Mt. Wotan (9,790 feet), **The Footstool** (10,410 feet), and **Mt. Sir Sandford** (11,590 feet).

The regular routes were followed on the undermentioned peaks:
"Mt. Sir William", "Mt. Unicorn", "Pioneer Peak", "Sentinel Peak", "Damon Peak", "Gog Peak", "Mt. Thor", Belvedere Peak (9,830 feet), **"Mt. Quadrant", "Enterprise Peak", Citadel Mt.** (9,580 feet), and **Palisade Mt.** (8,900 feet).

Purcell Range—Spillimacheen Group

"Cony Peak" (9,300 feet). Third ascent. Winslow Briggs, John Humphreys, Peter Ray, Robert West.
"Twin Towers Peak" (9,300 feet). First ascent. Same party. **"David Peak"** (9,350 feet). Second ascent. Same party. **"Beverley Peak"** (9,150 feet). First ascent. Humphreys and West. **Silent Mountain** (8,500 feet). First ascent. Briggs and Ray.

Carbonate Group

Carbonate Mountain (10,200 feet). First ascent. Briggs, Humphreys, Ray, West.
"Richards Peak" *(ca* 10,000 feet). First ascent. Same party. **"Horseman Spire"** (9,900 feet). First ascent. Same party. No dates given but climbs made in 1953.

Purcell Range—Crystalline Group

"Mount Syphax" *(ca* 9,600 feet). First ascent, August 22nd, 1953. Bob Brooke, Rob Day, Fen Riley, Peter Robinson, Gene White.
"Mont Brouillard" *(ca* 9,800 feet). First ascent, August 23rd, 1953.
Same party. "**N. Peak Crystal Mountain"** *(ca* 9,700 feet). First ascent, August 26th, 1953.

Western Bobbie Burns Group

Mount Conrad *(ca* 10,300 feet). Second ascent, August 29th, 1953. Brooke, Riley, Robinson, White.

Bugaboo Group

Eastpost Spire (9,200 feet). August 30th, 1953. Mr. and Mrs. J. Cooke, H. Walton, L. Worth, V. Day, G. Lamb, D. Irvin, B. Doub, G. Whitmore.
Snowpatch Spire (9,700 feet). Fourth ascent, August 30th, 1953. Nick Clinch, Gary Driggs.
Crescent Spire (9,300 feet). Traverse, September 1st, 1953. Mr. and Mrs. Cooke, Robinson, Walton, Worth.
"Pigeon Feather E." (9,400 feet). First ascent.
Un-named Spire (9,550 feet). Second ascent.
"Turret Peak"; second ascent. All on September 2nd, 1953. Irvin, Doub, Whitmore. **Crescent Spire, Crescent Tower, Brenta Spire,** September 3rd, 1953. Same party.
Howser Peak (10,244 feet). Traverse, September 4th, 1953. Doub, Irvin, Robinson, Walton, Worth, Whitmore.
Bugaboo Spire *(ca* 10,250 feet). September 5th, 1953. Same party.

Eastern Bobbie Burns Group

"Mount Kelvin" *(ca* 9,700 feet). First ascent, September 2nd, 1953. Mr. and Mrs. Cooke, Robinson, Walton, Worth.

Valhalla Range—Slocan Lake Area

Unnamed Peak near Gwillan Creek (8,500 feet). First ascent, May, 1953. Leon Blumer, Gordon Hartley.

Unnamed Peak (8,700 feet). First ascent, July, 1953. Same party with Herman Schindig.

Coast Range—Waddington Group

"Mt. William" *(ca* 9,800 feet). July 16th, 1953. Sterling Hendricks, Donald Hubbard, Alvin Peterson, Jim Bullard.

"Mount S" *(ca* 10,200 feet). July 26th, 1953. Hendricks, Hubbard, Peterson, Bullard.

Same peak on July 29th, 1953. Arthur Lembeck, Arnold Wexler.

"Mt. McCormick" east peak *(ca* 10,300 feet). July 20th, 1953. Hendricks, Hubbard, Peterson, Bullard.

Same mountain, west peak *(ca* 10,300 feet). July 25th, 1953. Same party.

"Mt. Shand" *(ca* 10,500 feet). July 29th, 1953. Same party with Jane Showacre and Ken Karcher.

Mt. Dragonback (ca 10,700 feet).July 25th, 1953. Lembeck, Wexler, Showacre, Karcher.

Mt Eaglehead (ca 10,800 feet). July 25th, 1953. Same party.

Mt. Tellot *(ca* 11.000 feet). July 23rd, 1953. Hendricks, Hubbard, Peterson, Bullard, Showacre.

Mt. Argiewicz (ca 10,900 feet). July 25th, 1953. Hendricks, Hubbard, Peterson, Bullard.

Same peak on July 29th,, 1953. Lembeck and Wexler.

Mt. Serra I *(ca* 11,800 feet). July 28th, 1953. Heudricks, Hubbard, Bullard, Wexler, Lembeck, Showacre.

Mt. Dentiform, east peak *(ca* 10,600 feet). July 24th, 1953. Whole party.

Mt. Dentiform, west peak (ca 10,600 feet). Same day. Lembeck Hubbard, "Bullard.

Claw Peak (ca 9,500 feet). July 27th, 1953. Lembeck, Showacre Bullard.

Mt. Hickson, main summit (ca 10,900 feet). August 3rd, 1953. First ascent. Hendricks, Hubbard, Peterson, Showacre, Karcher. N.B.: The centre peak of about same height was first climbed in 1939 by Rex Gibson and Sterling Hendricks.

Mt. Haworth (ca 10,600 feet). First ascent, August 3rd, 1953. Lembeck, Wexler, Bullard.

"Mt. Serendipity" (ca 10,500 feet). First ascent, August 4th, 1953. Hendricks, Hubbard, Bullard, Showacre, Karcher.

"Mt. Sepia" (*ca* 9,800 feet). First ascent. August 7th, 1953. Same party.

"Mt. Serpentine" (*ca* 9,500 feet). August 10th, 1953. Hubbard, Karcher, Bullard.

Same mountain on August llth. Lembeck, Wexler.

Coast Range—Monarch Group

"Princess Mtn." *(ca* 9,450 feet). First ascent, July 5th, 1953. J. Atkinson, F. Broda, J. L. Dudra, H. Rode.

"Page Mtn." (ca 9,650 feet). First ascent, July 6th, 1953. Broda and Dudra.

Monarch Mountain (11,720 feet). Second ascent, July 7th, 1953. Same party.

"Mt. Jacobsen" (no height estimated). First ascent, July llth, 1953. Atkinson, Broda, Dudra.

Coast Range—Chilko Lake Group

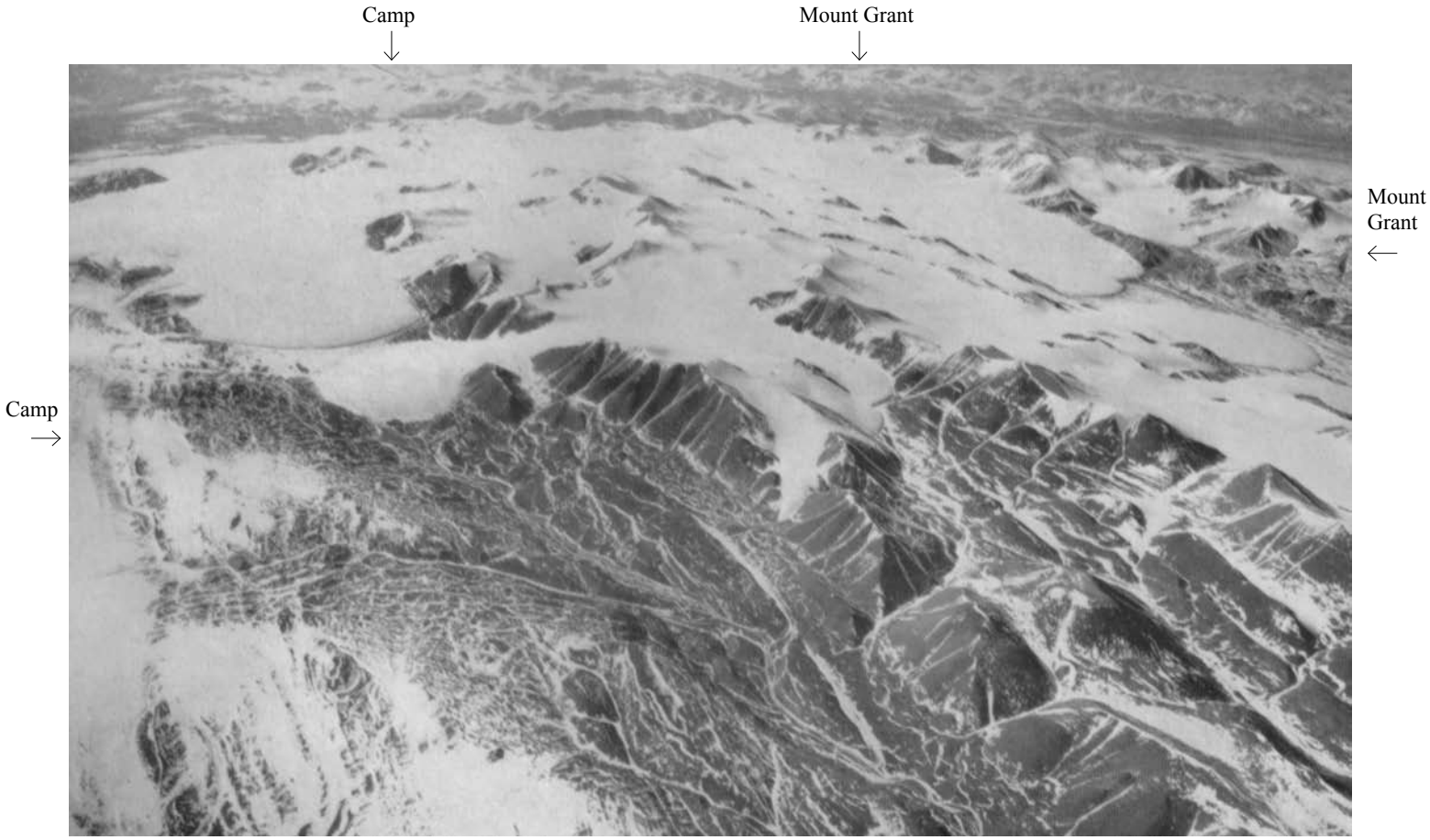
"Chimney Pot Peak" (no height estimated). First ascent, July, 1953. L. Blumer, Dr. Neal Carter, Tom Marston, Alan Melville, Elfrida Pigou.

Mt. Good Hope (10,632 feet). Second ascent, July, 1953. Blumer, Carter, Melville, Pigou.

Eastern Arctic. Baffin Island

"The Queen" (7,014 feet). First ascent, August 25th, 1953. P. D. Baird, Jurg Marmet.
Same peak ascended on August 28th by Vero-Wynne Edwards, H. Weber, W. Ward.

—E. R. GIBSON.



United States Range, Northern Ellesmere Island (June 24, 1950).
Photo Courtesy Royal Canadian Air Force

The Mint Julep Project Base Camp On The Greenland Icecap.
Photo E. LaChapelle

Photographed during a light ground blizzard.

SCIENTIFIC SECTION

ELLESMERE ISLAND, 1953

By G. Hattersley-Smith

Last summer a Defence Research Board of Canada Expedition carried out a reconnaissance of the Ellesmere Ice Shelf, from which many of the floating ice islands of the Polar Basin are believed to originate. (Koenig et al., 1952). The expedition was led by G. Hattersley-Smith (Defence Research Board), who was accompanied by R. G. Blackadar (Geological Survey of Canada), and, for the first part of the season, by two Greenlanders with their dog teams from Thule. The party was based on Alert weather station in the northeast corner of Ellesmere Island, about three hours flying-time from Thule.

Journeys totaling 900 miles were made by dog team during May and June along the north coast of the island between Cape Rawson and Cape Nares for glaciological and geological purposes (Blackadar, 1953; Hattersley-Smith, 1954). At Cape Columbia (lat. 83° 07' N) on the first of these journeys a second ascent was made of the northern peak of Cooper Key Mountain (1800 ft.), the most northerly peak in Canada. Cdr. Robert E. Peary made the first ascent with two Eskimos on June 8th, 1906, and built on top a large cairn, in which he deposited a piece of his North Polar flag and a record (Peary, p. 182-3). The piece of flag and the record were recovered by last summer's party.

In late June and July, after the Greenlanders had returned to Thule, Hattersley-Smith and Blackadar continued their work on foot. On one traverse, in which 300 miles were covered in 17 days, the ice-cap of the United States Range was visited for the first time, and first ascents were made of several easy peaks between 5,000 and 6,000 feet. One of these peaks may have been Mount Grant, named from afar by an expedition of the last century.

The party returned by air from Ellesmere Island in the middle of August.

REFERENCES

Blackadar, R. G. (1953): "Geological Reconnaissance on the North Coast of Ellesmere Island, Arctic Archipelago, N.W.T." Geological Survey of Canada, paper (in press).

Hattersley-Smith, G. (1954): "Northern Ellesmere Island, 1953" (in preparation for *Arctic*).

Koenig, L. S.; Greenaway, K. R.; Dunbar, M.; Hattersley-Smith, G. (1952): "Arctic Ice Islands". Arctic, Vol. 5, No. 2, p. 67/103.

Peary, R. E. (1907): "Nearest the Pole". London: 410pp.

THE MINT JULEP PROJECT

By Edward R. LaChapelle[1]

During the late spring and summer of 1953 a field party, under the auspices of the American Geographical Society and under the sponsorship of the Arctic, Desert, Tropic Information Centre, Air University, conducted a series of glaciological studies on the southwestern part of the Greenland

1 Member of Mint Julep Staff—Greenland.

Ice Cap. Logistic support was provided by the Northeast Air Command from Sondrestrom Air Base. Following two years of planning and a careful reconnaissance of the proposed research area, the advance party and supplies were landed by ski-equipped aircraft at the base camp site on May 14th. Work was immediately started on the establishment of a semi-permanent base camp, and, by the last week in May, a station of eight insulated Arctic huts had been constructed, and the full field party of scientific and maintenance personnel had arrived.

Every effort had been made to establish a comfortable camp, and sufficient personnel were on hand to permit a full-scale scientific program to be executed without the observers finding themselves hampered by the time spent performing tasks necessary just to survive under Ice Cap conditions. Previous parties on the Ice Cap often found so much of their time was devoted to such simple necessities as preparing food and keeping warm, that scientific work suffered. The reduction of this time drain by careful planning and supply paid dividends in the expanded program which could be undertaken.

The area of the Ice Cap under investigation was about 250 square miles in extent, centered about the base camp site just south of the Arctic Circle and approximately fifty-five miles inland from the western edge of the ice. Travel in the area was accomplished mainly by means of oversnow vehicles—the U.S. Army's M29CCargo Carriers, or Weasels. Use of these vehicles permitted operation over this large area from the base camp, thus virtually eliminating the necessity of setting up satellite or trail camps. Foot travel on ski was occasionally necessary during midsummer, when snow conditions were at their poorest, but transportation of personnel and equipment was mostly effected with two Weasels, each of which travelled more than 1,500 miles during the course of the season.

With the base camp located very close to the firn limit, or zone of demarcation between areas of annual accumulation and ablation, it was possible to study a wide range of glaciological features from a number of different viewpoints. One of the main contributions was the collection of detailed meteorological data about the conditions, hitherto almost unknown, which prevail on the Ice Cap. To this end a weather station was maintained at the base camp, and observations reported to the coast daily by radio throughout the summer season.

As a basis for the other field studies, the area was thoroughly mapped. Early in the season a survey was started with the establishment of an east-west base line eighteen miles long, and around this base line a grid was gradually established and marked with flags and barrels as the season progressed. Survey of the district thus marked was completed by altimetry and by triangulation, providing sufficient data to construct a large-scale topographic map.

A powered coring auger capable of drilling to thirty-foot depths was used to obtain snow and ice samples for analysis. Thorough tests of the physical and mechanical characteristics of these samples were carried out in a small cold laboratory excavated in the ice. Contributions to knowledge about surface snow conditions were made through the maintenance of ablation records over a wide area, and by the excavation of pits to observe and record snow metamorphosis.

As this short outline is being written the field season is just drawing to a close, and the publication of all the findings must await many months of study and analysis. At the present only a very few of the more general findings can be mentioned.

The topographic survey revealed a surprising amount of relief in what first appeared to the naked eye to be a flat and featureless plain of snow. The Ice Cap in this area slopes toward the west in a series of benches which are broken by a pattern of basins and ridges. Whether these features are surficial in origin, or represent a reflection of underlying terrain, is yet to be determined. Study

of the scanty previous descriptions of the area suggest that they are probably permanent.

This region of the Ice Cap, in common with most of Greenland's interior, possesses a relatively arid climate. Total annual precipitation collected on the ground in the form of snow appears to average around 35 cm of water a year. Before the beginning of the melting season, this represented an annual deposit of about 80-90 cm of snow at the base camp. The weather during the late spring and summer was generally fair, with only a few light storms and little precipitation.

Owing to the prevailing low average temperature for most of the year, the annual accumulation of snow does not become greatly consolidated except by wind action. The snows of fall and early winter in particular were found to be largely metamorphosed into virtually cohesionless depth hoar. As a consequence, the snow rapidly degenerated to a very soft condition following the advent of the summer melt season. Summer melting appears to be active for a considerable distance inland from the firn limit, and the dry interior zone observed in the more northerly reaches of the Ice Cap is probably very limited in extent at this latitude.

The rate of melting, or ablation, is considerably lower than that commonly observed on alpine glaciers, due to the absence of any source of dust closer than the coastal mountains. The very high reflecting power of the clean snow above the firn limit serves effectively to reduce the influence of solar radiation, which would on dirtier snows, produce a greater rate of ablation.

The Mint Julep Project has added, at least in small measure, to the store of information already accumulated by the Danes, British, Germans, French and others, but the contribution has been small compared with the scientific work still to occupy men for many years to come. Greenland's realm of snow and ice, second in magnitude only to that of Antarctica, still holds more secrets than it has yielded.

SOME NOTES ON FLORA OF THE UPPER WHIRLPOOL VALLEY

By E. J. Greig

The writer has been asked for comments on some of the plant life as noted in the vicinity of camp last summer.

At the outset I would like to make it clear that I have no pretensions whatever to being a botanist—merely a plant lover who has spent many happy hours in the mountains, and is always glad to find others, as I did last summer, ready to share my enthusiasm.

Travelling the Athabaska Trail was in a sense a sort of pilgrimage for me, this being of course the route David Douglas took in the spring of 1827, on his journey westwards from the Columbia. As snow must at that time have covered the upper reaches of the Pass, no doubt we were able to see many plants which he must have missed. Unfortunately I was unable to explore the south-west side of Mount Brown, where he discovered the charming little Snow Douglasia, named for him, not by him—now known as *Douglasia nivalis.*

This part of the Rockies, whilst quite interesting botanically, does not have the mass displays of bloom such as one sees in areas to the south and east. Throughout the valley I was particularly struck by the evidence of extreme acidity in the top few inches of soil, particularly in the wooded areas, in spite of the rock being predominantly limestone.

This degree of high acidity was indicated by the prevalence of a number of Ericaceous plants, notably *Ledum groenlandium,* (Labrador Tea), widespread in the whole area. Creeping amongst the moss in all the timbered areas one could see the tiny Rock Cranberry, *Vaccinium vitisidaea minor,* at that time bearing its bright red fruits. We have had this growing at the Coast for many years as one of our garden treasures; here it makes tidy little hummocks; quite amenable

to cultivation. Another plant of the Heath family, quite common in the camp area, was the Alpine Bearberry, *Arctostaphylos nivalis*. Its fruit is bright red and is said to be edible. So far as I know, this plant is not in cultivation; but should be a decided acquisition in the garden, having a close mat of wrinkled and strongly veined leaves. The flowers were, of course, long past, but even if they are insignificant, as the Floras would indicate, the effect in fruit is quite decorative.

The commonest plant in the camp area was, of course, our rather dowdy little friend, *Dryas Drummondii,* which makes an almost solid carpet for miles throughout the valley floors. This is the one with pendant yellow flowers. *Dryas octopetala,* with widely opened white flowers, sometimes growing with it, is a much prettier thing. This latter plant is more usually found on the highest ridges, together with mats of *Polemoniuni viscosum,* with its soft blue flowers, and the humped cushions of *Silene acaulis* and *Saxifraga oppositifolia,* though one more often sees these last two plastered on the face of a vertical cliff, their roots yards down in the rock.

There were untidy mats of the Saxifrage on the slopes on the south side of camp, having evidently been carried down from the heights above.

A number of treasures were growing quite close around the tents. Phyl Munday's sharp eyes spotted a wee plant near her tent, unknown to us both at the time; even as to genus, the first leaves being then only opening. We did not touch it, but since returning home she sent me a more fully developed plant, which proves it to be a tiny Rein Orchid, not more than 2 inches high; its scientific name I have still to run down. Scattered around camp, and in place along the trail, were colonies of the sweet-scented Single Delight, *Moneses uniflora.* This is very widespread, and I have yet to visit any range in the north-west where I have not eventually found it. A very showy little Saxifrage growing in the streamsides around camp, and many other places in the area, was *Saxifraga serphlifolia.* This has small succulent foliage, much like many of the Sedums, and sprays of the brightest golden-yellow flowers. Probably a temperamental little brute to try and grow; I brought home a scrap, as it is not in cultivation, but it is sulking badly.

One plant which intrigued me greatly for its horticultural possibilities was the Zygadene, *Zygadenus elegans,* which grew on all the slopes; being very plentiful on the lower slopes of Mt. Scott, where it made a most effective display. Its 12 to 15-inch sprays of bloom were set in arching narrow foliage; the whitish flowers are of good size and substance, tinged with yellow at the base of each petal.

Up near Athabaska Pass was a real Alpine meadow, with a dense growth of many Alpine plants, including many old friends of other ranges. Here the Louseworts took on almost the stature of Hollyocks, so lush was their growth. Here it was I found a very fine violet with enormous flowers, which does not check with any of our Coast species. Unfortunately, whilst at the head of the Pass, the weather soured badly, so we had regretfully to turn back towards camp, wishing we could also take a look at some of the lower Alps on the slopes above us to the south, so enticingly near with the promise of fresh plants.

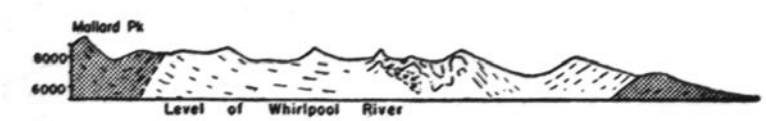
Space does not permit mentioning more than a few of the plants seen, many of which are of course much more plentiful in other parts of the Rockies. However, I was glad to find the white Moccasin Flower, it being plentiful quite near to camp. This we do not have at the Coast, and I had not previously seen it growing in the wild.

In conclusion I would like to thank the members of the club for the many kindnesses and courtesies extended to me as a visitor, and only hope that my limited knowledge was of some help to others who had like interests.

GEOLOGICAL NOTES ON THE SCOTT GLACIER AREA

By W. H. Mathews

In most respects the geology of the Scott Glacier area is typical of the central Rockies (see for example C. A. J., 1942-3, pp. 214-229). Only sedimentary rocks are present near Scott Glacier: a thick succession of quartzites, shales, and minor amounts of conglomerate overlain by several thousand feet of limestones and dolomites. Though originally laid down in flat layers on a flat sea floor (see also C. A. J., 1941, pp. 101-115), these rocks have subsequently been tilted, folded, and broken to form a wide variety of structures. The deformed beds were still later subjected to deep erosion, by streams, and during and since the ice age by glaciers, so that relatively old rocks, once deeply buried, are now exposed in the valley walls.



Geologic cross section of the north wall of Whirlpool River from Mallard Peak northeast to the mouth of Middle Whirlpool. Quartzite succession stippled, limestone and dolomite succession blank except for dashes indicating the attitude of bedding planes. Landslide where fossils were found is marked by a pattern of crosses.

Some items of geological significance came from the exploration of the area by members of the Scott Glacier camp. Fossil trilobites were found on at least three separate occasions during climbs of the ridge facing camp from the northwest side of Whirlpool River. In each case the trilobites were found in limestone fragments in the debris of a recent landslide which extended down into the timbered slopes. Two of the fossils have been identified, one as a close relative of Wanneria walcottana (so named after Dr. Charles Walcott who conducted early studies of the fossils and rocks of the central Canadian Rockies), the other as simply an "olenellid" trilobite. Both are of Lower Cambrian age, contemporaries of the fossils found on the lower northeastern slopes of Mount Stephen (see article by Walcott in the Canadian Alpine Journal, 1908, pp. 232-248) but older than the well-known fossils of the west slope of Mount Stephen and on Mount Burgess. Though the olenellid trilobites of Mount Stephen were derived from limestone beds immediately overlying the quartzite succession, it is impossible to say whether those from Scott Glacier came from a similar position; the quartzites if present at this locality are concealed by slide debris.

A second item of interest was the discovery of quartzite boulders on the crest of the limestone ridge northwest of camp at an elevation of 8,200 feet. These boulders, which could only have come from some source several miles away, had been carried there by glaciers which at one time filled the valleys of the Whirlpool and its tributaries from rim to rim, leaving only a few of the highest peaks standing above the ice as nunataks.

A few similar quartzite boulders occur on the moraine of Scott Glacier, though no bedrock source for such boulders is known within the drainage basis of this body of ice. Perhaps these had been carried by the enormous glaciers of the ice age and deposited, like those north of Whirlpool River, on the upper slopes, to be picked up again and carried to their present resting places in a recent rebirth of Scott Glacier.

SCOTT GLACIER NOTES, 1953

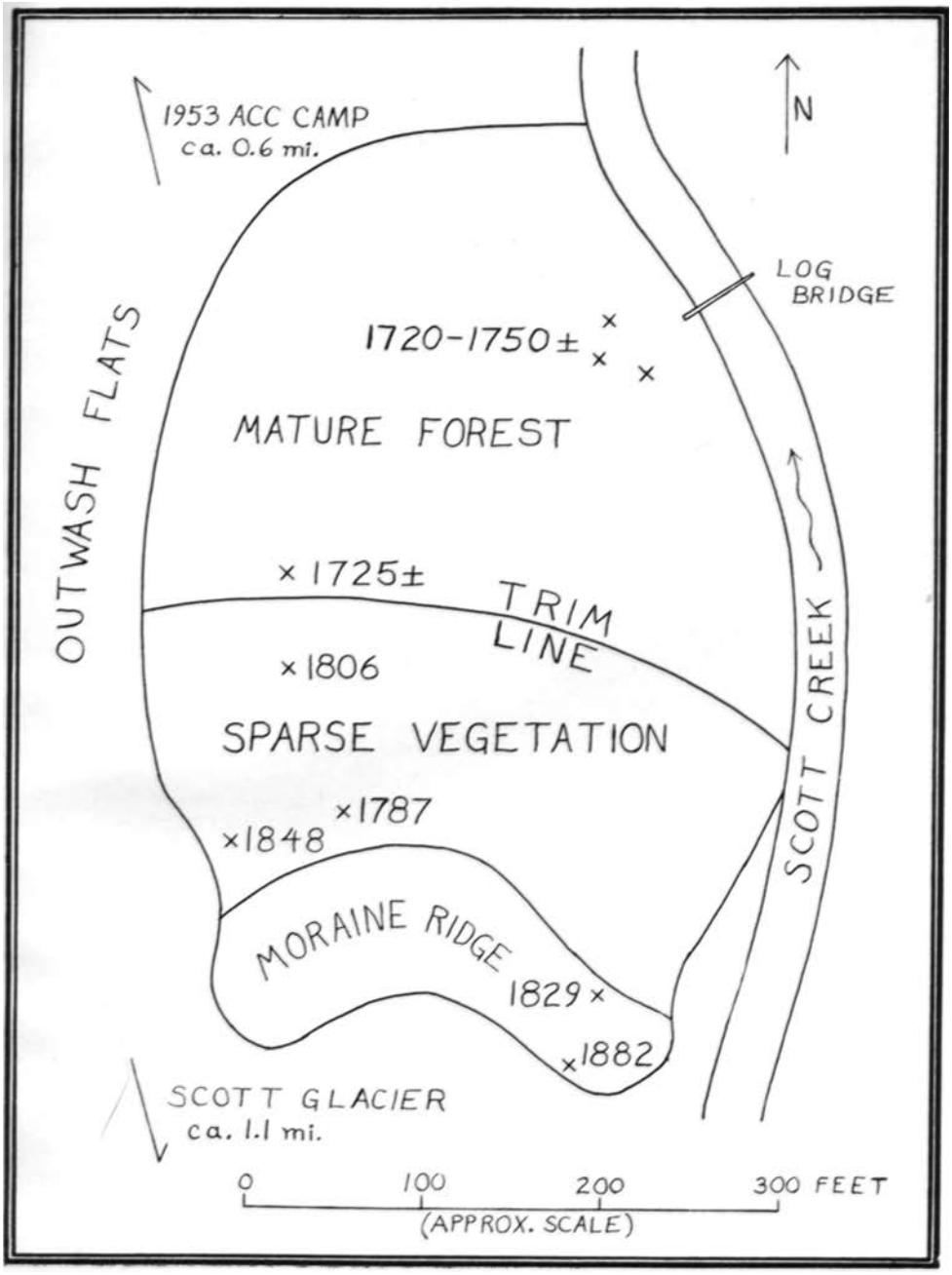
By J. P. Schafer

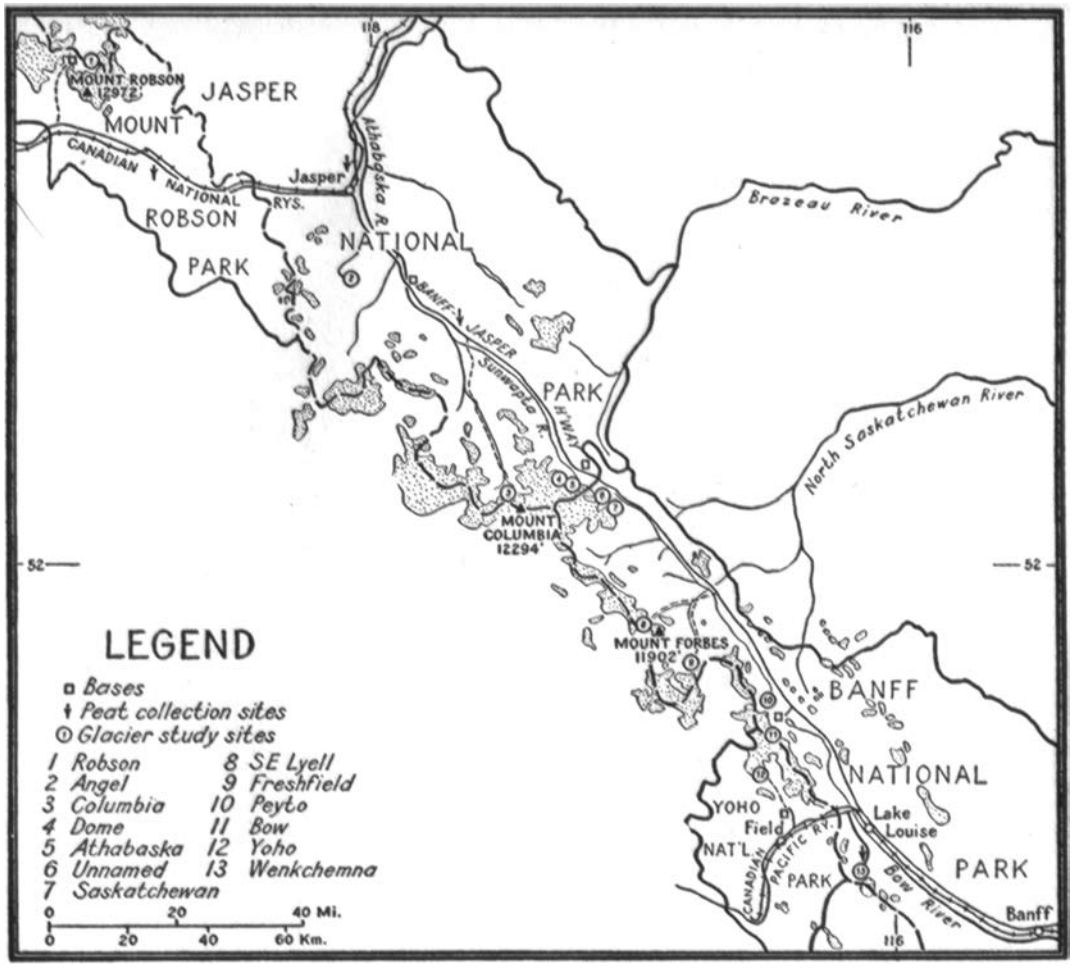
A barren moraine area more than a mile long shows that Scott Glacier has participated in the recent general glacial retreat. The region was surveyed by the Interprovincial Boundary Commission in 1920 (Sheet No. 26), and photographed by Thorington in 1924 (Thorington, 1925, upper photograph facing page 171; photograph in article by Mathews, 1953). By the early I920's the glacier had retreated about 0.4 mile from its position of maximum recent advance, marked by moraine and by forest trimline. Rex Gibson's photographs from the 1952 Whirlpool reconnaissance show strikingly the additional retreat of about three-quarters of a mile in 28 years (Gibson, 1953 and Mathews, 1953). The observations here reported were made during the 1953 Hooker Icefield Camp of the Alpine Club of Canada, July 20 to August 2.

In the middle of the valley, rising a few feet above the outwash gravel flats, lies an "island" of about 3 acres of spruce forest, a little more than a mile from the present glacier terminus, and about 0.6 mile from the 1953 camp (Mathews, 1953, 3 photographs facing page 168). The "island" conveniently preserves on its upstream side a segment of trimline and moraine about 400 feet long (see sketch map), the only remnant of the terminal part of the moraine loop not destroyed by outwash streams. The forest on the ''island", as in other areas beyond the trimline, is composed of a mature, close stand of large Engelmann spruce, with many fallen trees in various stages of decay, and with a heavy blanket of moss on the ground. The underlying glacial deposits have a weathered zone more than a foot thick, marked by oxidation stains and by partly decomposed limestone. In contrast, the zone between moraine ridge and trimline is only partly covered by low plant mats, bushes, and a few small trees. The glacial deposits of this zone, whether bare or covered by vegetation, show almost no sign of soil development or weathering.

The ages of some of the trees of the "island" were determined, and the dates of their oldest rings are shown on the sketch map. W. H. Mathews very kindly gave to the writer information on several trees in the mature forest whose rings he counted; a tree near the trimline which was cored with an increment borer was about 225 years old, and the trees cut for the bridge across the creek were 200 to 230 years old. These figures may represent the ages of most of the large trees, but the forest has certainly existed here for a much longer period. The five largest trees on the moraine ridge and the zone between it and the trimline were cored by the writer, with an increment borer loaned by Mathews. The ages given include, for several of the trees, an estimate of the number of the innermost rings missed by the core. The largest of these trees (35 feet high, 10 inches in diameter just above its base) was also the oldest, and its innermost ring was 166 years old. The other four trees ranged from 71 to 147 years. The cores were all taken about a foot above ground level, so that the trees are at least several years older than the figures given; the dates may be further weakened by missing or false rings. Of course, the ice retreated from the area an unknown number of years before the trees began to grow.

Scott Glacier reached its maximum recent extent, advancing into forest which had grown undisturbed for a number of centuries at least, and retreated from the trimline no later than about 1780, and perhaps somewhat earlier. The building of the small moraine ridge of the "island" was essentially completed at least by 1825. Thus, the date of the maximum recent advance of Scott Glacier is more than 110 years earlier than that of Saskatchewan Glacier (Field, 1949, pp. 108-109), but comparable to dates for some glaciers in southwestern British Columbia (Mathews, 1951) and southeastern Alaska (Lawrence, 1950).


1953 ACC CAMP
ca. 0.6 mi.
N
LOG BRIDGE
OUTWASH FLATS
1720-1750±
MATURE FOREST
×1725±
TRIM LINE
×1806
SPARSE VEGETATION
×1787
×1848
SCOTT CREEK
MORAINE RIDGE
1829×
×1882
SCOTT GLACIER
ca. 1.1 mi.
0
100
200
300 FEET
(APPROX. SCALE)


JASPER
NATIONAL
PARK
MOUNT ROBSON
12972'
MOUNT
ROBSON
PARK
CANADIAN NATIONAL RYS.
Jasper
Athabaska R.
Brazeau River
BANFF-JASPER
Sunwapta R.
H'WAY
PARK
North Saskatchewan River
MOUNT
COLUMBIA
12294'
MOUNT FORBES
11902'
BANFF
NATIONAL
PARK
YOHO
NAT'L
Field
CANADIAN PACIFIC RY.
Lake
Louise
Bow River
Banff
118
116
52
LEGEND
Bases
Peat collection sites
Glacier study sites
1 Robson
2 Angel
3 Columbia
4 Dome
5 Athabaska
6 Unnamed
7 Saskatchewan
8 SE Lyell
9 Freshfield
10 Peyto
11 Bow
12 Yoho
13 Wenkchemna
0 20 40 Mi.
0 20 40 60 Km.

Part of the inner face of the east lateral moraine is as steep as 65°-75° (Gibson, 1953, left side of middle photograph facing page 124), and the hummocky morainal material between the moraine ridge and the lake has apparently avalanched from the moraine. A number of persons at the 1953 camp noticed the ice patch, a few yards across, at the foot of the steep moraine face, about 0.4 mile from the present glacier terminus, and the small, water-saturated mudflows which its melting produced. A buttress of the moraine, containing more than 8000 cubic yards of material, collapsed and avalanched over this ice patch on the afternoon of July 30, in the writer's presence. The avalanche stopped short of the usual path up the valley, but swept a part of the slope that had been traversed by some persons. The avalanche scar exposed a 35° ice face, about 150 feet by 200 feet in extent, at the foot of the steep moraine face. Clearly, this part of the lateral moraine has an ice core, and, when all of the buried ice finally melts, the moraine ridge will be much less imposing- than it now is. The ice core of the moraine has probably been stagnant and buried for 100 to 200 years.

REFERENCES

Field, W. O., Jr. (1949): "Glacier Observations in the Canadian Rockies, 1948"; *Canadian Alpine Jour.,* vol. 32, pp. 99-114.

Gibson, E. R. (1953): "The Whirlpool Reconnaissance"; *Canadian Alpine Jour.,* vol. 36, pp. 125-127.

Lawrence, D. B. (1950): "Glacier fluctuations for six centuries in southeastern
Alaska and its relations to solar activity"; *Geog. Rev.,* vol. 40, pp. 191-223.

Mathews, W, H. (1951): "Historic and prehistoric fluctuations of alpine glaciers in the Mount Garibaldi map-area, southwestern British Columbia"; *Jour. Geol.,* vol. 59, pp. 357-380.

——————— (1953): "Changes in Scott Glacier—1924-52"; *Canadian Alpine Jour.,* vol. 36, p. 168.

Thorington, J. M. (1925): *"The Glittering Mountains of Canada"* John W. Lea; Philadelphia, 310 pp.

GLACIER AND BOTANICAL STUDIES IN THE CANADIAN ROCKIES, 1953

By William O. Field, Jr., And Calvin J. Heusser[1]

The most extensive glaciers in the whole length of the Rocky Mountains are situated in the area between Lake Louise and Mount Robson. Here along the boundary between Alberta and British Columbia in the Yoho, Banff, and Jasper National Parks and Mount Robson Park are some of the most accessible glaciers on the continent. The locality is therefore ideal for periodic studies of glacier variations as well as the investigation of many other aspects of glaciology.

During the past decades observations of glacier variation have been conducted throughout many parts of the western Cordillera. They have indicated a general recession now going on and have revealed in certain localities when it began as well as the general trends of glacier behavior during the last few thousand years. Of interest in terms of climatic change is the interval Matthes (1942, pp. 204-215) referred to as the "little ice age" and which Ahlmann (1953, p. 41) believes lasted from about 500 B.C. to 1900 A. D.

Interesting anomalies have also been found. For example, seven large glaciers in Alaska are now in advance of their positions at the end of the nineteenth century (Baird 1951, pp. 121-127). The reasons for these exceptions to the general recession are not as yet known. Suffice to say that, except for these few, glaciers throughout the temperate zones and in the Arctic are shrinking as a result of what appears to be a slight amelioration of climate[2].

The current behavior of the glaciers of the main range of the Canadian Rockies has been noted at a number of localities since the beginning of this century. The Alpine Club of Canada has taken a leading part in sponsoring such observations and in publishing the results. In the first issues of the Canadian Alpine Journal, the founder and first President of the Club, Arthur O. Wheeler, wrote (1907, p. 149) : "One of the objects of the recently organized Alpine Club of Canada is the study of prominent glaciers of the region, with a view to obtaining information concerning the formation and flow, advance or retreat of those upon which no observations have as yet been made, and of adding to existing information where some little work in this direction has been done. Speaking generally, it is desired to add the Club's might to scientific knowledge of glacial action by instituting yearly observations of the more prominent and accessible ice-cascades of the Canadian Rockies."

Sherzer's work (1907) in 1904 was the most detailed study of glaciers in the Canadian Cordillera performed in a single season, but some individuals, notably George, William, and Mary Vaux, Arthur O. Wheeler, and Dr. J. Monroe Thorington carried out extremely useful comparative observations over a number of years. In 1945, the Dominion Water and Power Bureau began a program of measurements which is now being carried forward with observations every two years. The first author of this paper began a series of studies in 1948 (Field 1949) reoccupying photo stations of other observers and those he had first visited in 1922. This program was continued in 1949.

The accumulated data from all observers indicated the approximate rate of recession of a dozen or so glaciers in the main range since the first set of observations had been made in the early years of this century. Recession during this time had been extensive and, in some instances, the rate had appeared to increase sharply after the 1920's. What had not been determined was the amount and rate of recession that had occurred previous to the first observations and since the last

1 Mr. Field and Dr. Heusser are on the staff of the American Geographical Society in New York.

2 For further discussion of this subject, see Ahlmann, 1953,

maximum glacier advance. When had the recent recession begun and how did the rate of recession before the beginning of the period of direct observation compare with that observed and recorded since? This information was considered to be of significance in order to correlate the behavior of the glaciers in this area with those of the Cascades and the coast of British Columbia and Alaska and those farther afield in Iceland, Scandinavia, and the Alps, where the glacial chronology of the last few thousand years is better known.

Our program for 1953 was drawn up by the authors at the American Geographical Society with the prime objective of determining the post-glacial[3] history by means of pollen profiles, the study of existing vegetation, and observations of glacial variations. The second objective was to locate the present positions of the termini and to determine the amount of shrinkage which had taken place since the last set of observations. A third objective, undertaken as part of the first and second, was to establish photographic and survey stations, to tie in with those which already existed for future reference, in the study of the variations of the glaciers as well as changes in vegetation and land forms.

Since time was limited to 7 weeks, most of the glaciers chosen for study were within easy reach of the highway (Fig. 1). These were: Angel, Dome, Athabaska, unnamed glacier at head of Hilda Creek, Saskatchewan, Peyto, Yoho, and Wenkchemna. Four glaciers, however, were deemed sufficiently important to warrant pack train travel: Robson, Columbia, South-east Lyell, and Fresh-field. Of these glaciers, four, Columbia, Athabaska, Dome, and Saskatchewan, all flow from the Columbia icefield, and three, Peyto, Bow, and Yoho, discharge from the Wapta icefield. Large valley glaciers are Robson, Columbia, Athabaska, Saskatchewan, Freshfield. Others range in size down to a comparatively small hanging glacier such as the Angel. Thus a relatively large number and a wide variety of glaciers, on both the east and west sides of the range, many of them previously studied, were examined during a brief period in the field.

The new approach in the 1953 studies was the introduction of botanic studies, such as have been applied in several other localities along the coast of British Columbia and Alaska, but, heretofore, only to a very small extent in the Canadian Rockies, An explanation of these techniques is therefore pertinent.

BOTANICAL STUDIES

In an area of existing glaciers such as the Canadian Cordillera, which was earlier modified by ice sheets or glacier complexes, it is possible to reconstruct the post-glacial events of climate, vegetation development and change, and glacier behavior. Two techniques are used. The first, is that of working out the pollen succession in bogs; the second, the method of dating the latest advance and retreat of valley glaciers by means of tree ring study. The latter offers the more precise dating but is applicable only to late post-glacial time.

The principles of pollen analysis are founded on several basic tenets. Wind-pollinated plants produce pollen that is carried by air currents over wide areas during the period of pollination. Some of this pollen settles in bogs and lakes where it becomes preserved. Pollen grains are remarkably resistant to decomposition and under the low-oxygen conditions in bogs and lakes, decay is at a minimum. Thus, the pollen that settles on the wet moss of a bog, for example, eventually become incorporated with the peat that is accumulating. Year upon year, as the peat deposit increasingly accrues, pollen contributed by the nearby plants will continue to be added. Any changes in the

3 The term “postglacial” is here used with reference to the time since the Cordilleran ice sheet, which existed till the close of the main ice age, withdrew from the areas under consideration,—Ed, Note,

composition of the regional vegetation will be recorded by the pollen which is preserved in the peat during that time. Bogs which occupy depressions formed during de-glaciation may contain a complete record of pollen, from the time just following that event up to and including the present. By sampling the peat in vertical section through use of a sampling device, determining the pollen content by laboratory methods, and diagramming the percentage of each species of pollen from level to level, the composition changes of the vegetation with time can be reconstructed. Since the species components of the vegetation are primarily controlled by climate, major changes in the pollen succession can be interpreted as having climatic significance. Other factors, such as fire and man, may upset for a time the natural trends set by climate. A climatic interpretation of pollen diagrams can form the basis for understanding the behaviour of nearby glaciers which also respond to climatic variations of moisture and temperature.

Four peat sections were taken in the course of these studies. The best section of the four is from a "kettle" to the north of Patricia Lake, 2 miles north of Jasper. Maximum depth attained by sampling with a Hiller borer, was almost 15 feet. The nature of the basin and the amount of peat accumulated suggest that the deposit contains the regional vegetation record for most, if not all, of post-glacial time. West of Jasper on the east end of Moose Lake, a 6½-ft. section was obtained. The bottom of the Fraser-Miette Valley between Moose Lake and Jasper is covered in large part by muskeg in which many test borings were made, but in none was the peat as deep as at the upper end of Moose Lake. Another 6½-ft. section is from the vicinity of Sunwapta Falls. The fourth section, also 6½-ft. thick, is from the Valley of the Ten Peaks along the road to Moraine Lake.

Study of the growth rings of trees which have either been pushed or scarred by advancing ice or have become established on recessional moraines and outwash, should help corroborate the findings expressed by the upper portions of the pollen diagrams. The techniques utilized for this portion of the study have been summarized by Lawrence (1950a) and discussed by Mathews (1953). Generally, they involve coring appropriate trees in the vicinity of the trimline[4] at their bases and through to their growth centers[5]. Cores so obtained are labelled and stored in aluminum tube containers, corked at both ends, as described by Marr (1948). These cores are later glued to boards which are grooved so as to accommodate them. In the laboratory age counts are made as accurately as possible. The case of trees pushed over or tilted by the ice is treated separately. Sections are cut from the bowed positions of these trees and the growth pattern examined. Concentric growth layers are laid down as the tree grows erect. After the tree is tilted the layers become eccentric in form and the changeover from one type to the other marks the date of the most recent advance of the glacier. Some trees are not tilted by ice push, but show evidence of pressure scars which can also be dated by sectioning and counting the rings since healing of the scar. For a thorough and interesting account of these methods, reference is made to Lawrence (1950a).

Old photographs can be used in locating the former positions of the glacier termini. These are also valuable in determining the length of time which elapsed between ice denuding and the establishment of the first tree seedlings. For example, if trees presently (1954) living on a moraine are no older than 20 years, they began growing in 1934; and if a photograph taken in 1922 shows the site having just undergone deglaciation, it can be assumed that a 12-year period has passed before

4 "... any glacier that has recently advanced down a forested valley, has destroyed all the forest in its path. At the line representing the maximum position attained by the ice front, where the forest was sheared off by the ice, is a sharp transition called the 'forest trimline'; it is a region of extreme usefulness for accurately dating the maximum advance . . ." (Lawrence, 1950a).

5 Coring is done by means of a Swedish increment borer, procurable in New York from Keuffel and Esser Co.

trees capable of survival became established. For comparable moraines where no photographs are available, it is possible to add a similar figure to the ages of trees to determine the time of deglaciation of their sites.

The technique of tree ring study was applied to glacier areas in the Canadian Rockies. Several hundred cores with a group of cross sections were taken which now await concentrated study. Preliminary counts in the field indicate that two historic glacier maxima were reached. Glaciers first pushed forward and began to recede between the late 17th and late 18th centuries. The second advance, which, in some cases, presumably reached beyond the first and thereby buried any evidence of the former, occurred and began to withdraw about the middle of the I9th century. Trees beyond the trimline formed by the most recent advance of these glaciers are generally three to six centuries old. From this information it can therefore be stated that there have been no earlier advances which have extended further than the present trimline for at least this length of time. All glaciers studied were in a state of retreat. These field data essentially agree with those from Garibaldi Park (Mathews 1951), from Mount Hood in Oregon (Lawrence 1948), and from southeastern Alaska (Cooper 1937, Lawrence 1950b). There is generally, however, evidence lacking from the other areas (except in Garibaldi Park) to suggest a strong advance or maximum during the mid-19th century, such as has occurred in the Canadian Rockies. Advances have occurred in the 19th century in these other localities, but these have only been associated with the building of small moraines and have not been of sufficient extent to have completely obliterated the features of an earlier outflow. Only after the data from the glaciers of this study have been accurately diagrammed to show time-retreat relations, can concrete comparisons be made with glaciers of these other regions. Time-retreat diagrams of the most recent glacier fluctuations will indicate the general small-scale climatic variations. The chronology and history prior to this time will be reconstructed by the methods of radiocarbon age determination (Libby 1952) and pollen analysis.

A sample of interstadial[6] wood uncovered in situ as a consequence of glacio-fluvial erosion during the retreat of Robson Glacier has been submitted to the Lamont Geological Observatory for radiocarbon dating. This wood represents the remainder of an earlier forest which thrived prior to glacier readvance. When Robson Glacier invaded this forest, the plant materials were either carried away or overridden and buried. Upon subsequent retreat some of the remains were fortunately exposed, such as those at the collection site, although most have been apparently washed out during or following the Robson Glacier advance. Interstadial deposits which could be relied upon for dating were encountered at only two of the 12 glaciers studied. The age of the wood buried at Robson Glacier will be of interest, aside from regional chronology, in understanding the relationship between the time of glacier advance in the Canadian Rockies and in the Coast Mountains. The late-postglacial readvance of ice in this latter area in Alaska is believed to have started at least 1,790+285 years ago, judging from the radiocarbon age of interstadial wood uncovered during the retreat of Mendenhall Glacier near Juneau (Kulp, et al, 1951).

GLACIER STUDIES

At this writing, the summer's observations are only partly-worked out, but the general outline of the recent behavior of the glaciers which were investigated are summarized in Table I. The distances given are based both on close estimates made from photographs and from direct measurements.

6 The term "interstadial" refers to the time between two glacial "stages", in this case between the time of the main ice age and the "little ice age".—Ed. Note.

Glacier	A. Date of Recession From Terminal Moraine	B. First Record Of Position of Terminus	Recession A — B		Recession B to 1953		Recession A to 1953		Recession in last 2 to 3 decades	
			Total	Rate	Total	Rate	Total	Rate	Total	Rate
Robson	1783	1908 M	933	7	2405	53	3338	20	1931-1953 1690	77
Angel	1733	(See note in text.)								
Columbia	1738	1924 P[1]	1300	7	3395	117	4695	22	1924-1953 3395	117
Dome	1875	1919 P[2]	1750	40	1050	31	2800	36	1919-1953 1050	31
Athabaska	1731	1922 P[3]	900	5	2700	87	3600	16	1922-1953 2700	87
Unnamed at head of Hilda Creek	1790	(See note in text.)								
Saskatchewan	1854	1922 P[4]	(See note in text.)						1922-1953 3525	114
S. E. Lyell	1841	1926 M	1320	16	4125	153	5445	49	1930-1953 3875	168
Freshfield	1869	1902 P[5]	1050	32	4325	85	5375	64	1930-1953 2817	123
Peyto	1713	1897 P[6]	995	5	2335	42	3330	14	1933-1953 1585	79
Bow	1673	(See note in text.)								
Yoho	1855	1901 M	1075	23	(See note in text.)					
Wenkchemna		(See note in text.)								

TABLE 1—Summary of data on recession of glaciers since most recent maximum. In second column, M stands for direct measurement and P indicates that position of terminus has been determined from the study of a photograph. All measurements are in feet.

Source of Data: A. Obtained in 1953.

B. [1] See Fig. 5.

[2] *Can. Alpine Journ.,* vol. 11, 1920, p. 138.

[3] Field. 1949, p. 101.

[4] Field, 1949, p. 109.

[5] Palmer, 1924b, Plate 3.

[6] Wilcox, 1900, p. 154.

All other sources cited elsewhere in text.

The original points of measurement dating from 1901 at Yoho Glacier (Vaux 1906, p. 578), 1933 at Peyto Glacier (Wheeler 1933, P-175), 1922 at Freshfield Glacier (Palmer 1924, pp. 8-10), 1926 at Southeast Lyell Glacier (Thorington 1927, pp. 2-3), and 1911 at Robson Glacier (Wheeler 1912, p. 45), were reoccupied in 1953 and freshly marked with monuments. They should be quite easy to locate in the future if visited before a lapse of too many years. At other glaciers, the reference points established either by the Dominion Water and Power Bureau from 1945 to 1952 (McFarlane 1946; Dominion Water and Power Bureau 1948, 1949, and 1950) or those established by this project in 1948, (Field, 1949) 1949, or 1953 can be used for future measurements and comparative photographs. At Wenkchemna and Angel Glaciers and the unnamed glacier at the head of Hilda Creek, stations were established in 1953 for future comparative photography.

The following notes are included to supplement the data presented in Table I.

Robson Glacier recession is now comparatively well documented. The series of three prominent recessional moraines between the terminal moraine dated at 1783 and the position of the terminus reported by Coleman in 1908 (1910, pp. 111-112), can now each be dated with fair approximation. Between 1908 and 1953 measurements or observations of the position of the terminus were made in 1911, 1913, 1914, 1922, and 1931. (Wheeler 1912, pp. 43-45 and 1914-1915, pp. 139-141; Cooper 1916, pp. 223-230; Wheeler 1923, pp. 158-159 and 1931, pp. 133-137). The 1953 party was extremely fortunate in locating the very faint remains of one of Wheeler's reference points marked, "A.C.C. Aug. 10, 1911," so that the early sites and measurements can now be related to the present survey of the terminus and the deglaciated area.

Angel Glacier on Mount Edith Cavell is an example of a hanging glacier which, in recent centuries, has undergone great expansion followed by rapid shrinking. Recession from the terminal moraine began about 1733 and was relatively slow until the early years of this century. Sometime after the early I920's the active ice of the glacier became detached from the ice resting in the valley floor. Shrinkage of the latter, now a relict mass, has amounted to thinning of an estimated 200 feet and a measured horizontal withdrawal since 1927 of 1,500 feet at the lowest point of the terminus (McCoubrey 1932, Footnote p. 151). The terminus of the active ice has not receded rapidly, but the whole ice tongue has shrunk in volume in the last two decades.

Columbia Glacier receded about 695 ft. from 1948 to 1953, an average of 139 ft. per year.

Athabaska Glacier receded approximately 355 ft. from 1948 to 1953, an average of 71 ft. per year.[7]

The *unnamed glacier at the head of Hilda Creek,* a tributary of the North Saskatchewan, drains a large basin on the east side of Mount Athabaska. No previous observations have been recorded. In 1953, it was determined that recession from the terminal moraine began about 1790, but no measurement of recession could be made since the lower end of the glacier is hidden by a heavy mantle of moraine.

At *Saskatchewan Glacier* evidence was found in 1953 to indicate that the date of ice withdrawal from its recent maximum should be revised from 1893, as reported in 1949 (Field 1949, p. 109), to 1854. The tree on the north trimline which in 1948 was found to have been pushed over by the ice in 1893 indicates that the ice in that year was at his highest level at that point. This is about 1,600 ft. from the lower end of the trimline. In 1953 observations tower down on the trimline showed that in 1854 the ice extended farther down-valley than in 1893. Withdrawal of the ice from the terminal moraine as well as the lower part of the north trimline should therefore be

7 For additional data, see also Meek, p. 209, and Dominion Water and Power Bureau Annual Reports.

dated as 1854. However, some 1,600 ft. above the terminus the surface level of the glacier at its north margin was apparently higher in 1893 than in 1854. Where two advances of nearly the same intensity take place, as evidently occurred in this instance, it is not surprising to find evidence that different parts of the trimline may have been formed by each advance.

Net recession from 1893 to 1948 was approximately as given by Field in 1949 (pp. 109-110), but a further net recession of an undetermined few hundred feet should be added for the period 1854 to 1893. From 1948 to 1953 recession was about 900 ft, an average of 180 ft. per year[8].

Southeast Lyell Glacier has shrunk enormously in the last quarter of a century. Dr. Hector visited the glacier in 1858[9] and wrote what is considered to be the first detailed description of a glacier in the Canadian Rockies. The terminus, he reported, was then about one hundred yards from the terminal moraine. In 1953 this observation was found to be substantially in accord with the vegetation record; the ice had begun to recede about 1841. Significantly enough, it maintained about the same rate of recession, noted from 1841 to 1858, until Thorington's visit in 1926 (1931, pp. 138-139). Mons Glacier, which was a tributary of the Southeast Lyell as recently as 1902 (Outram, p. 311), has now receded so far up its valley as to be scarcely visible from the main valley. The rate of shrinkage of this glacier seems proportionately greater than that of the Southeast Lyell or any other glacier observed in 1953.

At *Freshfield Glacier* a forefoot or tongue of ice extends out for several hundred feet into the terminal lake. It appears to be motionless and stagnant and not part of the active glacier ice. Therefore, for purposes of comparative measurements (Table I) this forefoot is disregarded and the true terminus is considered to be the lower end of the sloping surface of the glacier.

The large boulder seen by previous observers beginning with Palmer in 1922 (1924b pp. 6-9) was found in 1953 to be on the above-mentioned forefoot of the terminus. Forward motion of the ice at this point probably ceased some years ago, hence the 1949 position of the boulder, as determined by the Dominion Water and Power Bureau, should perhaps be taken as the last significant measurement indicating the surface movement of the ice. In those 27 years, the boulder resting on the surface of the glacier moved forward 1,835 ft., or at a rate of 68 ft. per year (Dominion Water and Power Bureau, 1949).

Peyto Glacier has continued the rapid recession noted since 1933 and the whole lower tongue seems to be thinning to the point where its early disappearance may be anticipated.

Bow Glacier has since the 1920's receded to a point above a cliff and is no longer visible from its terminal moraine. No survey of recession was made in 1953, but the date of the withdrawal of the ice from the terminal moraine was found to be about 1673.

At *Yoho Glacier*, by means of a careful study of the early photographs in the field, it was possible in 1953 to recover the approximate site of the 1897 photograph (Habel 1898, p. 329) and the reference points established by Mary Vaux in 1901, Sherzer in 1904, and Wheeler in 1906 (Vaux 1906, p. 578; Wheeler 1907, pp. 155-156). Thus, the history of glacier recession since about 1855, when the ice withdrew from the terminal moraine, up to 1931 is now fairly well established. It totals 2408 ft., of which 1,220 ft. occurred after 1906 (Wheeler 1931, p. 124). Since 1931 the terminus has receded up into a series of canyons and rock bluffs where it can scarcely be seen from the floor of the valley. A rough estimate from an aerial photograph taken in 1951 suggests a recession of over 3,000 ft. in the two decades, or an average of some 150 ft. per year.

8 For additional data, see also Meek 1948, p. 208, and Dominion Water and Power Bureau Annual Reports.

9 For original source, quotation, and discussion, see Thorington 1927, pp. 1-2.

Wenkchemna Glacier was visited briefly in 1953, but no vegetation counts or precise measurements were made. It is of particular interest because early observers reported that the moraine was slowly advancing into the forest (Vaux 1906, p. 577; Sherzer 1907, pp. 67-68). By comparing Sherzer's photograph taken in 1904 (1907, Plate XXIV, Fig. I), it is evident that the moraine is slightly in advance of its position in that year. The glacier itself, however, gives every evidence that it is shrinking.

The foregoing is merely a summary of the 1953 observations as they relate to previous observations of ice recession. Many more details remain to be worked up in regard to the rate of recession at different periods, the volume of ice which has disappeared, and the correlation of these data with observations made in other areas of North America and of other continents.

While it is generally recognized that the variation of glaciers is a result of changes in meteorologicial conditions, there is still much to be learned about how to interpret these variations in terms of specific climatic trends. More detailed case histories of glaciers in various parts of the world are required, coupled with additional studies of the cause and effect relationships between glacier variation and the meteorological factors involved. The Alpine Club of Canada has provided much of the primary stimulus of the observations noted above, and through publication in this Journal has provided most of the source material. The authors extend their appreciation to the individuals who have recorded their results in articles and both published and unpublished photographs.

As the record shows, many useful observations can be made by intelligent travelers and mountaineers who are willing to take the trouble of returning to a glacier every few years to occupy previously established reference points from which photographs and simple measurements may be made. If one begins such a program at an early age, observations may be made at accessible glaciers over a period of several decades during which the observer may see whole valleys deglaciated and an incipient forest begin to grow where the former glacier rested. Even within the space of a few years the changes may be startling, and serve as vivid reminders of the ever-changing aspect of the land surface. Moreover, the observer will have the satisfaction of knowing that his data will contribute to the growing store of information in regard to the chronology of glacier variation and, ultimately, to a more adequate understanding of the extent and causes and effects of climatic change.

ACKNOWLEDGMENTS

Sincere appreciation is extended to our two field assistants, Howell O. Archard and Stephen N. Den Hartog for their unfailing support and pleasant companionship which made possible an efficient and delightful undertaking. Grateful acknowledgment is also accorded to the American Philosophical Society for a substantial research grant from its Penrose Fund; to Dr. Donald B. Lawrence, of the University of Minnesota, for technical advice and the loan of botanical equipment; to Yale University for equipment; to the Surveyor General, Department of Mines and Technical Surveys in Ottawa for copies of photographs taken in connection with the survey of the Alberta-British Columbia boundary in the years 1917 to 1921 ; to the Photographic Establishment of the Royal Canadian Air Force for aerial photographs ; and to the National Parks Branch of the Department of Resources and Development in Ottawa for permission to collect botanical specimens in the parks. Sincere thanks are also due to our outfitters: Roy F. Hargreaves of Mount Robson Station; Frank Wells of Athabaska Falls; and James Simpson and James Simpson, Jr., of Bow Lake.

This project constituted a continuation of the American Geographical Society's Glacier Study Project which has carried on observations since 1941 in such other varied parts of the world as Alaska and Patagonia.

Southeast Lyell Glacier From Survey Station "Lake Moraine", August 1918.

Photos By A.O. Wheeler And W.O. Field

Southeast Lyell Glacier From Survey Station "Lake Moraine", August 1953.

Robson Glacier From Mumm Peak (1953).
Photo By W.O. Field

Freshfield Glacier (1937).
Photo J.M. Thorington

Freshfield Glacier (1953).
Photo W.O. Field

Boulders On Freshfield Glacier
Photo W.O. Field

REFERENCES

Ahlmann, H. W: son (1953) : Glacier Variations and Climatic Fluctuations, *Bowman Memorial Lectures,* Series Three, The American Geographical Society.

Baird, P. D. (1951): Report on the Northern American Glaciers, *Union Geodesique et Geophysique Internationale, Assoc. Internatl. d'Hydrologie Sci., Assemblee Gen. de Bruxelles,* Tome 1, pp. 120-128.

Coleman, A. P. (1910) : Geology and Glacial Features of Mt. Robson, *Can. Alpine Journ.,* vol. 2, no. 2, pp. 108-113.

Cooper, William S. (1916) : Plant Successions in the Mount Robson Region, British Columbia, *The Plant World,* vol.19, no. 8, pp 211-238

———————— (1937): The Problem of Glacier Bay, Alaska: A Study of Glacier Variations, *Geogr. Rev.,* vol. 27, pp. 36-62.

Dominion Water and Power Bureau, Department of Mines and Resources, Study of Glaciers in Banff and Jasper National Parks, Annual Reports of field work performed in 1948, 1949, and 1950.

Field, William O., Jr. (1949): Glacier Observations in the Canadian Rockies, 1948, *Can. Alpine Journ.,* vol. 32, pp. 99-114.

Habel, Jean (1898) : The North Fork of the Wapta, *Appalachia*, vol. 8, no. 4, pp. 327-336.

Kulp, J. Lawrence, et al(1951) : Lament Natural Radiocarbon Measurements, I, *Science*, vol. 114, pp. 565-568.

Lawrence, Donald B. (1948): Mt. Hood's Latest Eruption and Glacier Advances, *Mazama,* vol. 30, no. 13, pp. 22-29.

———————— (1950a): Estimating Dates of Recent Glacier Advances and Recession Rates by Studying Tree Growth Layers. Trans. *Amer. Geophys. Union,* vol. 31, pp. 243-248.

(1950b): Glacier Fluctuation for Six Centuries in Southeastern Alaska and its Relation to Solar Activity, *Geogr. Rev.,* vol. 40, pp. 191-223. Libby, Willard F. (1952) : Radiocarbon Dating, University of Chicago Press, Chicago.

Marr, John W. (1948) : Ecology of the Forest-Tundra Ecotone on the East Coast of Hudson Bay, *Ecol. Monog.,* vol. 18, pp. 117-144.

Mathews, W. H. (1951) : Historic and Prehistoric Fluctuations of Alpine Glaciers in the Mount Garibaldi Map-Area, Southwestern British Columbia, *Journ of Geol.,* vol. 59, pp. 357-380.

———————— (1953) : Glacier Study for the Mountaineer, *Can. Alpine Journ.,* vol. 36, pp. 161-167.

Matthes, Francois E. (1942) : Glaciers, in Hydrology, Physics of the Earth—IX, McGraw-Hill Book Co., Inc., New York, pp. 149-219.

McCoubrey, A. A. (1932): Observations on the Toby Glacier, Purcell Range, *Can. Alpine Journ.,* vol. 21, pp. 151-164.

———————— (1937) : Glacier Observations, 1936 and 1937, *ibid.,* vol. 25. pp. 113-116.

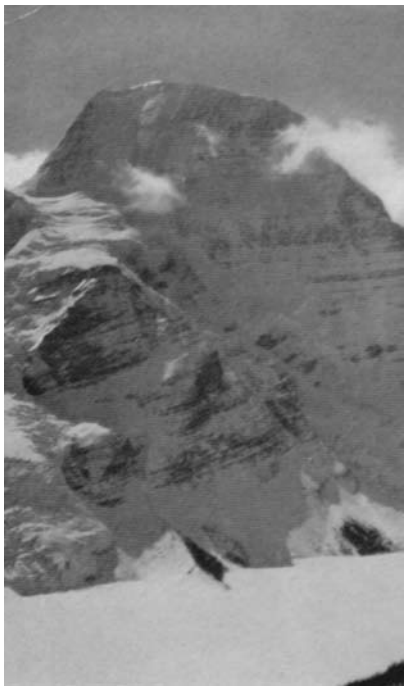
McFarlane, W. T. (1946) : Glacier Investigation in Banff, Yoho and Jasper National Parks, *ibid.,* vol. 29, pp. 265-273.

Meek, Victor (1948) : Glacier Observations in the Canadian Cordillera, *Can Geogr. Journ.,* vol. 37, pp. 190-209; also in *Extract des proces-verbaux des seances de I'Assemblee Generale d' Oslo (19-28 aout 1948) de I'Union Geodesique et Geophysique Internatl.,* pp. 264-275.

Outram, James (1905) : In the Heart of the Canadian Rockies, The

MacMillan Co., New York. Palmer, Howard (1924a) : Observations on the Freshfield Glacier,

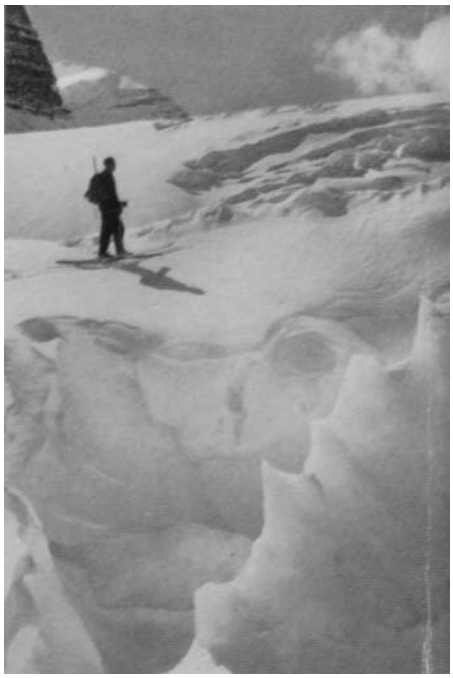
Canadian Rockies, *Journ. of Geol.,* vol. 32, pp. 432-441.
——————— (1924b): The Freshfield Glacier, Canadian Rockies, *Smithsonian Misc., Coll.,* vol. 76, no. 11 (Publication No. 2757), pp. 1-16 (rep. as Appendix D in The Glittering Mountains of Canada, by J. Monroe Thorington, John W. Lea, Phila., 1925, pp. 269-283).
Schäffer, Mary T. S. (1908) : Untrodden Ways, *Can. Alpine Journ.,* vol. 1, 110. 2, pp. 288-294.
——————— (1911) : Old Indian Trails, G. P. Putnam's Sons, New York and London.
Sherzer, William Hittell (1907) : Glaciers of the Canadian Rockies and Selkirks, *Smithsonian Contr. to Knowledge,* Pt. of Vol. XXXIV (No. 1692). pp. 1-12; 1-135.
Thorington, J. Monroe (1927): The Lyell and Freshfield Glaciers, Canadian Rocky Mountains, 1926, *Smithsonian Misc. Coll.*, vol. 78, no. 6 (Publication No. 2911), Washington, D.C., pp. 1-8.
——————— (1931) : Lyell and Freshfield Glaciers, *Can. Alpine Journ.,* vol. 20, pp. 138-140.
——————— (1938) : Notes on Saskatchewan and Freshfield Glaciers, *Amer. Alpine Journ.*, vol. 3, no. 2, pp. 219-220.
——————— (1945) : Notes on Freshfield and Lyell Glaciers, *ibid*., vol. 5, no. 3, pp. 435 436.
Vaux, George, Jr. and William S. (1906) : Observations made in 1906 on Glaciers in Alberta and British Columbia, *Proc. Acad. Natural Sci. Phila.,* vol. 58, pp. 568-579.
——————— (1907) : Glacier Observations, *Can. Alpine Journ.,* vol. 1, no. 1, pp. 138-148.
Vaux, George, Jr. (1910) : Observations on Glaciers in 1909, *ibid*., vol. 2, no. 2, pp. 126-129.
Vaux, William S. (1909) : Modern Glaciers, *ibid.,* vol. 2, no. 1, pp. 56-78.
Walcott, Charles D. (1920) : Geological Exploration in the Canadian Rockies, in Exploration and Field-Work of the Smithsonian Institution in 1919, *Smithsonian Misc. Coll.*, vol. 72, no. 1 (Publication No. 2581), pp. 1-16.
Wheeler, Arthur O. (1907) : Observations of the Yoho Glacier, *Can. Alpine Journ.,* vol. 1, no. 1, pp. 149-156.
——————— (1908) : pp. 271-275. Motion of the Yoho Glacier, *ibid.,* vol. 1, no. 2, Motion of the Yoho Glacier, *ibid.,* vol. 2, no. 2,
——————— (1910) pp. 121-125. Motion of the Yoho Glacier, *ibid.,* vol. 3, pp. 123-126.
The Alpine Club of Canada's Expedition to Jasper Park, Yellowhead Pass and Mount Robson Region, 1911, *ibid.,* vol. 4, pp. 1-63.
——————— (1913): Motion of the Yoho Glacier, *ibid.,* col. 5, pp. 53-58.
——————— (1914-1915a) : Motion of the Yoho Glacier 1912-1914, *ibid.*. vol. 6, pp. 133-138
(1914-191Sb) : Robson Glacier, ibid., pp. 139-142.
——————— (1920a) : Notes on the Glaciers of the Main and Selkirk Ranges of the Canadian Rocky Mountains, *ibid.*, vol. 11, pp. 121-146.
——————— (1920b) : Motion of the Yoho Glacier 1917, 1918 and 1919, *ibid.,* pp. 182-185.
_____ (1923) : Motion of the Robson Glacier, *ibid*., vol. 13. pp. 158-159.
——————— (1931): Glacial Change in the Canadian Cordillera: The 1931 Expedition, *ibid.,* vol. 20, pp. 120-142.
——————— (1933) : Records of Glacial Observations in the Canadian Cordillera. 1933 and 1934. *ibid.*, vol. 22, pp. 172-185.
Wilcox, Walter Dwight (1900) : The Rockies of Canada, G. P. Putnam's Sons, New York and London.



Mt. Robson And Berg Lake.
Easter Sunday Morning.
Photo P. Munday

Mt. Resplendent From Robson Glacier.
Photo P. Munday

Above Robson Cirque On Mt. Resplendent.
Photo P. Munday



Ski Paradise, Robson Cirque.
Photo P. Munday

(Also Hon. Mention Ski Class In Photo Competition)

CLUB PROCEEDINGS

ROBSON SKI CAMP

By Margaret Reiss

This was the second time winter camp had been held at Berg Lake and, if numbers are anything to go by, it met even greater success than in 1951. There were 35 attending camp.

Most of us spent the first night with Mr. and Mrs. Hargreaves at their ranch near Mt. Robson station. We received the friendliest of welcomes, wonderful food and heard hair-raising stories about grizzly bears, wolf packs and precipitous trails. That evening, too, most of us decided our packs were too heavy. Much time and imagination was spent in reducing gear to a minimum, weighing it, and reducing it to a further minimum. It is quite wonderful what you can do without if you have to carry it yourself!

The trail to Berg Lake was very beautiful, seemed endless, but wasn't very difficult. We were fortune in getting a ride for the first few miles along the road, so reducing the skiing distance to thirteen miles. At first we toured through snow-covered timber, following the course of the Robson River. Then across Kinney Lake, and up until we reached the Whitehorn Ranger cabin, where we brewed a cup of tea. The men picked up a few pounds of meat each, cached here by the advance party. After a short rest we crossed the river and Valley of a Thousand Falls and crawled up "the goat trail"—which, I am sure, no self-respecting goat in its right mind would dream of travelling. This trail climbed steeply and narrowly up the side of the canyon above White Falls.

Unfortunately the falls were frozen, and even the three largest—White Falls, Falls of the Pool and Emperor Falls—were draped, frozen and silent over their 200 ft. cliffs. The last, endless, thirteenth mile across Berg Lake in the dark, and the cabins were reached. Some of us had taken eleven hours for the trip, others as few as six.

Camp had been prepared by an advance party—led by Jo Kato—which had gone in a day ahead, carrying huge packs and dragging a heavy toboggan-load of supplies. This gallant crew opened up a bitterly cold cabin and got it heated and straightened out for us.

The skiers arrived in two groups: the first 15, led by Phyl Munday, on Good Friday, and the rest, led in a snowstorm by Park Ranger Murray Dawson, on Saturday. By Saturday evening all camp arrangements were under control and going with a swing. The ladies were housed in the main cabin (which became really warmed through after a few days), while the men occupied two outside cabins, or "deep freeze lockers". The only exceptions to this arrangement were Jo and Eric, who decided to sleep amongst old saddles, moose heads and mouse nests in the store room.

The first few days were spent exploring the surrounding terrain. Saturday and Easter Sunday trips were confined to Robson Glacier and the slopes of Mt. Mumm—the latter presenting some wonderful downhill runs. For Tuesday a trip over Snowbird Pass and a Snow and Ice School were scheduled. Thirteen of us signed up for the longer trip and set off at 7:20 a.m. the next morning. We were to go along Robson Glacier, over Snowbird Pass onto the Coleman Glacier and return to camp on the east side of Tatei Ridge. So we thought, anyway, until we rounded a bend on the glacier and caught sight of Mt. Resplendent; clear, huge and beautiful—and a long way off. This was the second highest mountain in the area and there had been only one previous winter ascent. The chance of scaling this 11,240 ft. peak seemed too good to miss. We unanimously voted to change our plans and set off for Resplendent at a stiff pace, led by Jo Kato. We had far to go. At the base of the Extinguisher, and before turning into the Cirque, we looked back and saw the ant-sized

Snow School party, led by Phyl Munday, creeping up Robson Glacier. They had caught sight of us, too, noted our changed course and guessed at our new destination; from then on we were dubbed "The Resplendent Snowbirds".

By 10:30 a.m. we were well above the Cirque and stopped for a second breakfast. Then steeply on. It was heavy going breaking-trail in the deep snow and the men took turns, each leading for about 100 yards. We climbed steadily and continuously without stopping for photography or rests, as there was some risk of snow and ice slides. However, by 1 p.m. we gained the col between Robson and Resplendent without mishap and had another rest and a bite to eat. From here we continued on foot, kicking steps as we went. Fortunately the crust was never hard enough to necessitate the cutting of steps, and what crevasses we encountered were small enough to be taken in an easy stride. The sun was bright, but the wind cut through us with considerable force. The actual summit— which we reached at 4 p.m.—would accommodate about five people, but since there were thirteen of us we had to queue up for some time in order to get onto it.

This summit was quite interesting, being a knife-like horn of snow and ice, heavily corniced and with a sheer drop on one side and a sixty degree slope on the other. I must admit that I find it more interesting in retrospect. There was little cloud and the view was a revelation. To the north-east lay an ocean of rugged, snow-clad peaks as far as the eye could see. To the south-west the view was softer and held more human appeal: the wide valley, down which the Fraser flowed, accompanied by two railway tracks and an oil pipe-line. Three straggly, man-made lines, which looked rather puny from where we stood.

Then—lest one should feel too proud at looking down from such a height—there was Mt. Robson; the great Mt. Robson, towering another two thousand feet above us. I tried to fumble with my camera, but the focussing device had frozen—and so had I. It was really very cold up there and there was no way of escaping the bitter wind. Turning to one of my companions on the rope, I queried numbly and rather enigmatically: "What's it like there, if it's like this here?" Surprisingly he understood and, although his reply regarding the temperature was not of the printable type, we both wished the men on their way to Everest godspeed and success.

The descent was very rapid and afforded some marvellous skiing in deep powder-snow. We reached the cabins at 6:30 p.m., having taken eight hours to go up and 2½ to come down. That evening the rejoicing was great and plans were made for the remainder of the party to make an attempt on Resplendent the following day. They accordingly started off bright and early, travelling in three groups of five. Unfortunately they ran into bad weather at the 9000 ft. level and were forced back by blizzard conditions. It snowed heavily that night and another attempt on Resplendent was out of the question for a day or two. But there were plenty of other trips: One group scaled Mumm, another attempted Anne Alice, and yet another started up East Whitehorn. Those who didn't want to climb ambled the two miles across Berg Lake to get a close-up view of the Hanging Glacier, whilst others went along the Smoky River to pay Murray Dawson a visit at his cabin.

We were all enjoying camp immensely; chiefly, I believe, because we were blessed with one of the world's best cooks, her cheerful assistant, and an ever-smiling Ivan who so efficiently chopped wood and carted water and never seemed to take his skis off to do either. Phyl Munday and Jo Kato were our guardian angels and brooded tenderly over blisters, strained ankles and head-aches. Phyl took it a step further by doing masterly sewing jobs on other folks' crampon-ripped ski pants and over-ventilated mitts. However, Phyl was not the only one to wield a needle. Every evening would find us sitting in a large circle under the nodding lines of airing socks, stitching away at climbing skins—which seemed to need constant repair—or else darning socks, dubbining

boots, chatting, smoking, reading, writing. A pleasant circle, dominated by a pot-bellied stove which stood in our midst, full of warmth and whims, defying anyone to touch it. If you went to feed it, it would drop its lid smugly into the red-hot center, and the perpetual bowl of clean snow, transforming itself into a foreign-bodied puddle, would generally follow suit. As the evenings wore on, proceedings tended to liven up a bit and there would be sing-songs, games, tall stories and hilariously muddled square dances.

A final and successful attempt on Resplendent was made on the Thursday. This time the three groups of five had lovely weather and good snow conditions and everyone reached the summit. A splendid achievement which was celebrated that night by singing, dancing and re-living every step of the way and comparing notes. The last evening—after most of us had gone "powder crazy" above the Cirque—we sat around for a long time. Nobody wanted the evening to end, because nobody wanted to go home the next day.

We had all been looking forward to the thirteen mile downhill run very much, but unfortunately the thawing and freezing process of the past week had transformed the surface to something resembling a bumpy plate-glass window and the descent was—for me at any rate—quite an ordeal. By the time I had reached "The Valley of a Thousand Falls", I felt that it more than deserved its name, took off my skis, and walked. The arrival of the warmer weather was becoming very noticeable lower down; many of the water falls were coming to life, and on Kinney Lake the ice was getting very thin around the edges. Part way across this lake our ski tracks were joined by those of a grizzly bear and her cub. They padded along the trail for a good two miles, but fortunately just remained tracks. We were met at the end of the trail by a truck, which carried us the last four miles to the Hargreaves' ranch.

To add to our high spirits, one member managed to vault gracefully into a pile of horse manure, whilst the rest of us tumbled out, splitting our sides, into six inches of clean mud. We were only just in time to catch the train, which carried us home, to dream of the past and look forward to next years' ski camp.

HOOKER ICEFIELD CAMP, 1953

THE OLD ATHABASKA TRAIL

By Maj.-Gen. W. W. Foster Honorary President

We were camping upon a site that is, in many ways, historical. It is situated on what was once the main thoroughfare between York Factory on Hudson Bay and old Fort Vancouver, at the mouth of the Columbia River on the Pacific Ocean. It was described in bygone days as the Athabaska and Columbia River Trail.

The Athabaska Pass through the Rocky Mountains used by this trail is on the boundary of Alberta and British Columbia. The definition of the boundary survey is of particular interest to members of the Alpine Club as Mr. A. O. Wheeler, its former president and director, who originated the Club's activities, was also British Columbia's representative on the Survey Commission. We are doubly fortunate today in having as our president his son, Brigadier Sir Oliver Wheeler.

A short distance ahead, on the continental watershed, is a little lake whose curious shape may have suggested the unusual name given it by furtraders, The Committee's Punch Bowl. Officially it was christened by Governor Sir George Simpson upon his famous trip in 1824, to honour his company's headquarters committee in London. Subsequently it was customary to mark arrival at the spot by making punch, or at least serving wine, for all members of an official party.

From either end of this tarn flows a small stream, one ultimately finding its way to the Arctic via the Peace and Mackenzie Rivers, and the other by way of the Wood and Columbia Rivers to the Pacific. There are many similar instances of streams on the watersheds flowing in opposite directions, one of the most familiar being the two which originate from the foot of the Robson Glacier. The northerly one flows via the Smoky, Peace and Mackenzie to the Arctic, while the southerly one flows through Lake Kinney and over the Emperor Falls to the Fraser and Pacific Ocean.

Camping near the Punch Bowl recalls incidents connected with that historic spot, used as a campsite by so many furtraders and explorers, down to the more recent boundary survey parties.

Although the pass was used by free-trading fur men over a long period, David Thompson was the first to leave a written account of the area which he traversed during 1810-11. Thompson commenced his activities as a trader with the Hudson's Bay Company in 1784 and remained with that company until 1797, but his real interest was exploration rather than trade and on that account he transferred to the rival Northwest Company, remaining in its employ as explorer and surveyor until 1812.

On the eastern side of the mountains, Thompson had become very friendly with the Piegan Indians, a tribe of the Blackfeet. However, when Thompson's plans to go west and develop a route suitable for trading with the Kootenay Indians became known, the Piegans decided to stop him. He managed to slip through without their knowledge by way of Howse Pass and organized a trading post at the junction of Lake Windermere and the Columbia River, since known as Kootenay House. Establishment of this post marked the beginning of his great services as an explorer west of the mountains.

Later in the year 1810 Thompson found he was unable, owing to the hostility of Indians, to continue the use of Howse Pass, and determined to find another further west with which the Indians could not interfere. Late in November he reached the banks of the Athabaska and with an Indian guide, a half-breed hunter and ten men in charge of dog sleds, followed the river into the mountain. On January 5, 1811, with a thermometer registering 26 degrees below zero, they started up the Whirlpool.

A curious incident is related in Thompson's journal. This area, according to local Indians, was the abode of mammoths, and he noted seeing tracks which were so large that he could not explain them.

On January 10 the same year, Thompson stood on the summit of the Athabaska Pass. He recorded observations upon the height of adjacent mountains which, having assumed the elevation of the pass as 11,000 feet, he said, "might fairly be taken at 7000 ft. above the pass, giving a general height of around 18,000 feet."

Two days later Thompson recorded the loss of a skin bag containing musket balls which a wolverine carried away. It is interesting to read in the Alpine Club Journal of 1921-22 that a member of one of the International Boundary Commission's Party, Mr. R. W. Cautley, found the musket balls 100 years later in a cache just north of the summit.

The balance of Thompson's trip to the mouth of the Columbia and the return through the pass and via the Athabaska to York Factory, is an epic of adventure and determination by one who made a great contribution to the development of Western Canada and in particular to this section. He undoubtedly, participated in building up the story of the fabulous Hooker and Brown mountains, through assuming the elevation of the pass to be 11,000 feet. However, the height given to these mountains over a long period can be specifically attributed to David Douglas, who gave his name to the Douglas fir of the western slopes.

Douglas left Fort Vancouver, at that time the Pacific Coast headquarters of the furtrading company, on March 20, 1827, and seven days later reached Boat Encampment at the apex of the Big Bend of the Columbia. Then, following the usual pathway up the Wood River, he struck the trail eastward to the pass, which was reached on the last day of the month. The following morning, Douglas notes, was sighted what he described as the highest peak yet known to exist on the northern continent of America, and placed its elevation at 17,000 feet.

Douglas named this peak Brown in honour of an illustrious botanist. He states in his diary that a little south there appeared a mountain of nearly the same height to which he gave the name of Hooker in honour of Dr. Hooker, Professor of Botany in the University of Glasgow. For many years after the journey by Douglas, maps showed peaks on either side of the Athabaska Pass, indicating Mt. Brown 16,000 feet and Hooker 15,700 feet. It was not until 1893 that Dr. Coleman of Toronto University, later a president of the Alpine Club of Canada, determined to investigate these two peaks which Canadians had for so many years claimed to be the two highest in the Rockies. An account of his research appears in a most instructive book entitled "The Canadian Rockies" in which is described an arduous six weeks trip to the Committee's Punch Bowl. This, he says, "like the famous Hooker and Brown mountains, turned out to be nothing but a fraud."

Mt. Brown was finally determined by the Interprovincial Survey as 9,156 feet, but the identity of Hooker was still open to question as none of the mountains in the vicinity could be placed at much over 10,000 feet. Three years later, 1896, Walter D. Wilcox, another Alpine Club member and enthusiastic mountaineer, also made an unsuccessful attempt to solve the Hooker and Brown mystery.

In 1898 Professor Collie with Hugh Stutfield determined to probe the matter to a conclusion. On one hand was the evidence of David Thompson, coupled with that of Douglas, who furnished the names and estimated heights of 15,700 feet and 16,000 feet respectively. On the other was that of Dr. Coleman and Walter D. Wilcox, who, provided they were dealing with the same pass, could not be mistaken. It appears the error is accounted for by both Douglas and Thompson starting with the wrong assumption as to the altitude of the pass. Douglas quotes it as

between 10,000 and 11,000 feet. The exact figure is only 5,750 feet.

The problem these errors in elevation presented was dealt with at some length by Mr. Arthur O. Wheeler, in the 1921-22 volume of the Journal. Mt. Brown, 9,156 feet, was accepted as the one named by Douglas, but the identification of Hooker was more difficult. Finally, however, the conclusion was reached that the high peak a few miles east of the Punch Bowl and six miles from the summit of Mt. Brown, with an altitude of 10,782 feet, was Hooker. Based upon this decision and reports made by the Inter-provincial Boundary Survey in 1920, confirmation of these findings was recorded by the Geographic Board of Canada.

It is 143 years ago that David Thompson made notes of his trip through the Athabaska Pass. From that date it became the principal gateway used by distinguished scientists, furtraders, and other adventurers enroute to the Pacific slope. In 1821, the Hudson's Bay Company absorbed the Northwest Company, and terminated a long drawn-out conflict which, supported in turn by subsidiary tribes of Indians, had been the cause of so much destruction of property and loss of life.

I would like to refer again to the indebtedness of this generation to these men and others of earlier days whose resource, courage and love of adventure overcame all obstacles. In doing so they made a substantial contribution to the freedom and opportunity that exists throughout our land today. Quoting Franklin Knight Lane's interpretation of the spirit of the pioneers:

> *"They trekked through treacherous snows, forded swift running waters, crept painfully through rocky gorges, clambered up mountain sides, the sport of avalanche and slide. Dared the limitless land without horizon, panted beneath the flare of the raw and ruthless sun. Starved, thirsted, fought, were cast down but never broken, and they never turned back. They stand at last beside this western sea the incarnate soul of an insatiable race."*

HIGHLIGHTS OF CAMP

By Hilda L. Reid

It was thrilling to follow over the historic route from base camp into the Alpine Club Summer Camp of 1953. Base camp had been set up at a Government sawmill, near Lake Moab, 4½ miles from the Whirlpool River Crossing on the Banff-Jasper highway. The trail, if not the actual one used by the fur traders, followed closely in their tracks for a very questionable 20 miles to the main camp. For the most part the trail was not particularly good, consisting alternately of sections of thick, heavy mud followed by bog and muskeg. Continuous rain, drizzle and mist was, at times, very unpleasant. However, occasional glimpses of the beautiful Whirlpool River, and of clouded peaks, encouraged us on our way.

By the time we reached the flats, where the main camp was located, the weather had cleared a little and we were rewarded with our first sight of the spectacular Scott Glacier, with Mt. Hooker in all its splendour. Half way across the flats we were welcomed by several members of the advance party who valiantly offered to carry our packs. In no time at all we were quaffing vast quantities of tea.

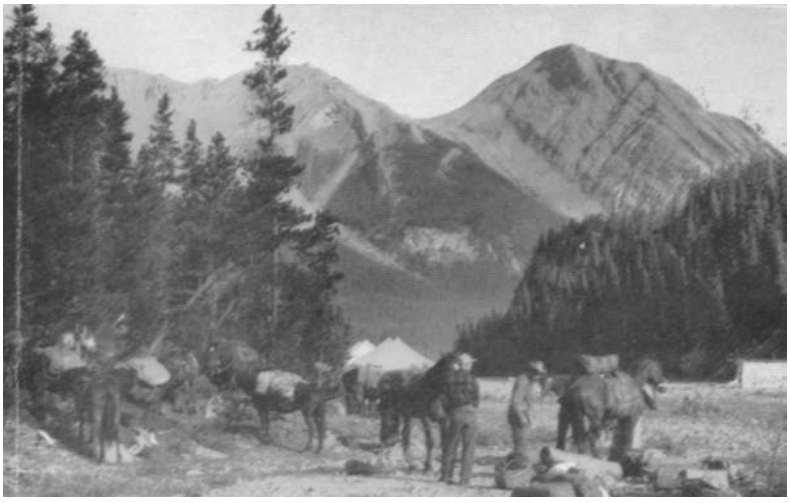
For several days after the hike-in many stiff legs and hips, and blistered feet were to be found—muscles that had lain dormant for a year creaked protestingly.

The main camp, situated on the gravel flats about 1½ miles from Scott Glacier, had taken a month to set up. A most difficult task, which had been efficiently carried out by Mr. Cuthbertson. The new, enlarged dining tent was a great improvement over previous years. This year we ate in

Camp At Athabaska Pass.
Photo P. Munday

Main Camp, Scott Glacier Behind Trees.
Photo Lucy Smith

Alberta–B.C. Boundary Cairn At The Committee's Punch Bowl.
Photo P. Munday



Loading The Pack Train.
Photo P. Munday

First Traverse Of Kane Icefield, Mt. Kane Left Center.
Photo E.R. Gibson

the light, and were able to keep dry regardless of weather. Camp organization and arrangements were just as efficient as in previous years.

Several peaks in this area, and of course Scott Glacier, are named after members of the Scott Antarctic Expedition. No organized climbing has been done in this area since 1924. Owing to very inclement weather (thunder, lightning, rain, hail and snow) jt looked as if no climbing would be done in 1953. During the first week very little climbing was done, and most parties that set out were turned back by the weather. Jim Tarrant, however, was able to lead a first ascent of Mt. Bowers, 9,900 feet, in spite of the weather.

High camp was set up on the Hooker Ice Field, and from here numerous climbs of Mts. Hooker, Scott, Evans, Gates, Ermatinger and Serenity were made. A cry heard daily was: "Has any one any crampons to lend? or a packboard? or a lightweight sleeping bag?" Someone always had, and the daily trek up to high camp was made. A party of three led by Jo Kato made the ascent of Mt. Hooker from main camp. They left at 2:30 a.m., ate breakfast on the summit, and were back in camp for afternoon tea.

Rock and ice schools were taken by Rex Gibson, Bob Hind, and Walter Perren our Swiss guide, where advice, instruction and practice was given in rappelling, chopping steps, and use of crampons. As the latter were a necessity for most of us before attempting the Scott Glacier, the instruction was most welcome. Len Chatwin and Phyl Munday led photographic trips on the glacier.

A reconnaissance climb was made on Terra Nova, an unclimbed peak of 10,100 feet, just north of Mt. Scott, in an attempt to establish a route, but the party was turned back by bad weather. Two later attempts likewise failed. Finally Bob Hind led a third party that succeeded in reaching the summit. Great interest was shown in the climbs on this peak as it was in full view of camp.

The trip to Athabasca Pass was very popular. It was a delightful 12-mile walk from the main camp, along the banks of the Whirlpool River and gave a very fine view of the canyon; through meadows filled with beautiful alpine flowers: past a lovely waterfall, and the hanging glacier on Mt. Kane. A sub-main camp was set up by the side of the Committee Punch Bowl, in a setting of unsurpassed beauty. However, all the mosquitoes in Alberta and B.C. had gathered here for their summer holidays! They were of the healthy, well fed, zooming type—main diet mountaineers and "612". The first ascent of Mt. Brown was made from this camp site in 1827 by David Douglas, the first major climb recorded in the Canadian Rockies. Several parties climbed this historic mountain. A party of four, led by Rex Gibson, made a high level traverse. The route led across Kane Glacier and Hooker Icefield to high camp. En route the party made a first ascent of an unclimbed 9,900 foot peak. An ascent of Mt. Kane was also made from this camp.

West of the Whirlpool Valley and opposite the main camp was a ridge known to us as "Camp View Ridge", and "Boundary Peak". Mass assaults were made on these peaks by climbers, botanists, fossil hunters and photographers. The view from the summit was superb, on a fine day!

Between camp and Scott Glacier it was necessary to cross the swiftly-flowing Scott Creek. A large tree trunk had been felled across it, but the crossing at times was quite hazardous with the "sitting-down" method being most used. Col. Davies, with a volunteer squad, built a very efficient bridge, complete with handrail, of the "walking" type. The fate of the volunteer who fell in the creek was never mentioned. Many were the blessings bestowed on Col. Davies by parties returning after dark when they reached his bridge.

Camp fire was, as ever, a very popular part of camp life, although frequently rained out. Cocoa served by the camp boys was a welcome addition. The new staff position of night cook

was a great success as parties arriving in late from climbs, and those arising at 3 a.m. found hot meals awaiting them. The tea tent this year was used extensively, and as usual large quantities of tea, dispensed by the tea hostess, was consumed by climbers and non-climbers alike. Artists, photographers and card players were to be found here at all hours. The drying tents also became popular meeting places. Sunday service was held in the tea tent, Rex guided our thoughts in a fine sermon, and Mrs. Ella Walker and her accordion supplied the music. Following the service the annual meeting was held.

Our president, Brigadier Sir Oliver Wheeler, and Lady Wheeler were greatly missed in camp, owing to the indisposition of Sir Oliver. However, they were able to greet many members arriving by train at Jasper. General Foster and Captain McCarthy spent the first week in camp.

Our camp doctor, George Clark of Calgary, was kept busy treating numerous blisters and minor ailments. The "Doc" also found time to introduce something new in the way of art—"Mountains Moderne". Phyl Munday kept the hospital tent running as efficiently as ever, despite the fact that Phyl herself had suffered injuries just before coming to camp.

East of camp, over a wooded ridge, was a small lake which was reasonably warm and afforded excellent swimming. By the end of the first week it had taken on the aspect of a seaside resort. Air mattresses make wonderful floats!

Camp fashion note for men—kilts are now being worn to camp, but ye ken, ye'll need tae to be a braw laddie to wear yin!

It was with a feeling of deep regret that we finally packed our bags and prepared to return to the outside world. Although many of us meet only once a year, the friendships made are strong and lasting, and new friends quickly become old friends. The hard-working packers loaded our dunnage on the tired pack train (the horses had made the long trip from base camp daily to keep us in comfort)—last goodbyes were said—last lingering glances taken at the scenes we had come to love. Then, off along the out trail, just as wet and just as muddy as on the way in, with the umbrellas of the Vancouver section bobbing along to remind us that civilization was just a few miles away.

FIRST ASCENT OF TERRA NOVA

By R. C. Hind

The camp circular for 1953 referred to "an unclimbed 10,000 ft. peak just north of Mt. Scott" as one of the climbs of the area. From camp this appeared as a quite impressive rock peak and during the many rainy days there was a lot of speculation as to what would be the most likely route.

One afternoon Joe Kato took a small party on a reconnaissance to see if a direct route could be made up the face to a prominent notch part way up the ridge. He was not able to complete this route due to lack of time but reported a final couloir, partly chimney and a bit icy, which might go.

A day or two later Bill Goodrich and myself made an attempt on the peak. We headed straight up from camp over grass and scree to the ridge and along the easy ridge over loose rock and some snow to the notch. One rather nasty spot on this ridge involved a jump across a gap with a rather poor landing. This could be turned however and we did not feel quite capable of jumping back. On the return we dropped down about 50 ft. and so avoided the gap.

When we reached the notch at 10:30 it started to snow and we took shelter under an overhang. After waiting 2½ hours we gave up and started down. We were now at the top of Kato's chimney and I went down this 120 ft. to see if it would be a quick way off. However, it was icy, full

of new snow and had several small overhangs so we returned slowly down the now snow-plastered ridge. We were unable to see where we were going until we reached timberline but found ourselves right on the line and were soon down.

July 28, the first fine day in camp, saw Rex Gibson leading a party including Ellis Blades, George Strickholm, Bill Goodrich, and G. Peckham on the mountain. They reached the notch without difficulty and continued up the ridge, Ellis Blades leading. The climbing became a little more difficult here and progress was slow so that when they reached the first really severe pitch on the mountain it was already 4 p.m. To go on would certainly have meant being benighted so they turned back.

On July 29 Stan Pearson and I left camp at 4:30, breakfast-less, and started up again. We reached the notch at 9 a.m. and the first big step 20 minutes later. Here we traversed about 40 ft. to the right over a sloping ledge and found a good stance. A short vertical wall with very small holds led to easier going. The next serious obstacle was a small tower on the ridge which was overcome by climbing a ten-foot, slightly overhanging pitch on the left. An easy scramble led to the summit at 10:50.

After lunch and some cairn building we left the top at 11:45, roping down at the two tough spots and arrived back at the notch at 1:20. We continued down the ridge, leaving it at the gap and crashed down loose gullies and scree to camp, arriving a little early for tea at 3:35.

The rock on this mountain is like most of the Rockies, some good, some awful. Most of it is of that very sharp, pitted type so hard on skin and clothes. Both of us wore out a pair of gloves on the climb and would certainly have had to travel much more slowly barehanded.

MT. HOOKER FROM MAIN CAMP

By Jo Kato

After reading Dr. Thorington's thrilling account of his first ascent and traverse, and after seeing it at close hand during the 1952 reconnaissance, the challenge to climb this beautiful peak was overpowering. My opportunity came during the second week of camp.

I had never climbed with two guides before, but at 2:15 a.m. on Wednesday July 29, Dolores La Chappelle, Barbara Richardson and I set out by bright moonlight from main camp.

It was a lovely night. The moon peeked over the ridge of 'Terra Nova' which had so far resisted two attempts, and flooded the valley of Scott Creek quite brilliantly. We traversed the moraine debris after crossing Scott Creek, and ascended to the left of the waterfall at the left edge of the lower portion of the Scott Icefall. When we reached the usual "crampon place" which was at the termination of a medial moraine, dawn was just breaking.

The ice was dry, and crampons bit crisply as we progressed past the first icefall, and threaded our way between the crevasses of the second, which swings to the left or east. Emerging from this maze of ice, we traversed a steep snowslope to our right which led to the Hooker névé. At this point, Walter Perren could be seen leading a group of climbers from the high camp, up the same snow slope from the north base of Ermatinger. Another group emerged and headed for Mt. Scott.

The Hooker snowfield was silent in the long morning shadow of Ermatinger, but Mt. Hooker itself was bathed in the warm orange alpenglow of sunrise. The air was crisp and invigorating. The sky was nearly black. There was no trace of clouds. We tramped across the névé till we left the shadow of Ermatinger, and suddenly burst into the brilliant sun. A stop was made for goggles and sun cream at this point. It was 6 a.m.

The first small wisp of cloud was starting to form over Mt. Geikie, which stood up as a formidable black wedge, when we resumed our march to the base of the southeast ridge of Hooker.

A second breakfast was enjoyed in leisure by a small ice-rimmed lake at the base of the ridge. The summit was close at hand. When danger from rockfall was minimized, we leisurely started off with just myself carrying ice-axe and crampons. The lower part of this ridge, which was the escape route that Thorington's party took under the leadership of Conrad Kain, is an enjoyable rock-climb, being a somewhat metamorphosed limestone and fairly solid. We decided to stick as much as possible to the absolute ridge. This entailed climbing two overhangs which my companions did with great aplomb. This rock ridge, which at points is rather crumbly and unstable towards the top, peters out into a snow slope. At this point, a rock cairn was constructed at the last rock on this route. A record was entered in a copper tube container donated by Calgary Section.

By this time, Walter Perren's party had raced to the summit and back. We proceeded up a steep snow slope, avoiding the cornice to our right, and suddenly emerged on the summit. It was 10:20 a.m.

What a magnificent view! This was one of the two fine days during camp. Below us, facing north, was Little Hooker and the Scott Icefield, with two tiny blue lakes with floating icebergs. Beyond was the valley of Scott Creek with the tents of the main camp showing, and Whirlpool Valley. Edith Cavell could be seen, the Ramparts, and beyond in lonely majesty stood Robson in the blue haze. Close to us was Evans and the four peaks of Kane. To the west could be seen the Trident group in the Selkirks, and to the southwest were Bras Croche and Clemenceau. South was the deep trench of Wood River and Fortress Lake, and beyond were the Columbia Icefields Group, all easily identifiable. Even Mt. Sunwapta and Poboktan stood out. Close to us to the east were Ermatinger and Serenity. Fryatt looked different, and just to the south of it was a formidable peak finally identified as Brussels Peak. It looked more terrifying from this angle. The Brazeau and Maligne group looked serene in the distance.

After much clicking of camera shutters, we ate lunch, and after a last look around, made a leisurely descent over much the same route as that of ascent, but avoiding the overhangs. A glissade down the steep moraine and along the gravel flats led us back to main camp, still in time for tea at 4:10 p.m.

SLEEPING IN THE ICE-BOX

By Lucy E. Smith

It was my first experience on a glacier and 1 had spent several hours in the borrowed sleeping bag which had been so nice and light to carry to high camp the day before. My own warm, but heavy bag, and my air mattress, lay empty and neglected down at the main camp. Never again will I complain about the excessive weight and warmth of that bag!

First 1 tried putting my ski jacket under me. Then I tried putting it on. Next I put my packsack beneath me. I even tried lying on my boots! I lay on my left side until a cramp shot from hip to ankle. I lay on my right side until it was numb. I turned on my back, and so on until I was reminded of the story of "Rolling Tom" who had vowed he would turn over in his grave if his widow ever looked at another man. At that point I stopped trying to think of funny things because I was afraid that if I smiled too much my face would crack! Finally, in desperation, I sat up so there would be less of ME in proximity to the ice and looked with envious eyes towards the bulge beside

me which betokened my peacefully-sleeping companion who, out of a wealth of experience, had known just what to bring.

Perhaps it was curiosity to see what the world looked like at 2:30 a.m. from the top of a glacier or perhaps it was something else, but something drew me outside the tent—I, who had chosen to come to high camp for the sole reason that those starting off from main camp for a day's climb arose at the unearthly hour of 4:30, the thought of which did not appeal to me at all.

For the first few minutes, as I walked around I could appreciate nothing but the fact that the circulation really was beginning to creep back into my icy limbs, but then I began to take in my surroundings. The moon, just past the full, was shedding a bright path of light northwards down the Scott icefall, up which we had toiled the previous afternoon. Our four Logan tents pitched in the lee of Mt. Ermatinger were lit by this radiance while in the east, away from the direct influence of the moon, a myriad stars twinkled over the peak of Mt. Gates. Mt. Hooker, in the west, appeared very cold and somewhat forbidding at that hour. Somewhere—beyond the moon (or so it seemed)—lay Mt. Serenity, my graduating climb.

It was not long before someone stirred in another tent and a voice broke the silence: "Did anyone mix up the Klim for breakfast ?" It required no great stretch of imagination to establish the identity of the speaker for was it not the same voice which, not so very many hours before, had shattered the early slumbers of those lucky folk who were able to sleep, by inquiring about the fate of some dried apricots !

By 4:30, the two denizens of the cook tent had rolled out of their bags and very soon bacon was sizzling in the pan. That sound proved much more effective than any alarm clock I have ever heard.

An hour later, the friendly moon witnessed our departure from high camp—six of us for a long snow plod to Serenity, the peak with the breath-taking view; the other four to a shorter but stiffer climb up Hooker

Although, physically, it was the most uncomfortable night I have ever spent, the whole adventure was one I hope I shall be able to repeat many times. The only difference is that next time I shall take my own sleeping bag and air mattress, no matter how much they weigh !

HOOKER ICEFIELD CAMP

July 20 to August 2, 1953

The forty-eighth Annual Camp was held in the valley of Scott Creek, upper Whirlpool Valley, and not far from the foot of the magnificent icefall of the Scott Glacier which comes down from the Hooker icefield.

Fifteen miles south of Jasper and about five miles west of the Banff-Jasper highway, over a park lumber road, we had use of some of the lumber camp buildings for our base camp. From here the Main camp, 18 miles distant, was reached over a rough trail which followed the valley of the Whirlpool river. Baggage and supplies were packed in over this trail by "Red" Creighton's 30 odd pack horses. The camp was set up under the supervision of Mr. R. J. Cuthbertson, Western Vice-president of the Club and he acted as Manager during the operation of the camp.

The weather was very unsettled and wet, especially during the first week and most of the first parties attempting the high peaks were turned back by snowstorms. However, the High Camp was set up on the glacier, with four Logan tents and from it climbs were made of Mts. Bowers, Ermatinger, Evans, Hooker, Gates, Scott and Serenity. Most of these were second ascents and it was the first time any of them had been climbed by women. The first ascent of Mt. Bowers was

made by a party led by Jim Tarrant and the first ascent of Terra Nova, a difficult rock climb, was made by the two-man party of Bob Hind and Stan Pearson of Calgary. First ascents were made of some lesser peaks across the valley from Scott Creek, from which one gets a fine view of the Scott Creek valley and the camp, and beyond, the Scott glacier, the Hooker icefield and its surrounding peaks.

A subsidiary camp was set up at Athabaska Pass, 10 miles up the Whirlpool valley from the Main camp. Many climbers went there to visit the historic site where the fur brigades of the early 1800's used to meet at the famous Committee Punch Bowl. From this camp many parties climbed Mt. Brown, named and climbed by David Douglas in 1827. Rex Gibson led a strong party from the Pass, across the Hooker icefield to the Main camp and climbed an unnamed mountain en route.

During the camp Ice and Rock climbing schools were held. Instruction was given by Walter Perren, the professional guide and by such expert amateur leaders as: Mrs. Phyl Munday, Rex Gibson and Dr. Kato. We were glad to again have, on loan from the C.P.R., the Swiss guide, Walter Perren. He led many of the big climbs and gave much useful instruction in climbing techniques.

Our sincere thanks are due to our corps of amateur leaders without whose assistance it would not be possible to carry on a climbing programme at our camps. With their help 28 members made a graduating climb and became active members of the Club.

We were fortunate in that both our Honorary President. General Foster and our American Vice-president, Captain MacCarthy, were able to attend the camp and to address the camp-fire meeting.

The Sunday service was conducted by Major Gibson, assisted by Mrs. Ella May Walker and her accordion.

With the camp held in such a fine climbing region, never before visited by the Club, it was a little disappointing that the registered attendance was only 138 as against 178 at Assiniboine in 1952.

The President made a suggestion, in his address, that we might make better use of good weather by putting annual camps back, as they used to be in the early days to take place the last week of July and first week of August, instead of the last two weeks of July as in recent years. This matter is being referred to the Board for advice. This has been done with the result that almost all the members have voted for the later dates.

On the whole, weather in Camp this year was poor, though it was admirable the first week of August. Besides inclement weather, the Camp was somewhat marred by accidents, fortunately not fatal though serious enough, to two members. These were both due to attempts to travel independently rather than as a party. It is essential that all Club climbing parties travel as such from the time of leaving Camp, to return.

CAMP STATISTICS

Attendance:

From Canada	93
From U.S.A.	43
From England	1
From Germany	1
Total	138
Plus Camp boys and crew	20

The following graduated to Active Membership:

Bower: (9,909):
Messrs. Noel A. Owens, Donald K. Saunders.

Ermatinger (10,080).
Misses Maureen D. Adkins, Elizabeth M. Barclay, Nancy C. Ford, Mary Jury, Messrs. Dr. George C. Clark, Victor D. Heller, Vernon K. Leonard. George E. Strickholm, Charles E. Van Wagner.

Evans (10,460):
Mr. Ellis Blade.

Hooker (10,782):
Miss Marion M. Harvey. Mr. Peter D. Thomas.

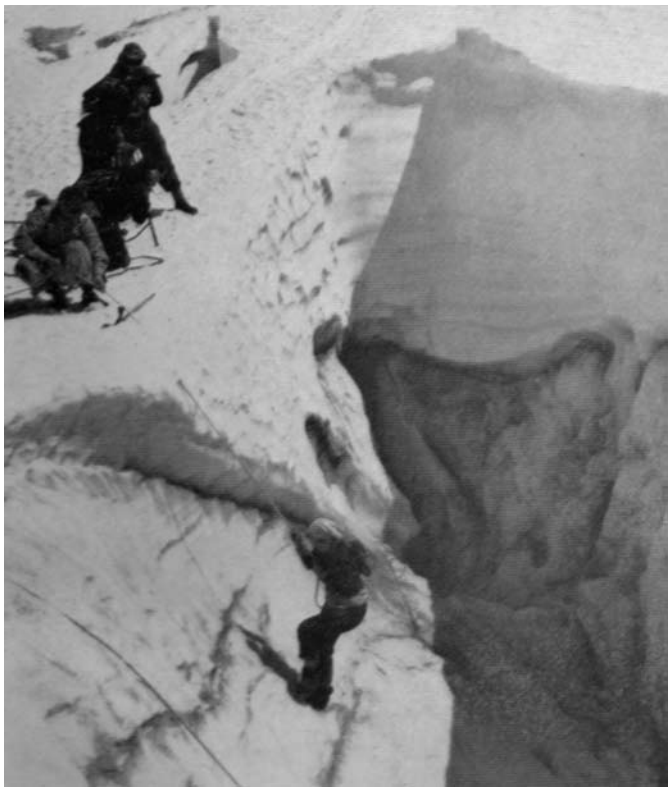
Oates: (10,220):
Miss Janet Ruff. Messrs. David G. Fish, Niels Stoermer, Mrs. Elizabeth Brooke.

Scott (10,826):
Mrs. Mary F. Blade, Misses Joyce Fletcher, Nora E. Neilson, Messrs. William H. Angus, Cecil M. Lamb. George H. Rever, S. C. Watts, James W. Wilson.

Serenity (10,573):
Miss Lucy E. Smith. Mrs. Frank J. Steinhardt.

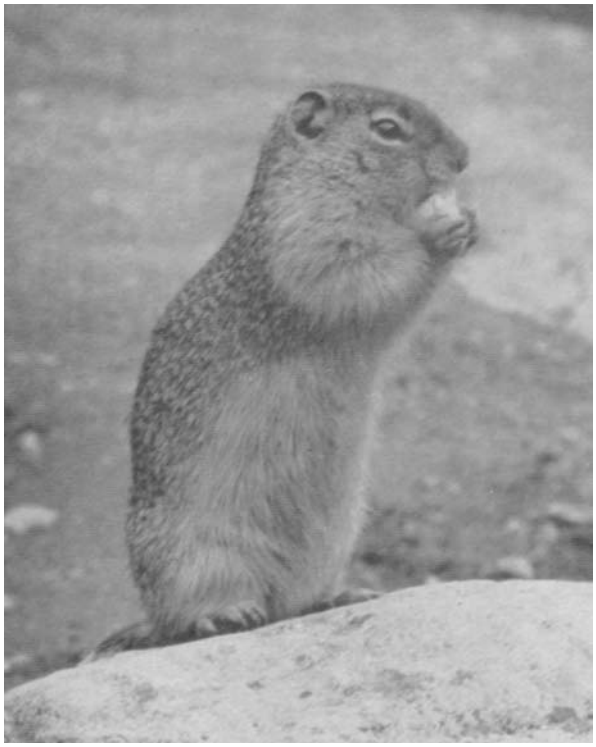
WINNERS IN PHOTOGRAPHIC COMPETITION

Class B Mountain Scene.
Mt. Sir Donald.
Photo E.C. Porter



Class A Climbing. Crevasse Rescue.
Photo Mrs. Don Munday

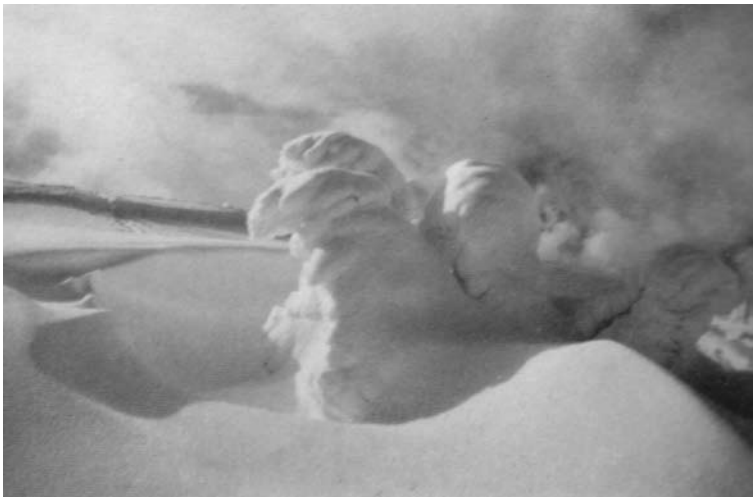
Winner Wiebrecht Cup, And Class D Mountain Feature "Lookout Below".
Photo E. Pigou



Class F. (Alpine Natural History)
Div 1. Ground Squirrel.
Photo B. Palser

Class F. (Alpine Natural History)
Div. 2. Drummond Dryas.
Photo P. Munday

(Photo Not Available)



Winner Class G,
Alpine Association
"Snowbirds"
Photo E. Pigou

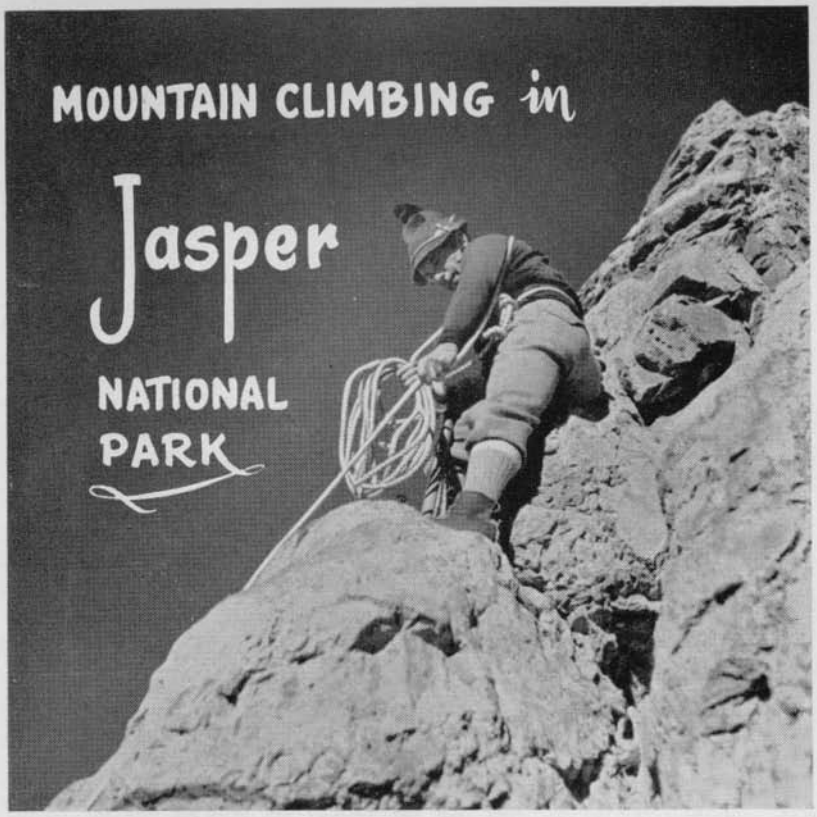
THE
ALPINE CLUB HOUSE AT BANFF

The Clubhouse will open the last week in June. Members and friends are invited.

The Clubhouse is situated on the Upper Hot Springs Road. Motorists who drive direct will find ample parking space provided.

The Charge for members is $5.50 a day, non-members $6.50 a day, children 12 years and under $4.00 a day. These charges include meals.

While we expect to be able to take care of all members and their friends who will come to the Clubhouse, it will assist the Committee if advance notification is given by letter or telegram stating time and date of arrival. Before June 15 write J. M. Dodds, Chairman of the Clubhouse Committee, 640 - 12th Avenue West, Calgary, and after June 15 to the Manager, Alpine Clubhouse, Banff, Alberta.



After camp closes, visit Jasper National Park . . . climb the great peaks that are such favorites with Alpine enthusiasts. Stay at Jasper Park Lodge, informal showplace of the Rockies. Enjoy golf, swimming, tennis, fishing, horseback riding and motoring—or just relax in a setting of superb beauty.

Your local C.N.R. ticket agent will be glad to assist you with your train reservations.

CANADIAN NATIONAL

THE RAILWAY TO EVERYWHERE IN CANADA

Wrigley Printing Co. Limited
1112 Seymour St., Vancouver 2, B.C.