# PACK HORSE TRACKS

*H.S. Bostock*

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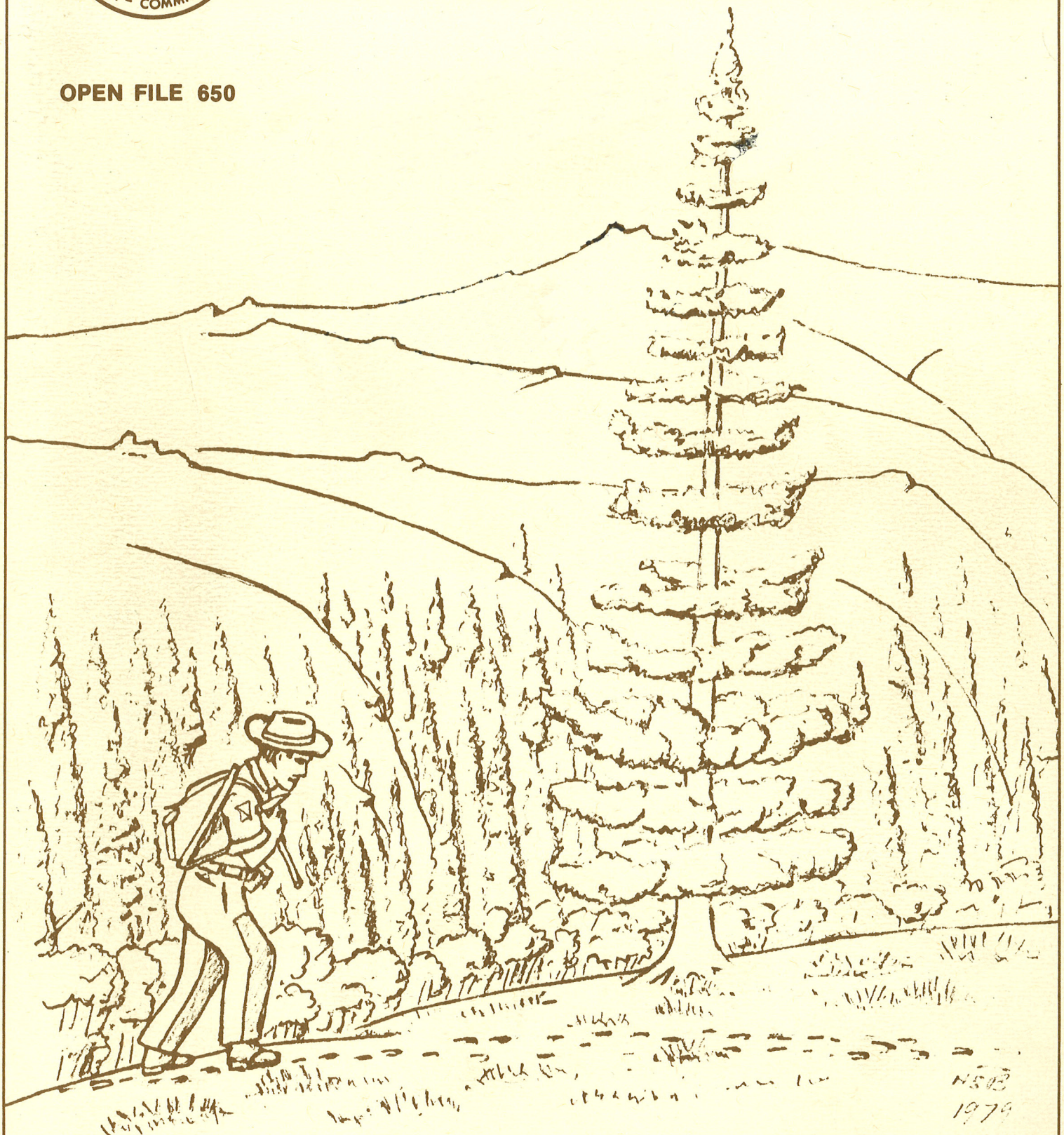


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# PACK HORSE TRACKS - recollections of a geologists life in British Columbia and the Yukon, 1924-1954

**H.S. BOSTOCK**

**1979**

CONTENTS

# FOREWORD

Hugh Bostock spent 25 field seasons in the Yukon, the first being in 1931. When he started many of those who had remained after the Yukon Gold Rush were still alive. His field work and his annual reports on the mineral industry of the Yukon brought him in touch with these people and from them he gathered a store of anecdotes and stories that help flesh out the history of the Yukon. A modest man, he resisted the urgings of his friends to write about his experiences but, as he notes in his preface to this book, a few years after he had retired from the Geological Survey he took up the idea with growing enthusiasm. I am delighted that it was possible for the Geological Survey to assist in many ways in preparing the drafts of this story and now to be able to make the results of the effort more widely available. The manuscript has been slightly edited but the original "diary form" has been retained because, as the author notes "..... it soon appeared that I knew no other way of writing what I wanted to say and so this style has been followed throughout." From the many hundreds of photographs in Dr. Bostock's collections a selection was made of those that showed activities, people, and places that have their place in Yukon history. These are complemented by a few of the author's sketches. In the days before polaroid cameras he commonly illustrated his letters home with small sketches and thus kept his family visually aware of some of the things that befell him.

Although he made his name as a geologist in the Yukon, Hugh Bostock began his career with the Geological Survey in southern British Columbia in 1924. Born in Vancouver early in 1901 he obtained degrees at Royal Military College, Kingston, Ontario and at McGill and Wisconsin universities and was graduated in both mining engineering and geology. A member of a family prominent in the political development of British Columbia, he was early exposed to the intellectual stimulation inherent in such a situation. When he retired from the Geological Survey in 1966 he was head of the Cordilleran Section with responsibility for most of British Columbia as well as the Yukon. His investigations in the Yukon, carried out over difficult country on foot, by canoe, or most commonly with pack horses gave him a detailed knowledge of the physical geography of the region that is probably still unequalled. In 1965 he was awarded the Massey Medal of the Royal Canadian Geographical Society for his contribution to the knowledge of the western Cordillera and Yukon Territory in the fields of geology, archaeology and historical geography. In presenting the medal Governor General Georges Vanier remarked on the hard physical work that underlay Hugh Bostock's scientific contributions. In the pages that follow the reader will find some traces of this effort although words can hardly recreate the frustrations that must have arisen when horses became mired in muskeg, bucked off their packs or stealthily disappeared overnight and took hours or even days to recover. Nor do mere words convey the beauty of a Yukon midsummer night or the flowers that carpet a high alpine meadow. Words are nevertheless one of the few ways man can convey his thoughts and in this book Hugh Bostock recreates many aspects of the Yukon that was, a land that even today is in a period of rapid change.

Ottawa, May 1979

D.J. McLaren
Director General
Geological Survey of Canada

## Author's Preface

Near the end of 1965, shortly before I left the Geological Survey of Canada, Cliff Lord, Chief Geologist, said to me, "Hugh, when you retire you should write an account of your field experiences with pack trains. You have seen the change from horses, buggies and wagons to cars, trucks, planes and helicopters". The first years of retirement were busy ones but in the fall of 1970 Cliff's suggestion was remembered. It was a new field of adventure for me to try to write something of this nature. The only way was to start with the first years as a student assistant and write the story chronologically and autobiographically. Indeed it soon appeared that I knew no other way of writing what I wanted to say and so this style has been followed throughout. For the first two years, 1924 and 1925, private diaries had been kept but for later years there was only my own memory and day-to-day records in my Survey field note books. When a draft of the first years had been written in longhand it was taken to Cliff, to see whether it was what he had had in mind. He had long forgotten his suggestion and said, "We didn't give you anything in writing about this?"

"No", I answered, "it was a verbal suggestion of yours".

"We have no funds for such a publication", he went on, thumbing through the pages, "it's clear enough to read as it is. I'll give it to someone to look at". About three weeks later I happened to meet his secretary in the hall in 601 Booth Street, the home of the Geological Survey of Canada, after 1958 when we had moved out of the Victoria Memorial Museum. She told me Cliff wanted to see me. On entering his office, he said, "This paper of yours Hugh, I gave it to Geoff to read, here is his memo on it". The memo was most encouraging to me, particularly as Geoff Leech knew more of the history and life of the areas written of in British Columbia than anyone else in the building. Cliff went on, "It's good. I've read some of it myself. If you keep on like that you'll have a readible book. I never knew you could write like that. But we can't publish it. We have no funds for such things at present, but we want it for our historical files." Those who know him can appreciate what a bouquet this was coming from Cliff. Here was a chance not to be lost and before I left his office, Cliff had agreed that the Survey would make photocopies of the manuscript and copies of photographs, figures and maps needed. The original manuscript would be returned to me and a copy complete with illustrations was to be filed with the Survey. The matter was then referred to Yves Fortier, the Director, who agreed. The project would be mine to do with as I wished and so I continued to work on "The Pack Horse Tracks".

As none of my field notebooks or manuscript maps could be taken out of 601 Booth Street I copied the pertinent information from them in the building and took it home. This gave the daily itinerary of the field seasons from 1924 to 1954. It included numerous reminders of and some full accounts of matters of human interest but not often the full details that add certainty to memory. The timetable, however, gave an infallible skeleton on which the flesh could be moulded with confidence into something like the true form. In writing it was apparent that some notes of my background were needed so that readers could understand the origin of the writer's points of view and interests and to make explanations in the text unnecessary. Father travelled across Canada in 1888 and bought the Ranch at Monte Creek (then called Duck's) 18 miles east of Kamloops, B.C. in the South Thompson valley on the main line C.P.R. Two years later he and mother were married in England where they lived the lives of country gentry. In 1893 they moved to Canada making Monte Creek and Victoria their homes. Father was elected as a Liberal to the House of Commons in 1896 for the constituency of Yale and Cariboo, virtually the whole interior of British Columbia. He did not run in the next election and was appointed to the Senate in 1904 at the age of 40. He became leader of the Liberals in the Senate and later Minister of Public Works in Mr. Mackenzie King's first cabinet. In 1922 he was made Speaker of the Senate, a position he held until his death in 1930. As years had passed in Canada the family increased with seven children, Marian, Alec, Jean, Nan, Hugh, Norman and Ruth. After going to school in 1912 in England, first at Hillside and then at Charterhouse near Godalming, Surrey, I returned to Canada in 1917 to enter the Royal Military College, Kingston, Ontario in August 1918, McGill University in 1922 and University of Wisconsin in 1925.

A few words of Hillside, the private boarding school to which I owe much. We 50 or so boys were devoted to our masters despite the occasional stern use of the ash stick. One or more was always with us after lessons as well as during games. Sunday afternoon

walks were delightful lessons in all the branches of natural history that the southern English countryside offers.

Norman, two and a half years younger than myself, and I ran wild on the Ranch in the summers until we were sent to school in England. In the fall and winter evenings, Mother read a variety of books to us including "Wild animals I have known" by Thompson Seton and anyone who has read it will recognize how well Raggylag's example of freezing came to stand me in good stead on several occasions. During our days at the Ranch we saw the roundups, branding, separating, the ploughing, sowing, haying, harvesting and all the phases of ranch and farm life. We had few toys. The presents we received were mainly tools. These included jackknives at 7, an axe when I reached 9 and a .22 rifle on becoming 11. With our bows and arrows we shot at magpies and crows and also at pigs and calves when no older people were about. We spent a lot of time watching the blacksmith and carpenter work that was almost continuously in progress. We lingered around with endless questions until in exasperation the foreman would say, "Can't you hear your mother calling?" or try some other such subterfuge to be rid of us. There were the chores to be done after breakfast such as splitting the kindling, piling the firewood, fetching the vegetables from the kitchen garden and so on, all of which we found irksome. Our best refuge was the shade of the brushy creek bottom where we were out of sight of Alec and our older sisters who referred to us as "The Two Grubs".

One day in June 1912, the mosquitoes in the creek bottom were particularly bad. Shorts, short sleeved, open necked shirts and wide brimmed straw hats were our only protection. We decided the big ditch up on the west bench (terrace) would be a better place to amuse ourselves. It would also be out of sight. With our hands we soon dug a gap in the soft, glacial silt wall of one of the main distributary ditches and directed water out of it onto a small flat area where we made a series of tiny parallel ditchlets for the water with our fingers and then turned it through another gap into the ditch whence it had come. The idea was to have our own little grain field, a miniature of the real thing that stretched gently down from the big ditch over the wide sloping field where the crop was watered by a pattern of small parallel ditches. All went well except that no matter how we tried we could not prevent the water in our ditchlets from eroding the sides and developing winding courses. Our researches, however, were abruptly interrupted by a loud explosion of Chinese oaths followed by "Mushymullah you? Whaff for you spoil 'em alligatin?" We didn't need to look. It was Big Jim, the Chinaman in charge of the irrigation. We were rather in awe of him. We fled, rolled under the barb wire fence, jumped down the six foot silt cliff and ran down the steep sage brush covered slope into the security of the creek bottom. But why did the water keep destroying our straight-ditchlets and make them wind. I never forgot this problem and it awakened an interest in geomorphology although it was 16 years before I heard a discussion of stream meanders by Professor A.K. Lobeck at the University of Wisconsin. In the years at the Ranch the things of country life were learnt unconsciously and in later years it was sometimes forgotten that others had not had similar opportunities.

After six years as a student assistant starting in 1924 I was appointed to the staff of the Geological Survey of Canada in the fall of 1929 and I found that I had become one of a band of brothers amongst whom there was an esprit de corps unsurpassed by any other group I have known. This proud spirit founded on a comradeship in zeal for excellence enabled the field officers to be granted freedom of action in expenditures and responsibilities that seem amazing in these days where there is so much distrust in all walks of life. This freedom has been a major factor in building and maintaining the high regard in which the Survey is held throughout the world.

The first years 1924 to 1930 were spent in southern British Columbia but in 1931 I was appointed to take charge of the exploration of the Yukon Territory and this region became my prime interest. Not only is its climate invigorating and its wilderness enchanting, but its people particularly were the outstanding attraction. There were misfits that came and went but the honesty and comradeship of the permanent inhabitants were inspiring. Their hand was ever ready to help us and this enabled us to work with efficiency and economy not otherwise possible.

In writing at times there has been uncertainty for whom I was writing. Generally however, the interest of my field successors has been at the back of my mind and this has led to detailed accounts of movements and subjects that may be of little interest to others. An aim too has been to record matters of historic interest. A temptation

to stray away into subjects remotely related to the main theme has been yielded to in places because I happened to think they should be put down. It is hoped, however, that readers will discover things here and there that interest them.

Four appendices are added at the end of this book. The first, on "Placer Mining" is to explain to those readers unacquainted with the subject a few of the principles and methods used in small scale placer mining operations in the Yukon. The second, "Early Surveyors in the Yukon", is to record a few chronological notes and scattered memories of my predecessors heard from men who had known them. The third, "The Draughting Division" is written to give a picture of its place in the Survey during my years and some account of its chiefs, notably Mr. Alexander Dickison, and my own dealings with him. The fourth "Field Seasons in the Yukon", comprises verses written for my wife, Violet, and printed privately in 1963 in a limited edition, that tell something of the story of field work.

My gratitude goes to Cliff Lord for his suggestion in the first place and for his support as well as that of the Directorate of the Survey throughout the long time of writing without which the manuscript would not have been accomplished. Also to the cartographers and photographers for their interested help and preparation of the illustrations; to Geoff Leech for reading the whole manuscript in the rough and his persistent encouragement; to Dirk Tempelman-Kluit, one of my successors in the Yukon whose emphasis on the value that the manuscript has been to him in his own field work and in the preparation of his reports has supplied a substantial urge to keep on. But above all to Violet whose quiet, unselfish support throughout the years of field work and the writing of the manuscript made it possible.

# PART 1: SOUTHERN BRITISH COLUMBIA

## CHAPTER 1: THE SEASONS 1924 TO 1930

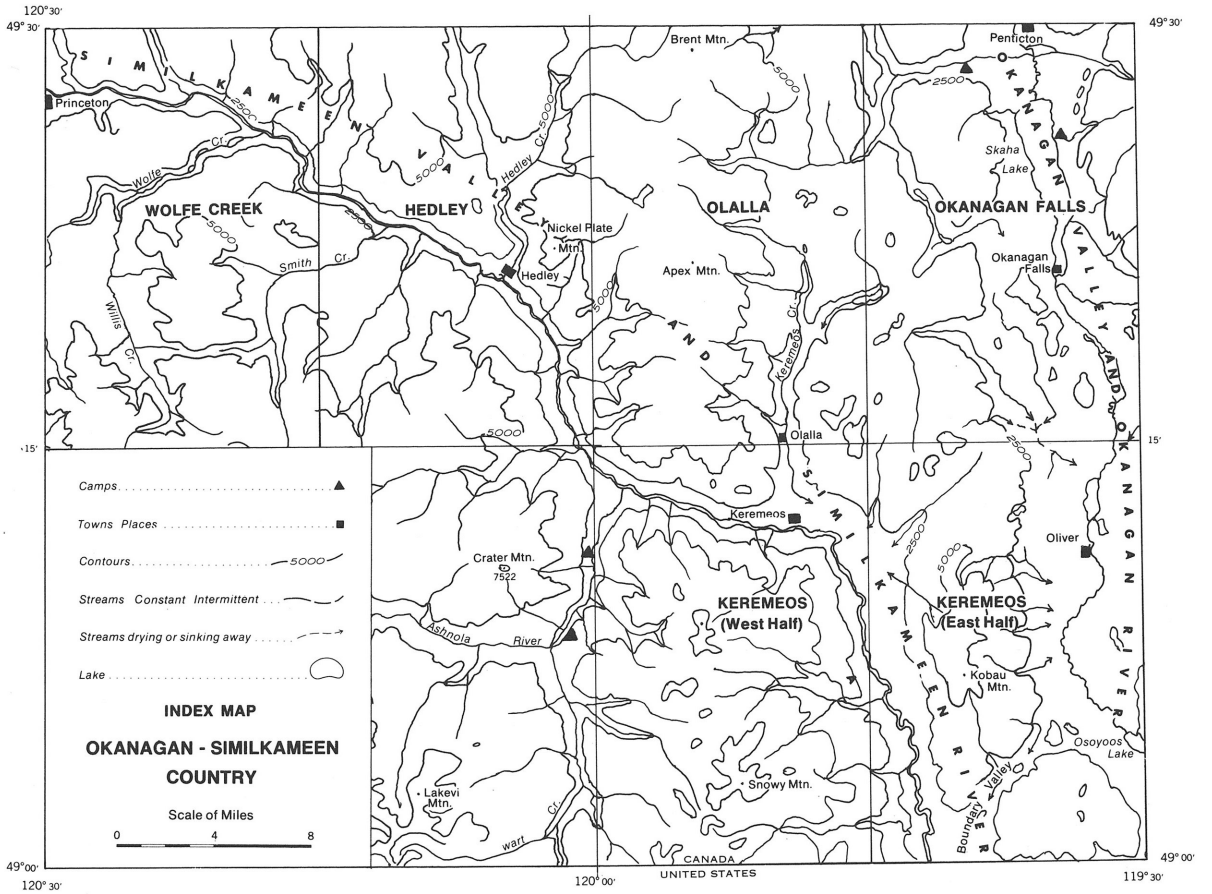
### Section I: 1924, The Windermere Country

After graduating from R.M.C. in 1922 I did not know what to do. I met Mr. Randolph Bruce, later Lieutenant Governor of British Columbia when he called on Father in Ottawa. He said "Why not take Mining Engineering at university. That will give you a broad foundation and you can branch into civil, electrical and metallurgical engineering or even geology afterwards if you want to. Come and see me at Invermere, B.C. this summer." When I arrived there he sent me up to the Paradise Mine where I happened to meet John F. Walker, a graduate student in geology at Princeton University. Walker was in charge of a Geological Survey party starting the study and mapping of the Windermere area. He invited me to supper at his camp, 2½ miles away, and told me how to find my way there. I accepted and so had my first contact with the Survey. In the summer of 1923 after taking a 3rd year in Mining at McGill I was still undecided. I worked at the Sullivan Mine at Kimberley, B.C. This didn't seem my kettle of fish. I thought I would be a trapper and happened to meet one, Albert Hall who invited me to spend the weekend with him at his cabin up Mark Creek. I did so. The old fellow talked of all kinds of things including a good deal about his experiences as packer with a Survey party under Dr. S.J. Schofield. That winter at McGill I applied for a summer job as a student assistant on the Survey and in the spring I was surprised and delighted to find Walker had asked to have me. It meant working out West.

On May 20th I arrived at Golden from Ottawa after the usual lonely journey on the C.P.R. I was indeed glad to see Walker on the platform looking for me with two others, Hal (G.W.H.) Norman, a U.B.C. 3rd year student, and George Boggs, the cook. Both had been with Walker the year before. After lunch we took the train south to Lake Windermere station and thence we travelled by car to Invermere and after supper in the very nice hotel, we looked over the equipment left there from last summer. Tomorrow was to be spent bringing the baggage from the station, sorting it all, equipping ourselves suitable, buying food and fixing the horses feet. There were five horses, Snip, Maggie, Jiggs, Buster and Sparkplug. Hal had worked on a farm to earn enough to go to university and could do anything with horses including shoeing. All the horses were quiet except Sparkplug, a mare, who was nervous. Walker issued us with Brunton compasses, aneroid barometers, tally counters, protractors, scales, topographical maps of the area, notebooks, geological hammers with straight 18-inch handles, heads weighing one pound with square faces and wedge-shaped backs and rucksacks. Guilelessly, I asked how many hours we were expected to work each day and he said "twenty-five". I found this was sometimes true.

The morning of the second day we packed one horse and loaded the rest of the things on an old buggy and set out eastward from Invermere. Hal and I rode the other two horses and Walker and George drove in the buggy with Maggie and Jiggs as the team. We crossed the Columbia River at Athalmer and turned south and then southeast to a ranch, owned by a Mr. Moorland, where Windermere Creek comes out of the Brisco Range, the western front range of the Rockies. The floor of the Rocky Mountain Trench was typical dry belt country and the fields we passed were irrigated. We had lunch and, leaving the buggy at the ranch, packed the things that we had brought by buggy on the four unpacked horses, using the two stock saddles Hal and I had been riding. Walker then led us up the trail up Windermere Creek followed by Buster, Maggie, Jiggs, myself, George, Snip and finally Hal, leading Sparkplug. The creek valley was steep sided and closed in on both sides as we left the Trench. The trail was well made and followed the steep north side about four miles to a place where the valley floor widened and a small terrace that projected into it gave a level place to camp on overlooking a little sinkhole lake with a meadow around it. This was a small but ideal campsite for us. A few grouse were all the wildlife we saw but we could hear them drumming all along the valley. The creek water had so much lime in it that sticks reaching into it along the bank were crusted over; it was icy cold and looked deep blue in the lake. The horses were unloaded and the two tents, one for sleeping and one for cooking, were immediately put up. George set about at once to prepare supper. Hal and I cut wood and fixed up the camp. All the saddlery was put up on a horizontal pole to keep mice and porcupines from chewing it. This was regular practice throughout the season. After supper and a game of bridge we went to bed at 9. This had, indeed, been a day of instruction for me, notably in packing the horses. For the first time I saw Snip walk logs lying along side the trail, a thing I found later he took every opportunity to do, stepping up onto them, placing one foot in front of the other to the very end where they were often only about 8 inches in diameter. He frequently had a steep hill side below him but he never slipped. I have never seen another "log walker". Originally he had been a pet saddle horse.

In the sleeping tent Walker had his bed innermost, under the screen window, then Hal, then myself and finally George, who always got up first, at the door. This was a very economical system in tents but proved exceedingly stuffy as George was afraid to have any part of the door open in case of bear, porcupines and other animals. Later I made up my mind I would never subject myself or anyone else to this if I could help it. The cook tent had one normal end with a doorway and the other end was clipped in. One of my first jobs in camp was to remove the clips and sew in the end except for the lower part of one side for use as a doorway. We always carried a four-hole, solid sheet, iron camp stove, roll top pole table and four little camp chairs. George was a very clean, but limited cook and could not bake bread. Instead he made a baking powder loaf of whole wheat flour and raisins, referred to as "bulldog". It was very sustaining. Breakfast, normally at 6:45 a.m., was of baking powder hotcakes of whole wheat flour with canned salt butter and syrup made of mapline and brown sugar. We were


120° 30'
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SIMILKAMEEN VALLEY
Princeton
Brent Mtn.
Penticton
OKANAGAN VALLEY
Skaha Lake
Wolfe Cr.
WOLFE CREEK
HEDLEY
Hedley Cr.
Nickel Plate Mtn.
Hedley
OLALLA
Apex Mtn.
OKANAGAN FALLS
Okanagan Falls
Smith Cr.
Willis Cr.
Keremeos Cr.
Olalla
15'
Keremeos
Oliver
Crater Mtn. 7522
Ashnola River
KEREMEOS (West Half)
KEREMEOS (East Half)
SIMILKAMEEN RIVER
OKANAGAN RIVER
Kobau Mtn.
Osoyoos Lake
Boundary Valley
Lakevi Mtn.
Snowy Mtn.
Cr.
CANADA
UNITED STATES
49° 00'
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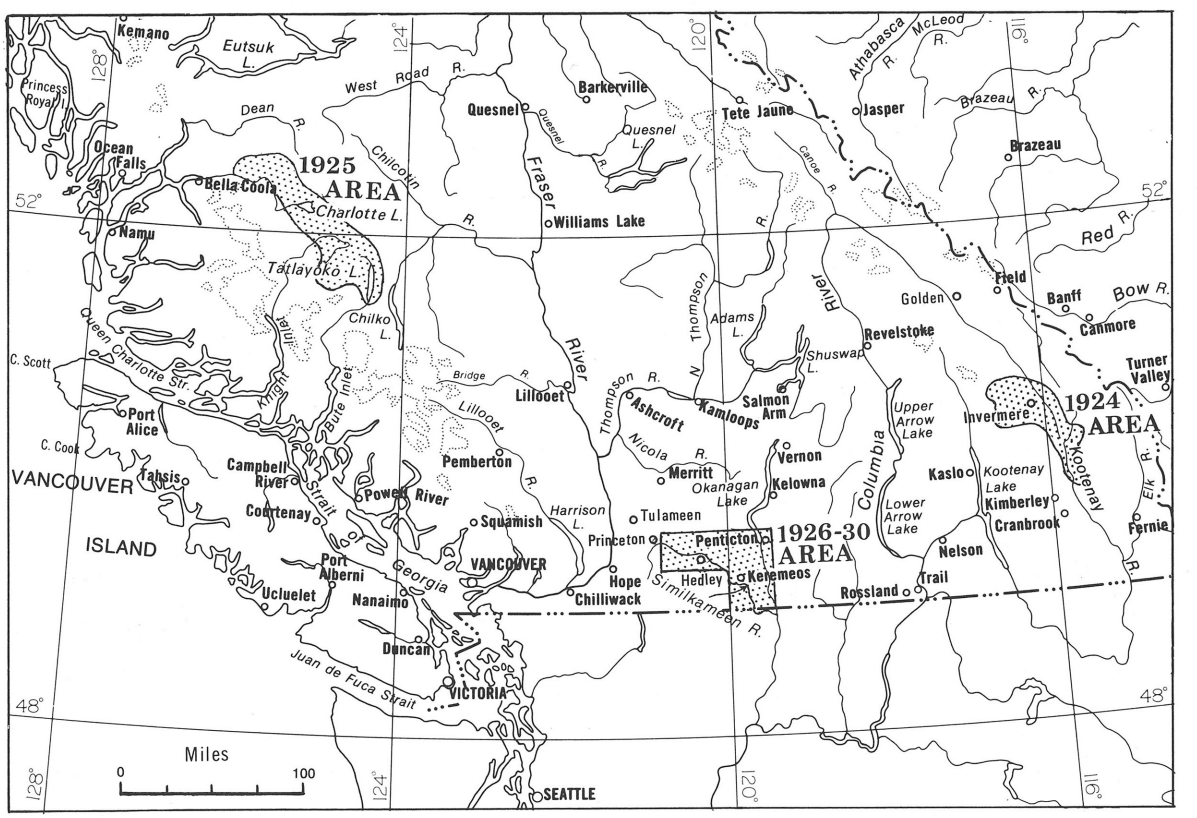
119° 30'
Camps
Towns Places
Contours 5000
Streams Constant Intermittent
Streams drying or sinking away
Lake
INDEX MAP
OKANAGAN - SIMILKAMEEN COUNTRY
Scale of Miles
0 4 8


Kemano
Eutsuk L.
Princess Royal I.
West Road R.
Dean R.
Quesnel
Barkerville
Quesnel L.
Tete Jaune
Jasper
Athabasca R.
McLeod R.
Brazeau R.
Brazeau
Ocean Falls
Chilcotin R.
1925 AREA
Bella Coola
Charlotte L.
Fraser R.
Williams Lake
Canoe R.
Red R.
Namu
Tatlayoko L.
Chilko L.
Field
Golden
Banff
Bow R.
Canmore
Revelstoke
Shuswap L.
Adams L.
Thompson R.
Queen Charlotte Str.
C. Scott
Jarvis Inlet
Knight Inlet
Bute Inlet
Bridge R.
Lillooet
Thompson R.
Ashcroft
Kamloops
Salmon Arm
Upper Arrow Lake
Invermere
1924 AREA
Turner Valley
Port Alice
C. Cook
Pemberton
Nicola R.
Merritt
Vernon
Okanagan Lake
Kelowna
Columbia R.
Kootenay R.
Elk R.
Fernie
VANCOUVER ISLAND
Campbell River
Tahsis
Strait of Georgia
Powell River
Courtenay
Squamish
Harrison L.
Tulameen
Princeton
Penticton
1926-30 AREA
Kaslo
Kootenay Lake
Kimberley
Cranbrook
Lower Arrow Lake
Nelson
Port Alberni
VANCOUVER
Hope
Hedley
Keremeos
Trail
Ucluelet
Nanaimo
Chilliwack
Similkameen R.
Rossland
Duncan
Juan de Fuca Strait
VICTORIA
SEATTLE
Miles
0 100
128°
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120°
116°
52°
48°

allowed as many hotcakes as we could eat, one to start on, one for each thousand feet we expected to climb, with several to stop and start on during the day. This generally amounted to 8 or 10 and they weren't small, thin hotcakes either. Our lunches were of bulldog, butter and jam sandwiches and we often took a quart water bottle between us. After a trip to town we had some fresh meat but throughout the main part of the season we had either fried ham or bully beef for meat for supper with potatoes and such vegetables as we could get locally, generally roots of some kind. Desserts were stewed prunes or dried apples, except on moving days when as with the bully beef, one can of fruit was shared between the four of us. The only thing we could fill up with as we liked at supper was bulldog and butter. George had everything worked out in great detail, almost to what we were going to eat for every meal, before we started on a trip. We were to work the dry hot country where the climbing was least, 1500 to 2000 feet per morning, in the cooler weather of June and then gradually progress as the heat came on, to higher country, where it would be cooler and the morning climbs would range up to 4000 feet or so in the Purcell Range. Walker worked out how many days we would probably lose due to bad weather in each part of the area. We generally climbed at about 1000 feet per hour including stops at outcrops and for writing notes. He was very particular about detail and things had to be done just right, however, as he was also patient he was an excellent trainer. As I was the new member of the party, blame for what went amiss fell on me, particularly in George's eyes. My wages were $2.50 per day, with food, shelter and transport in British Columbia. I had brought for bedding two double Hudson Bay blankets and Walker supplied me with a 7 x 4 foot tarpaulin, pack cover and rope to tie them up like a parcel. We provided our own clothing, and boots were the most important and costly item. We wore 8-inch miners' hobnailed boots with horseshoe heel plates and sole leather counters around the heels, a very vital protection on the rock slides.

Returning to Windermere Creek, here we were in Paleozoic sediments and we spent much of the time hunting fossils, brachipods, trilobites and graptolites. These were the hard remains of some of those little creatures, unheard of by most laymen but which are of such vital importance in the understanding of geology and so the finding of the oil and coal that are the basis of a high standard of living. For us the graptolites, whose remains appeared like pieces of fern leaf, were perhaps the most important. We packed hundreds of pounds of fossils into camp.

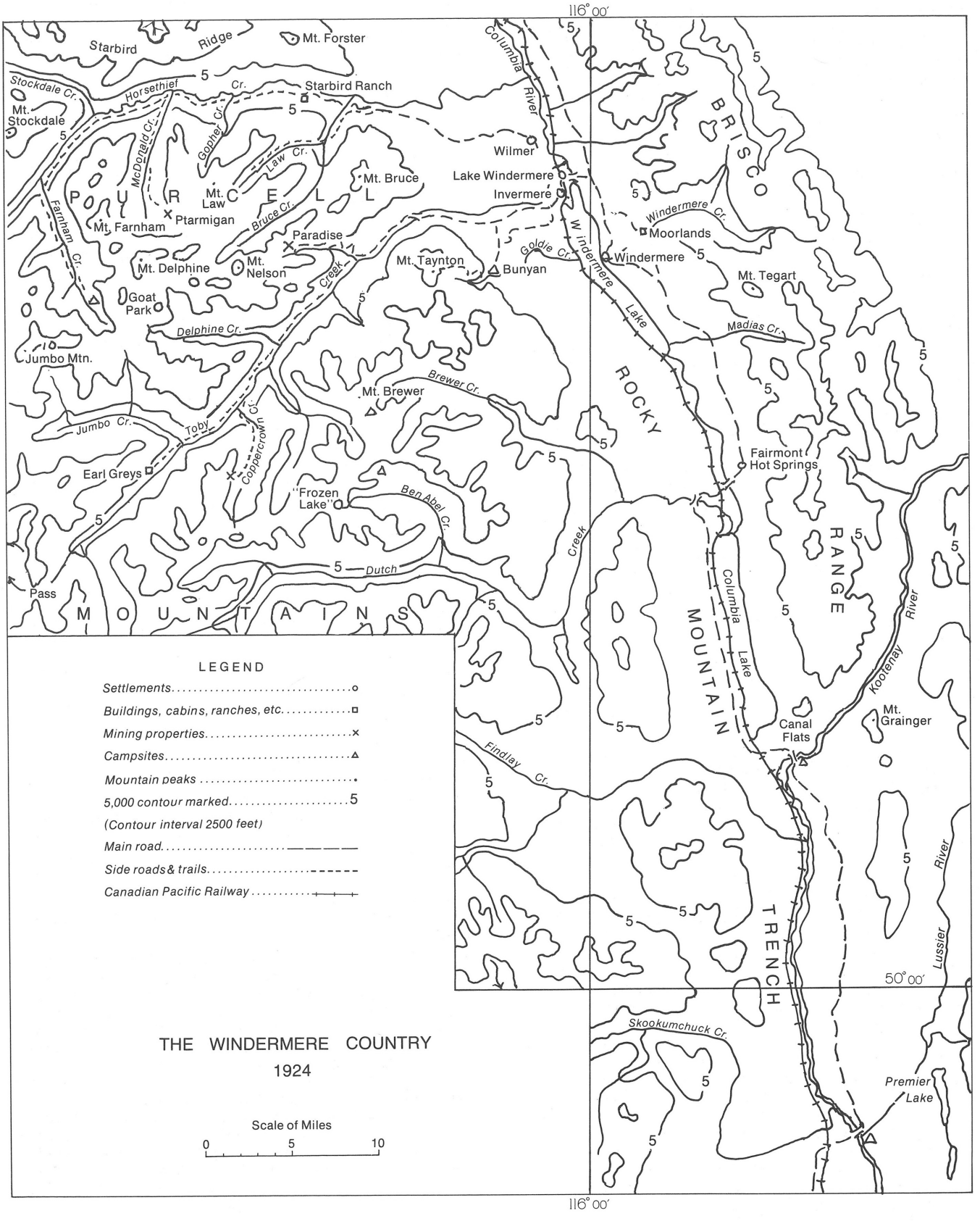
On June 1st, I had a good bath in the creek, the first since we had been in camp, and washed my clothes. After a few days we moved back to the ranch where we had left the buggy and traversed in the afternoon and the following morning. Then after lunch Hal and I drove into Invermere to ship the fossils to Ottawa and return with mail, some more equipment and supplies. I had graduated in Mining Engineering from McGill despite my misgivings and received telegrams of congratulations from Father and C. Howard Gordon who had helped me so much in studying for the exams. I had already decided the Geological Survey was the place for me if I could make it, however long the path might be. I wrote to Dr. J.A. Bancroft, Professor of Geology at McGill to ask if I might return to try for my M.Sc. in Geology there. In Invermere I bought a dozen bottles of beer to take to camp. The day was hot and Hal and I consumed half of these as the team jogged slowly along. At camp we delivered everything in order as we had been instructed, but Walker gave me a wondering look and George appreciated his beer.

In this part of the area during June the brush was full of wood ticks and we had to look over each others backs every evening to pick them off. Luckily none had bitten in enough to be difficult to get out which was a wonder. The vegetation was very varied there. A great number of different flowers were out; the open sunny hillsides and flats, the moist creek bottoms and the high mountain slopes all had their own species. The most amazing variation to me was the stands of cedars in the moist, narrow creek bottoms and then a few miles away the cactus on the dry floor of the Trench. There was also a great assortment of birds including willow, and blue grouse. Signs of animals including mule and white tailed deer, elk, caribou, goats, black and grizzly bears, porcupines, coyotes, and small life were all seen in their own habitats. As the weather was getting hotter, the dry-belt character of the lower mountains and the Trench floor became evident. The views of the great peaks of the Purcells with their glaciers on the west side were magnificient and enticing.

Some of the first hot climbs are remembered by our being at them for a long stretch. My heart pounded and pounded, though the pace was not fast. If only an outcrop would appear and bring this up, up, up through the forest to a pause. How could Hal go on flitting around?

June 11, packed up and started looking for the horses which we finally tracked down about noon. They were mixed with a number of range horses including a young stud. We moved 12 miles north towards Radium Hotsprings, camping by a little creek where it came out of the range. After a few days traversing in the mountains we moved south to Dutch Creek to a poor dusty campsite close to the road and worked around Fairmont Hotsprings. The timber on many of the lower slopes of these mountains at this time was virgin as there had been little logging and few fires there. On June 19th I broke the handle of one of our two axes. On June 27th I had my first traverse alone and as I wound my way back to camp through the forest a breeze was blowing. Suddenly there was a deep groan behind me that made me jump and my hair tingle. I spun around. There was nothing to be seen but it came again and I was standing beside a dead great tamarack that leaned against another and uttered this sound as they swayed in the wind. Two whisky jacks were my only companions.

Hunting the horses, which generally meant tracking them as they wandered quite a bit, frequently fell to me and I wasn't much good at it though hobbled horses make a track anyone should be able to follow. So often Hal seemed to find them in a short time when I had failed after hours. On one of these hot, still, dry belt days when camp was on the floor of the Trench and it was my turn to watch them I tracked them through open park-like douglas fir and bunch grass country to a broad shallow valley containing a few big firs and two or three little dense clumps of young ones up to twenty feet high. The horse tracks were all over here where they had been grazing and though I could see every part of the valley there was not another sign nor sound of them. I circled the whole valley but no tracks led out of it. I tried a wider circle, no better luck. Then returning down along the valley to




LEGEND

- Settlements ..... o
- Buildings, cabins, ranches, etc. ..... □
- Mining properties ..... ×
- Campsites ..... △
- Mountain peaks ..... •
- 5,000 contour marked ..... 5
- (Contour interval 2500 feet)
- Main road ..... ———
- Side roads & trails ..... - - - - -
- Canadian Pacific Railway ..... +—+—+

THE WINDERMERE COUNTRY

1924

Scale of Miles

0 5 10

where I thought I had seen the freshest tracks, I glanced at one of the clumps of little firs. It wasn't big enough to hide a single horse let alone five. But a moment later one faint "tink" of Sparkplug's bell came from it. They were all standing motionless in the centre of it, packed head and tail like sardines in the shade to escape the sun and the flies.

The routine plan of work was generally that Walker and Hal traversed while I stayed in camp, watched the horses, mended the equipment, cut firewood, washed clothes, darned socks, wrote letters, repaired hobnailed boots while George, who was always spotless, told lewd but somewhat humourous stories of life as a purser on tourist boats plying between New York and the Maritime Provinces. The country was very hard on our boots. In Invermere we bought large Swiss hobnails to guard the edges of the soles. Towards the end of the season the soles of my lovely, hand-knitted, heavy woolen socks, which Mother had given me, wore thin and I darned the whole length of each sole making them better than when new. The next spring when I wanted them I found she had taken a pair to Ottawa to exhibit at tea parties as she said she had never heard of such darning. But returning to the routine, Walker took me out the second day and Hal and I traversed the third day so that normally, weather permitting, each of us had every third day in camp unless some particular traverse or a move was to be made. Conversation around the supper table, besides geology, covered about everything, Walker and Hal knew of the country, its early explorations, inhabitants, history, alpine climbing, game animals so that by the end of the season we all had a fair grasp of our combined knowledge. This included such things as the drowning of Dr. C.W. Drysdale and his assistant W.J. Gray in July 1917 in the upper Kootenay River in the Rockies. A full description of this tragic accident is given in the bulletin of the Geological Society of America. A lesson from it is, when being carried into a rapid don't strive for the bank where the undertow is, keep out in the stream. The wading of streams was another subject and it brought up the system described by R.G. McConnell in one of his reports where his party walked abreast across the streams all holding onto a long pole. If the upstream man was swept off his feet he hung on and broke the force of the current for the others. Naturally I listened most of the time. There was a story in the country of the wrecking of a circus train on the main line C.P.R. Among the animals lost were two Tibetan camels. It was said that their tracks were seen at times in the Rockies for some years later. Certainly such animals would seem suited to this region.

June 29th, we moved to the abandoned Bunyan Mining camp on Goldie Creek southwest of Invermere. This was a group of log cabins and board tent frames in a clearing in the forest at the foot of the Purcell Range that there formed the steep west wall of the Trench. We pitched our tents on two board platforms. The next day Walker, George and I drove into Invermere where Walker bought a gallon of Taragona wine which we brought back to camp to celebrate July 1st with.

The weather had been terribly dry and hot. Hal had spent the day getting everything prepared for a very early start on the morrow. We planned to follow the steep, switch-back trail that went straight up the southeast spur of Mt. Taynton. This would mean a climb of 4000 feet for us and the horses under the direct rays and heat of the sun so we were to rise at 3:00 a.m. and get off as quickly as we could.

After supper we sat around the table in the cook tent sipping the wine from enamel bowls we used as cups and as time went on the level of the wine dropped below halfway in the bottle. George remarked that it had a delicious flavour but certainly no kick at all. A little later he said that he had to bake a bulldog for lunches tomorrow, got up from his chair, put a piece of wood in the stove and in a moment he was drunk. There he sat on the stove, laughing like a fool, the smoke rising from the seat of his scorching trousers. Hal got up to get him off the stove and was gone too but luckily George fell off the stove. Walker and I didn't dare move while Hal wrestled with George on the floor trying to get him up. After a minute or so they got to their feet and staggered out of the tent together. George fell over, sprained his ankle and lay between two stumps. Finally Walker and I had to get up. He had not taken as much of the wine as the rest of us and wasn't so bad. I was very sick, and so got over it quickly. We found George in the dark as he kept calling out, got him to bed, and then settled Hal who refused to go to bed in a chair in the cook tent. There his usual reticence gave way to calling out in a loud voice quotations from classics. Later this changed to poetry and then turned to comments, largely on the subject of Walker, who was still a graduate student at Princeton, having received a letter addressed: "Professor J.E. Walker". He made a great joke of this. Each time he shouted this out the coyotes around the clearing attracted by the noise endorsed his views with their chorous of howls. Finally he got up from the chair and fell on the ground where gazing up at the stars he kept repeating "The world is going round and round and round", until he passed into oblivion. We got him to bed and so the dawn came.

Needless to say we didn't move that day, but the day after we left George who had sprained his ankle with the cook tent and stove at the old mining camp. We put the gallon bottle containing the remainder of the wine on the table in one of the log cabins. Walker, Hal and I packed the horses with the sleeping tent and ten days' supplies for the three of us, climbed the terrific switchback trail to Mt. Taynton and they travelled southward right along the tops of the ridges that are largely of soft slates to the head of Brewer Creek. The climb was blisteringly hot under the sun and it took us all morning going up. The horses had to be watched and rested at intervals. But once on top in the breeze we travelled easily along the winding ridge with relatively gentle undulations between 7500 and 8500 feet. We camped that night beside a meadow in a large basin near the top of the timber which was here about 7800 feet, the feathery mountain tamaracks being the highest tree. The following day we moved around the west slope of Mt. Brewer into the head of Benabel Creek. There were old, deeply worn game trails along these ridges which formerly had been used by caribou. All we saw were a few big mule bucks. Camp that night was open at 7700 feet. The tent was pitched by stretching it between two upright poles guyed and anchored by rocks. To stop it from blowing away, we laid rocks all around the walls inside the tent and the side guys too were anchored to rocks. The wind was bitter and howled down the slope behind upon us. Cooking was done on a stone fireplace in front of and sheltered by the tent.

We traversed for two days and on the third morning Walker and Hal traversed southwestward and I was left to find and round up the horses that had disappeared into the lower timbered part of the basin and to get supper. It took me all morning following the horse tracks down the basin through the timber and bringing them back. Then I retired inside the tent to keep out of the bitterly cold wind to eat my lunch. I had hardly taken a bite when I heard Walker outside shout that we were going to pack up at once to move back, which we did. He said that he had found out all he needed from on top here. We started back the way we had come and then turned down into a small upper cirque on the east side of Mt. Brewer, 9146 feet. On the west stood its pyramid-like peak with snow drifts at its base ending in a blue tarn fringed with open tamarack forest. Here Walker had camped last year. It was a beautiful spot and the elevation a little above 8000 feet. I have never slept so high in my life again nor seen forest so high in Canada. Coming along the ridge south of Mt. Brewer we had been in a strong icy wind but here we were in a well-sheltered nook. Walker said as the trip had been cut short I could cook as much as I liked. I sliced up 6 potatoes and 6 large onions mixed them with a can of beans and one of bully beef. The big frying pan was piled high and the mixture had to be stirred constantly on the open file. The hot juice from a large can of peaches was used to dissolve a packet of lemon jelly and was poured into the aluminum bowls we used for dessert with the peach halves in them. These were put in the pond to harden. This was the normal ration for two suppers. We ate every bit of it. Afterwards I hung the wet dishcloth over my folding chair to dry before the fire. While one side dried the other froze. I had only a flannel shirt on. I never enjoyed a meal more in my life. Late the next afternoon we were down at the Bunyan, and George was delighted to see us though we were sorry to have left this most lovely part of the map area. His ankle was better and despite his taste for tipling, the wine was as we had left it and may be there yet.

The following morning we spent resorting everything and in the afternoon the others drove to Invermere and returned after dark. Then we moved up Toby Creek to the Copper Crown Creek taking the buggy to the end of the road, about three-quarters of the way, after which George rode Buster. The waters of Toby Creek come from several glaciers so they are silt laden and may rise 2 feet or more on a hot day, to drop again during the night. Walker and I went up Copper Crown Valley to see Murdock McLeod and his claim. He was a little man in his late sixties. His arms were thick and muscular and his chest was like a drum, as often seen in people who have spent much of their lives in mountains. His cabin on his claim was near the top of timber close to his workings. Here he had some small saddle veins of high grade silver-lead ore carrying as much as 45% lead, and 23% copper, 100 oz. of silver and $20.00 in gold. This he blasted, dug out, picked over and sacked for packing on horses in the fall to Invermere. For a few horse loads he received $400.00 or more after freight and smelting expenses. As it cost him less than $350.00 a year to live he saved a little and felt well off. He was healthy and happy, enjoying his lonely summers in the mountains and spending his winters in his cabin in Wilmer where he had friends. He said he had staked his claims in 1899 having backpacked over from Kootenay Lake through Earl Grey Pass. Walker invited him to supper and he came down with us and spent the night in his other cabin nearby. He said that this year there were 14 grizzlies in his valley and he referred to them all by name. He kept away from them when he could and they didn't bother him around his claim. It was when he was on the trail that he saw them. They had different personalities. Some ignored his passing. Others were nervous and always ran. One or two expected him to clear out of the way. Some were just lazy. Sows with cubs were to be avoided. The number in the valley fluctuated from year to year. The 14 this year was about a maximum but one year there had been only six. There were some old regulars and some came and went. This spring on the trail he had seen the body of a very light coloured animal partly hidden a short distance away and thinking it was a goat got his .22 rifle ready to shoot it when suddenly it stood up. It was a grizzly and he said it looked as big as a Clydesdale. On trees here and there along his trail McLeod had nailed slats so that he could climb them quickly if he met a grizzly.

It was in this valley that Mr. K.G. Chipman of the Topographic Division of the Geological Survey was mauled in the summer of 1912 by a grizzly with cubs. While his assistant made camp he climbed the ridge behind it to a large open slide area. After looking for triangulation and camera sites for about 30 minutes with his field glasses, he heard a thud above him and saw a grizzly charging him. He had a .303 rifle with him which he picked up and started to run. He saw he was between the bear and her cubs. The bear grabbed him above the knee and he went down and she let him go. He fired a shot, fortunately missing her and she grabbed him again, this time below the knee. He was wearing army type leather leggings with a strip of steel down the front and this saved him from serious damage to his leg. He then lay still. She nosed him and then left him and chased her cubs. He recovered and was appointed Director of the Surveys and Mapping Branch of the Department of Mines and Technical Surveys in the 1940s and retired in 1949.

From this camp we moved up to Earl Grey's cabins which had been built 10 years or more before, as a summer resort for him when he was Governor-General. The country had been burnt off a few years later but the clearing around the cabins had saved them. Now the second growth was coming up and spoiling what must have been a wonderful view. A trapper used one of the two cabins and last year had told Walker that the winter before he had been snowed in, run short of food and reduced to eating a wolverine that he had trapped. One would think only a skunk could be worse. The cabins were well built but the roofs had begun to leak through neglect and the walls needed chinking. We put the cook tent up inside the living room of one of the larger cabins. From here we visited various abandoned silver-lead prospects as well as mapping the geology. There were a number of fair trails leading to the different groups of claims.

On July 21st we left Earl Grey's cabins and moved to another abandoned mining camp, "The Hot Punch". George walked as his ankle had recovered. The buildings at this camp had been kept up well and one cabin was particularly well furnished. It was here that the leading lady had stayed during the filming of "Unseeing Eyes" in 1923. This movie was based on the book "Snow-Blind".

Walker and I visited the Paradise Mine at 8000 feet, and a prospect near it, going up in the ore truck, a ten ton White truck with wide solid rubber tires on the wheels. I was glad to see old Mr. MacDonald, the manager, who in 1922 had given me my first lesson on how to walk up a mountain. He had also told me how nice it was working up there in the winter as it was so much warmer than down in the valley at Invermere during the still cold weather, a feature true of nearly all hill and mountain areas. Mr. MacDonald drove us down to Toby Creek on his way to Invermere. This was in a model T Ford and to preserve the brakes, each time he drove down the tremendous hill from the mine at 8000 feet to Toby Creek at 4000 feet, he cut a douglas fir about 6 inches in diameter at the top of timber and dragged it with a chain, top first, down behind the car. He had accumulated quite a pile of dead trees beside the road, at the bottom by this time. The butt ends of these trees were worn about half through from their abrasion on the gravel road.

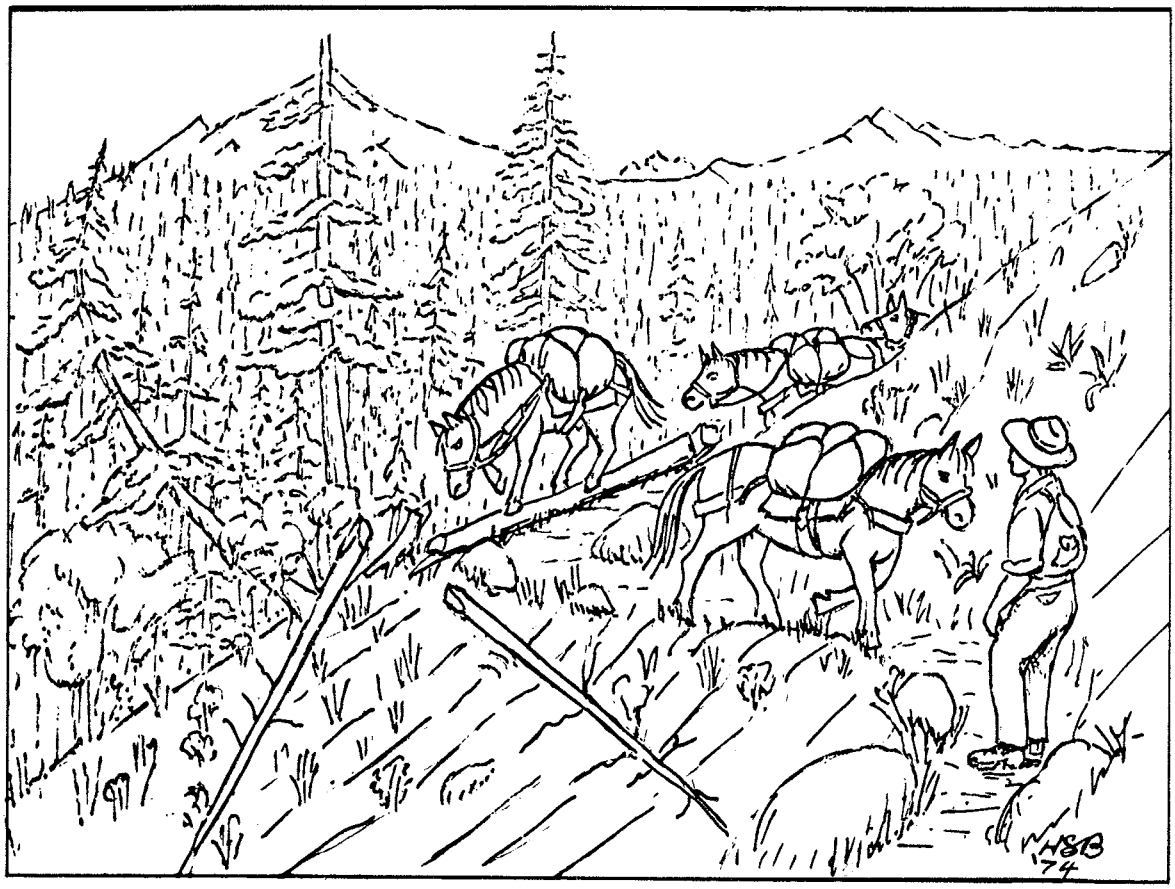
July 27th Hal and George moved to a campsite beside an irrigation ditch about a mile west of Invermere. Walker and I surveyed the road, omitted on the map. I called on Mr. Bruce and had supper with him. He had been almost blind for many years and was entirely dependent on his housekeeper-secretary. It was amazing, however, what a grasp he had of everythink and how he could judge people. His wife, Lady Bruce, a titled lady in her own right had died at Invermere and she had been buried in their lovely garden sloping down to Windermere Lake. When I had visited him in 1922 he had sent me to sleep in a cabin of an old paddlewheel steamboat moored in the lake at the end of the garden on the east side. Here one had all the usual facilities of steamboats, except water laid on, but one could dive off the deck into the lake. On calling at the place in 1973, I found that Lady Bruce's grave was still tidyly kept and the lovely garden had been turned largely to lawn. The beach at the foot was fenced off and public. The old steamboat had long since gone. The property which was left to the municipality for a hospital, was now a home for retarded women.

On the 30th we set off for the big country up Horsethief Creek and camped on the Starbird Ranch. It had been quite an establishment, developed as a halfway base for the wagons hauling equipment and supplies in and ore out from the Ptarmigan Mine. The board barn still stood on the north side between the road and the creek, which could qualify for a small river here. At the foot of the mountain slope on the south of the road opposite the barn the house had stood with a terraced lawn on the west. It had been burnt down when a forest fire had swept the mountain side. A small stream coming down behind the house had been diverted into a ditch on the upper side of the top terrace which was a lovely campsite for us and there we pitched the tents. Both sides of the creek bottom had been cleared for hay meadows but the bridge over the creek had rotted and collapsed. Stepping out of the tents one commanded a grand view north across the valley to the Starbird Ridge and Mt. Forster at its east end.

On July 31st Walker and Hal crossed the Horsethief in a canoe borrowed from a prospecting family named Larabie and discovered the Precambrian overthrust eastward onto Paleozoic. This was a great find and they were much elated. The next day Walker and I explored the east end of the ridge. We carried packs and a fly for a trip of two nights out. The two teenage Larabie boys helped us up with our packs. Being brought up in the mountains they could outclimb us anytime. We chose a spot for the night and, leaving our packs, traversed east along the ridge to the top of Mt. Forster - 8400 feet. To our surprise we found that the mountain top was composed of Paleozoic formations of the Rockies and that they contained some rich fossil horizons. We returned to our packs for the night and where a prospector had had a hole we dug a small level area with our hammers big enough for us to sleep on without sliding down on the mountain side. Our fly was erected on poles over it. The fire was on the lower side of our area. Supper was of both beans and bully beef and was most welcome. We were up and off again by 7 a.m. and heading west this time along the ridge. As we found the day before that the ridge extended across the strike of the formations, we were able to obtain a good idea of the section of the sediments. There was also a large flock of mountain goats and the old ones helped the young ones up the rocks with their noses. As all the ridge west of us was Precambrian and we were soaked by heavy rain we returned to our packs. When the rain stopped we filled our packs with all the fossils we could carry and started down and back to camp. This was my first experience in packing a heavy load down a mountain side and I kept falling down. When we reached the creek the canoe had gone. We spent the night there in a cabin of the Larabie's. It was untidy but dry and stocked with food. The next morning I occupied myself by whittling a paddle from a piece of wood while we waited. Hal turned up in the late afternoon and we were back in camp by 6 p.m. He only brought the canoe for us because it had rained. The Larabie boys had mixed up the message Walker had asked them to give him. Walker employed the two Larabies to help us bring down the rest of the fossils we had collected and after that on August 5th we moved up the valley to a little below the mouth of Farnham Creek.

Camp here was right on a low part of the bank that had been flooded during the hot days in July but there wasn't much space anywhere else so we took a chance. Horse feed too was poor though there was lots of goose grass which, having a silica rather than a lime base, is said to be bad for horses. The next day the others went up to the "Lake of Hanging Glaciers" and came back disappointed after the spectacular accounts of it that were going around. It is a small, deep lake in a steep-sided valley with several glaciers around it one of which ends in it. At times bergs float down and block the outlet raising the lake level 20 feet or more by the marks on the shore so that when this ice dam gives way a flood goes down the Horsethief. I cut a trail to a slide sweep where the grass was good and drove the horses up there. The others came in late. They had had a very long, hard day as they had had to climb up 3500 feet or more and 25 miles there and back without much trail.

The following day I was sent up Farnham Creek to find our next campsite which was to be near the head of the valley. There was a good trail as there had been a number of prospectors up it. The only difficulty I found was that I had to wade the creek. It was the first stream of this kind that I had ever waded and I was nearly swept off my feet. After a while I came to a small slide sweep at 5500 feet which was about where Walker wished to camp on the



"Snip" "The Log Walker" 1924

southwest spur of Mt. Delphine, 11076 feet. Returning to wade the creek from the west again I found the warm day had brought the water up a foot. Profiting by the morning's experience I found a stout pole to lean upstream on, filled my rucksack with rocks for more weight and crossed successfully. The Farnham valley was practically all virgin timber while the forest of the Horsethief and Stockdale valleys had been deliberately burnt by a prospector named Gallop to make it easier for him to see the outcrops. This had been about 10 years before but most of the trees were still standing. Except in the grove preserved on the road to Alberni on Vancouver Island I have never seen trees such as some of the great towering gaunt skeletons here must have been. Gallop's fire destroyed far more value in timber than mining could be expected to yield in this area. The next day Walker and Hal traversed up the Horsethief over the shoulder of Mt. Stockdale, 10100 feet.

On the 10th we moved to the place I had chosen on Farnham Creek. On the way into Farnham valley the trail led through a gap known as "Gallop's pass" between a cliff and a great rock with forest all around. This gap was just wide enough for all the horses except Sparkplug to get through and she had to be unpacked on one side, the pack carried through and put on her again on the other side. When we came to ford the creek Hal started straight in, leading Buster and was swept off his feet but caught Buster's tail. Then he and Walker crossed holding onto the horse's tails. I crossed as I had coming back before, and was the driest. Walker told me I should not have crossed this creek alone which rather tickled me as he and Hal had talked so much of their experience in crossing creeks. At our new camp we had to block the trail, for although the grass was plentiful and good the area was small. August 12th Walker and I went along the divide at 9800 feet to the Delphine Creek watershed. This was the highest point I have ever been on foot. At the top we could see big unmapped peaks all along the western horizon and a great conical peak about 15 miles north of us. By taking vertical angles and estimating the distance we made its elevation 11200 feet. There were flocks of goats in the large cirque with a lake in it below us on the southeast, which was known locally as "Goat Park" but also renowned for grizzlies. On the way back we looked at Gallop's prospect where the addit was filled with ice and then walked over to see the snout of the glacier at the bottom of the large icefield on the north slope of Mt. Jumbo, 11217 feet. We were certainly among the big stuff here with several peaks around us higher than 11000 and Farnham, 11342 feet, the second highest peak in Canada south of the C.P.R. towering up to the northeast. The trees on the moraines at the front of the glacier diminished in size as it was approached, evidencing its rapid retreat. Again I broke the handle of one of our two axes again at this camp, much to Walker's disgust. As Walker had estimated, we had on the average two days' rain here in every three. The wet days and evenings were spent largely on repair jobs and writing letters. Our heavy hobnailed boots needed more constant attention than ever. Hal and I asked Walker if we could take a day and climb Farnham but he said emphatically that we had not been employed to go alpine climbing. It would have been about 6000 feet up from camp but from what we had been able to see would not entail much rock climbing.

We traversed on the morning of August 18th and then started to move back in the afternoon, camping that evening about midway between McDonald and Stockdale Creeks. The next day Walker and Hal traversed across the granite between Stockdale and Horsethief Creeks. Here we saw an old track of a big moose and the fresh track of a young one. The old one was as large as a domestic cow's. Hal rode to town for the mail. The next day we went up Stockdale Creek after crossing the Horsethief on an old bridge of which only the stringers were left. The road was overgrown with brush. At the junction of the creeks an old logging camp remained from before the fire. Stockdale Creek drops steeply in a series of pretty falls over granite to join the Horsethief. An old timber flume had been built around them to bring the logs down around the falls from Stockdale Valley. The first half mile of the road was choked with great fallen trees and overgrown with dense alder brush and then washed out for a distance, beyond which it was covered by another tangle of logs and brush until we came to a bridge where one good stringer was still in place. Beyond this the road was more or less clear of brush but there was still lots of down timber. The valley bottom here widens and we came to another logging camp, big enough for about 100 men, and a good meadow. The cabins were still in good shape except that the doors and windows had been removed. It had been raining for the last hour and when we reached there at 10 a.m. we made a fire in the blacksmith shop to warm and dry ourselves a bit. The camp had a ghostly, desolate atmosphere about it. After lunch we continued up the valley until 3 p.m. The upper part of the valley was less burnt and not much timber had been cut, giving it a wild and natural aspect. The basin on the northeast side of Mt. Stockdale must be particularly attractive. Everywhere we went there was bear sign but we saw none. Hal got back in the evening with the mail, this was the first since July 30th. There was quite a few letters for me including one from Professor Bancroft who, to my delight, said I might return to McGill for graduate work towards an M.Sc. in geology. I had been fearing a contrary answer as I knew I had only got through the exams for my B.Sc. by the skin of my teeth.

The next day was wet but in the afternoon, with a little food, Walker and I walked up the road along McDonald Creek 10 miles and 2500 feet to the Ptarmigan Mine camp at 6600 feet. Here we found a cabin that was still usable and slept the night on a board bunk with some straw on it and ore sacks over us. We stoked the stove by turn but even then we were cold. By 6:30 in the morning we were off climbing up to the mine at 8400 feet. The workings were filled with ice and seemed to lie in a fault zone. Messrs. Farnham and Starbird had invested their fortunes in it and many others in the district invested in its stock. With the road, ranch, mining camp, aerial tramway up to the mine and underground development, $250 000. had been spent on it only to find some $40 000. worth of ore. The company closed down. Starbird shot himself and Farnham was said to have died not long after.

From there we climbed on up to the summit of the ridge and worked along it reaching 9600 feet where we looked down into Gopher Creek on the east and McDonald Creek on the west. The atmosphere was crystal clear and the view in every direction, though varied, was magnificient. Across McDonald Creek to the west the great ridge of Farnham walled off the distance. The face towards us dropped in stupendous precipices, almost vertically, to the cirque glaciers

along the base. If one threw a rock from the summit, after falling clear about 3000 feet it would go bounding down the ice another 1000 to 1500 feet. There can be few such long shear mountain faces in Canada. A mile or so north of the peak itself stands the Farnham Tower sticking up like the funnel of a railway steam engine about 700 feet with vertical walls on all sides, its top, nearly 11000 feet had a cairn on it built by the intrepid climber Konrad Kain and his companions in 1914 who were the first to climb it. A great block of peaks rose northwestward beyond Stockdale and had their summits topped with cloud and unknown peaks continued, the Purcells northward beyond the Starbird Ridge. Directly east was Mt. Law 9746 feet on the north side of its creek and Mt. Nelson, 10772 feet on the south side. To the south and southwest our ridge connected with that including the massive blocks of Delphine and Jumbo. Away, away across the Trench in easterly directions the big peaks of the Rockies formed the skyline on which Assinaboine 11785 feet and the Royal Group were conspicuous. We worked north along the ridge over a bewildering maze of fault slices mixed up with the unconformity under the Toby conglomerate. Three goats were on the ridge besides ourselves and in the late afternoon we faced the worst descent of the season for 3000 feet to the road in the dusk and got back to camp ready for supper about 8:30 p.m.

August 24 was Sunday and we all had it as Sunday together. The following two days Walker took Hal over much the same traverse as he had taken me on the 22nd and 23rd. I traced the granite contact on the south side of the Horsethief, climbing up to 7400 feet. The second evening the others came back with partial agreement on how the faulting went and how the geology should be shown on the map.

On the 27th Walker and Hal planned to cross the Horsethief. Walker tried on Snip but the course was steep, deep and full of great boulders. Snip could not keep his feet among the boulders with the force of the water and Walker got a pretty thorough wetting. It was decided to move back to the Starbird Ranch camp and cross the next day at the Larabie's place to finish the geology on the Starbird Ridge.

On the 28th we were up early and I drove Walker and Hal in the buggy to Larabie's crossing and then started for town but when I had gone a short way I remembered that I had forgotten to put the sacks of fossils into the buggy and had to return to get them. I was at the station just in time to get them off the train, then collected our supplies and mail while the horses were having a feed in the stable and was back at camp in the dark at 8:30 p.m. The drive in and out was 45 miles altogether. The next two days there was nothing much for me to do but shoot some grouse and look over the horses who had good feed here and were little trouble. I picked up the others at 7 the second evening. On September 1st I went up with the two Larabies to pack down fossils from the Starbird Ridge. All was well until we started down but that was an awful tough trip, the worst of the summer for me, and when I reached camp Walker said I had not made the packs heavy enough.

The next day I didn't feel very well but Walker, Hal and I put our bedding on Snip and went up a trail onto the east part of the long spur running out from Mt. Law. Hal brought Snip back from 6400 feet and Walker and I packed on up to 7600 feet. To our disappointment, we could not find any water where we had expected it and we only had our one quart bottle of water for two days. We continued climbing up along the ridge. It was hot and I desperately thirsty. When we got up to somewhere above 8000 feet and were above the timber looking back down into a little basin where there were some trees, we saw something shining like a tin can. Walker looked with his glasses. It was a tiny puddle of water. We promptly shared the water bottle. After a weary day we got back to our packs and took them to where we had seen the puddle. What we found was more than a puddle; it was a pond about 5 yards in diameter, a foot or so deep and little trickle ran out of it. Here some prospector had once camped. We were in our bedrolls soon after dark. It was a very clear night. In the night I got up and going a few yards away I was startled by a loud "whistling cry" almost beside me. I could see nothing in the darkness but believe it was an elk that had come to drink.

We were up, had a couple slices of bulldog, and started down at dawn to the camp where we spent the remainder of the morning packing fossils. After lunch we left George at camp and taking our three bedrolls, a fly and grub on 3 packhorses, drove in the buggy up the road to where there had been a logging camp a mile or so above the mouth of McDonald Creek. There we put the fly to sleep under. The night under the completely open fly in the fresh air I slept so much better than I ever did in the stuffy tent. In the morning Walker and Hal made a section of the granite while I hunted the horses without success. On the way up about 2 miles back we had put a brush fence across the road in a narrow place. There were no tracks down there. There were tracks around where we had spent the night and in places in the bush but the ground was very poor for showing tracks. I was still hunting the horses when the others got back at 2:30. Walker was very disgusted with me for having lost touch with the horses and insisted they must have gone down the road. I argued that it was useless going down there, that they must be somewhere hidden ir the brush nearer camp. Anyway he insisted that all three of us go down the road to the fence. As I had told him, he could find no sign of them having been down there and we walked back in silence. Close to fly camp there were some high stumps left in logging. Hal climbed up onto one, snapping a branch on a small poplar as he did so. There was a loud snort in the brush right behind him. They had been standing there, silently, all along. We were back in camp at 6.

On September 6th we returned to the irrigation ditch camp. It was boiling hot and dusty after the Horsethief country. The next day "Sunday", was spent washing, packing fossils, answering mail. The study of the map-area was virtually finished but accessible areas along the Trench southward offered additional knowledge. On the 8th we moved up Windermere Creek to 5050 feet past our first camp and beyond the edge of the map to hunt for better exposed sections and fossils in the Paleozoic. The day after we were well rewarded in finding a splendidly exposed section of graptolite shales. Here were more than 1600 feet of shale beds with practically every foot swept clean by snow slides in a steep little mountain gulch. The younger and older adjacent formations were also exposed so that the whole bare section was about 2000 feet thick. The only drawback was that it was completely overturned. The following two days the three of us worked on it, Walker at the top of the lower beds, Hal in the middle, and myself on the lower part. In this way Walker didn't have to climb up to us at the end of the day to see what we had found. Hardly a foot of

the section failed to yield some fossil remnants. The vast majority were the graptolites and 21 different species were recognized by Walker on the spot. The third day Walker and Hal explored some of the exposures of adjacent formations and I continued picking away at the lower part of the section in the gulch. On the 13th Hal and I started on a long exploration traverse but on reaching the first summit we saw that our course, as laid out, involved time-consuming climbing up and down over cliffy ridges and that we would not get far. We returned to the graptolite section and spent the rest of the day collecting more fossils from the lower part.

After taking a "Sunday" largely to sort, label and pack the fossils we returned to camp in Moorlands' field.

On September 17th Hal and I rode horses about 12 miles south to Madias Creek. I climbed Mt. Tegart about 7500 feet. How arduous this climb would have seemed in June! Hal climbed the point we had set out for on the 13th. We both discovered good fossil horizons but not the spiral graptolites we had hoped for. Among mine, however, were some specimens of trilobites new to this region including one complete glabella. It was very cold on top. Luckily the horses had stayed near where we had left them and we were only a little late getting back to camp. We all hoped to visit these fossil localities the next day to see what more could be found, but it rained.

We moved to Dutch Creek campsite on the 19th. The snow was down everywhere to 6500 feet. How small the Rockies seemed after the Purcells. The following day we moved across Canal Flats and camped south of the bridge over the Kootenay River. This bridge was only a few years old and of wooden truss construction, the tension members being steel rods. The weather continued cold and threatening, but no rain. Camp was on the gravel terrace on the south bank and had a grand view. In the foreground lay the Flats and the Findlay Creek gap into the Purcells. Northward the Trench was framed by mountains on each side and eastward the inner ranges of the Rockies could be seen up the Kootenay River valley. Water had to be carried up the cutbank which is about 60 feet high and the place had been used a lot so that wood had to be brought from a distance. We placed the tents adjacent to each other so some warmth went into the sleeping tent from the cook stove.

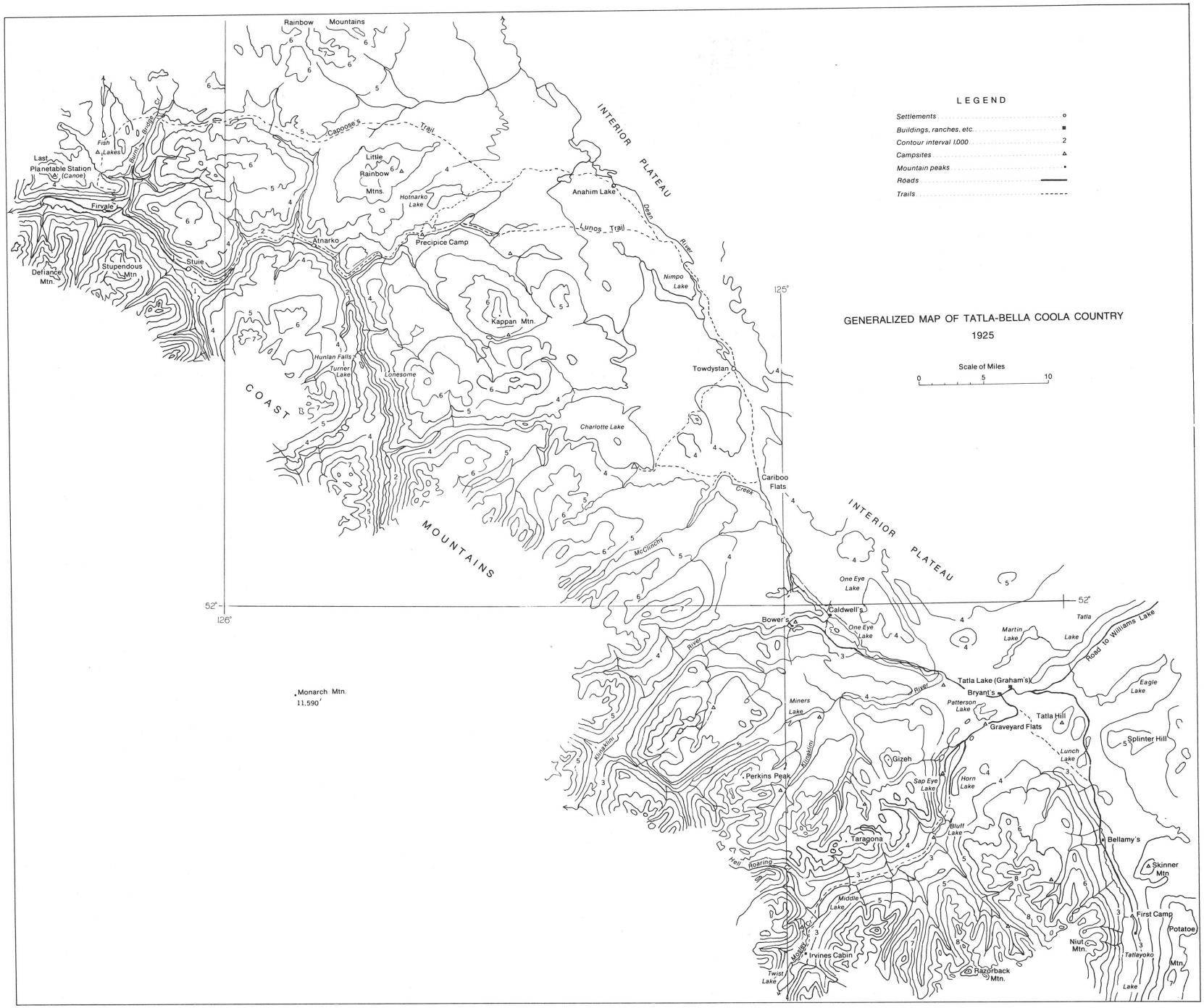
It was there, last year that Walker had camped first when Dr. E.M. Kindle, Chief Paleontologist of the Survey had brought Dr. Walcott, formerly Director and Dr. Kirk, Chief Paleontologist of the U.S.G.S., as well as Mr. M.F. Bancroft and his G.S.C. party from the Lardeau country to visit him. After seeing exposures of interest there they all went to look for the Toby conglomerate. A funny little story goes with this. These leaders in geology, including Walker, as they trudged up the road to camp, passed where the conglomerate was expected to be but did not find it. At supper a long discussion ensued why or how the conglomerate was absent. After a while Hal, the junior of all the geologists present, asked innocently where they thought the conglomerate they had walked passed in the road cut about a mile back fitted in. They looked at him askance; none of them had noticed it.

The next day Walker and I rode up the north side of the Kootenay about six miles. There was a first-rate trail there. Leaving the horses we climbed up to 4600 feet to find the Cambrian contact. After lunch we rode on a mile or so. The valley was clothed in lovely strands of ponderosa pine and douglas fir while parts of the bottom were dense lodgepole pine. The day was cold and cloudy but no rain or snow fell.

On September 22nd Walker and Hal drove up to Findlay Creek someway. I took Sparkplug and rode up the Kootenay River along the south bank into the solitude with no map. Two miles of wagon track led to Grainger's abandoned homestead and then a trail crossed the north shoulder of Mt. Grainger and swung south across the creek bottom that extends north from the Windgap to Lussier River (Sheep Creek). So far the valley was clothed by brush and open timber. After crossing the creek, where there was an excellent campsite six miles from the bridge, the trail forked and one branch followed by the Forestry phone wire, went up the Kootenay River and the other headed southward. The Forestry trail climbs through typical dry belt, open bull pine and tamarack forest. Having reached the bottom of some bluffs it drops down past some sink holes toward the river again. I climbed the bluffs to 4300 feet and had a splendid view up the Kootenay River valley. Sparkplug behaved well. After lunch I turned back trying another route nearer the river but the ground was marshy and I returned to the trail by which I had come. The open timber here was fine cattle range and was traversed by a network of old elk and caribou trails. The day was one of the most enjoyable of the summer.

The following day while Hal finished the work up Findlay Creek I drove Walker south seven or eight miles in the buggy. These fall days were lovely. The tamaracks were just turning yellow and the patches of the dark green of the bull pine amongst them, both with their great red stems presented beautiful vistas through the forest. We saw four deer and numerous fresh tracks.

The next day we moved to the tourist campsite on the east side of the bridge near Skookumchuck and this was another good day. On the 28th Walker and Hal drove up the Skookumchuck some miles. I saddled Sparkplug again and rode over to the south end of Premier Lake to examine the section south along the foot of the east wall of the Trench. There was no trail beyond the lake and the route extended through rocky hillocks about two miles to a lake about 250 feet wide and 2 miles long between two wall-like precipices. These formed formidable obstacles and continued south of the lake. After scrambling along above the east wall for some way on Sparkplug, I came to an old trail leading west into the bottom where it vanished in dense brush. After half an hour's fight through this on foot tugging Sparkplug along as she didn't lead well, I found the west wall still confronting me for another half mile or more. In the brush I lost the hunting knife which I had made with a lignum vitae handle that I had spent so many evenings carving. It was getting late when we finally got out of this over the south end of the long low ridge extending south from the west side of Premier Lake. Here the forest covered a broad terrace about 300 feet above the floodplain of the Kootenay. Riding out onto a promontory, I expected to see the bridge silhouetted against the light of the sunset sky on the river, but though I could see the whole course of the river stretching away for miles below me the bridge was not in sight. I was much farther south than I thought. Turning north along the


GENERALIZED MAP OF TATLA-BELLA COOLA COUNTRY
1925
Scale of Miles
0 5 10
LEGEND
Settlements
Buildings, ranches, etc.
Contour interval 1,000
Campsites
Mountain peaks
Roads
Trails
Rainbow Mountains
INTERIOR PLATEAU
COAST MOUNTAINS
INTERIOR PLATEAU
Capoose's Trail
Little Rainbow Mtns.
Hotnarko Lake
Anahim Lake
Dean River
Lunos Trail
Nimpo Lake
Anarko
Precipice Camp
Kappan Mtn.
Towdystan
Cariboo Flats
Creek
Charlotte Lake
Hunlan Falls
Turner Lake
Lonesome
McClinchy
One Eye Lake
Caldwell's
Bower's
Road to Williams Lake
Tatla Lake
Martin Lake
Eagle Lake
Tatla Lake (Graham's)
Bryant's
Patterson Lake
Tatla Hill
Graveyard Flats
Splinter Hill
Lunch Lake
Miners Lake
Klinaklini River
Perkins Peak
Gizeh
Sap Eye Lake
Horn Lake
Bluff Lake
Taragona
Bellamy's
Skinner Mtn
Hell Roaring Creek
Middle Lake
First Camp
Potatoe Mtn.
Niut Mtn.
Tatlayoko Lake
Monkey Creek
Irvines Cabin
Twist Lake
Razorback Mtn.
Last Planetable Station (Canoe)
Fish Lakes
Burnt Ridge
Firvale
Defiance Mtn.
Stupendous Mtn.
Stuie
Hunlan Falls
Monarch Mtn. 11,590'
52°
126°
125°
52°

terrace I rode through the forest where it was nearly dark, skirting around small gulches and crossing two big ones. Finally, just before darkness closed in the bridge and camp were below me. The following day Walker and I drove across the river and turned north to look for the anticline he now thought should be there. Hal rode up north of Premier Lake towards Ram Creek.

The next two days we travelled north to camp on Brewer Creek and to finish the lower part of the area we had intended to do from the Bunyan. On October 1st Walker and Hal went up Brewer Creek and I stayed in camp. The following morning I set off promptly after the horses that I found travelling on their way back to Invermere along the road. After lunch we moved to Midas creek in hope of getting a bigger collection of trilobites from the locality on Mt. Tegart but there was now too much snow and the weather was unsettled. October 3rd was cold and it rained all day. We stayed in. That night it turned colder and we awoke in the morning to find the tents sagging under several inches of snow. There was nothing for it now but to head for Invermere and the hotel. On the 5th we dried, sorted and packed the equipment. Hal and I weighed ourselves just as we had in May on the same scales. At that time I had weighed 154 pounds and as I had taken my belt in four inches during the summer, I thought I would be lighter. I weighed 172 pounds. Not all the years of physical exercise at R.M.C. had done for me what this season in the mountains had. While Walker and George finished packing and listing everything, Hal and I took the horses across the Trench to Moorland's ranch to winter and took their shoes off. We had supper there with the Moorlands and afterwards Moorland drove us back in his car. In the evening I paid a farewell call on Mr. Bruce. The weather continued cold.

On October 7th I was getting up at dawn, looking from my window, the rays of the sun, which had not yet risen in the Trench were shining on the great, precipitous peak of Mt. Nelson. It was clothed in fresh snow and was bathed in glorious shades of pink and purple, a sight never forgotten. We were down for the train in good time. While waiting on the platform Walker said some men wanted to see me. There was a group of about eight elderly citizens and as I approached, one came forward and introduced himself saying his name was Kimpton and that in the election of 1896 they were supporters of Father in the East Kootenay valley. Father's riding was Yale and Cariboo, virtually the entire interior of British Columbia, an area nearly as large as France. Kimpton, famous locally for stealing the abandoned Anglican church at Donald because he wished to be married in it at Windermere, made quite a speech about what a good member Father had been and how active he was now as a Senator. As usual on such occasions I was tongue-tied and did not know what to say but thank them. I was glad when the train pulled in and I could escape from them. At Golden we transferred to the main line; Walker and George would take the east bound in the evening and Hal and I said goodbye to them, getting on west bound C.P.R. No. 1 in the day coach. I never saw George again. The coach was crowded and I sat down beside an old man who said his name was Dawson. He asked me where I was getting off. I said Monte Creek, to which he answered "Oh! That's where that Englishman, Bostock, has a ranch. Pretty much of a white elephant I think, but they say that redheaded woman of his is a real fire eater. When he was away she fired the foreman and ran the ranch herself, and with all those children too." This was all true but I didn't let on I was one of "those children" and he talked on of prospecting in the Slocan and Arrow Lakes country which interested me very much. Here was another mountain prospector. He got off at Sicamous and Mother got on. She had been visiting at Kelowna. Hal stayed with us at Monte Creek for two days. On the first day Father and Jean arrived back with the car. We went around the Ranch looking for arrowheads, petrified wood and agates. In the evening Hal left for Vancouver. On the 13th I boarded C.P.R. No. 2 for Montreal.

At McGill I was the last of eight graduate students to arrive. Each of us in turn had to give a talk on Wednesday nights in the order we had come back. These talks were attended by the whole staff of the Geology Department and the graduate students. I profited greatly by listening to the others, none of whom had had a summer anything like mine. I had lots of time to organize what I had to say and these two factors gave me confidence though I had never given a talk in my life. When my turn came, I spoke for an hour and a half and ranged through physiography, glaciation, geology and structural geology, with sections drawn on the blackboard. At the end, the staff asked a number of questions, many of which I could not answer. Finally Prof. Bancroft got up and turning to the other students said "I wish you all could have a summer like this."

The next day Bankie came bouncing in to see me. He was tall, lean and had a springy walk. His rather indifferent attitude towards me had disappeared. He said "You learnt a lot last summer. Have you got your examination marks of last spring?" He looked at them and exclaimed vehemently "Terrible! HORRIBLE!" Turning to me and looking through his thick glasses said "Young man, I should have thrashed you before each lecture, but you'll be alright. Now where do you want to go for your Ph.D.?" I had already timidly broached this dream to him "Princeton" I answered, thinking of what Walker had told me of it and that Hal intended to go there. "Alright. You write to them and I will give you a letter of recommendation." A few weeks later he came in again and asked me if I had heard from Princeton, I told him they said they had all the graduate students they could handle. "You'll never regret that" he returned "Now write to Wisconsin. They have the strongest department on the Continent with Leith, Mead, Winchell and Twenhofel. Professor O'Neill and I will both write letters for you." And so, in the fall of 1925 I started for Wisconsin after another season in the mountains.

## Section II: 1925, The Tatla-Bella Coola Country

After attaining my M.Sc. at McGill I left Ottawa on May 24th. Father saw me off at 1:30 a.m. on the C.P.R. No. 1 and I reached Vancouver on the 28th. Going up to the Geological Survey office which was in the Winch Building for the first time, I met Mr. A.J.C. Nettel, the secretary. I asked for Dr. Victor Dolmage who was in charge of the office and would be Chief of the party I was to be on. Without uttering a word Nettell sat at his desk pointing commandingly at the guest book. When I had signed he waved me to Dolmage's office. There I also met the other two assistants on the party. The senior assistant was F.F. Osborne, an M.Sc. from U.B.C. and the other A.M. Cockburn, an honours geology B.A. from Edinburgh

University, as green as they make them. Not being a Canadian he was officially employed as assistant packer. The plans for the summer in the Chilcotin were gone over here. We were to make a topographical and geological map from Tatlayoko Lake to Bella Coola, an unmapped stretch of country. The control to be used was a triangulation net put in during 1924 by Dr. John Davidson for the B.C. Land Survey. With this as base we were to work on the planetable at 4 miles to the inch with 1000-foot contour interval. Osborne said he would show us how to do it. I liked Dolmage and Cockburn at once. I also met Carl Tolman who had been out with Dolmage the year before. He told me many things about Henry Alexis, (also known as Eagle Lake Henry), the Indian packer who was going out with us. Carl and Henry obviously got on well together.

In later years I came to know Nettell as one of the characters of the Survey. He was Welsh and held a degree in Metallurgy. After working as a field assistant to Dr. Charles Camsell for some years in the Northwest Territories, he obtained the position of secretary to the B.C. office of the Geological Survey when it was established in 1918. About 5 feet 9 inches, well built, sandy haired, thick glasses, with a waxed mustache that projected straight out laterally and was cut off square at the ends., he was a quick witted, strong personality who soon became widely known in the B.C. mining and prospecting fraternity. As secretary he looked after many things in Vancouver for the western parties including the storage and shipping of their equipment. He loved little humourous practical jokes. I never heard the end of my telegram that was delivered to him by the C.P.R. telegraph in Vancouver, "Please send Ida down by C.P.R. to Penticton". He was to prove a most helpful friend to me in subsequent years.

Blake Wilson, a McGill friend, asked me to stay with him and I visited many friends, the A.P. Hornes, E.P. Taylors and Capt. L.H. Lindsay, R.N.R., on Saturday as well as going over P. Burns and Co. packing plant with Blake.

Dolmage and Osborne left in the afternoon for Ashcroft where they were to examine some prospects on their way to Williams Lake. On Monday, June 1st, I reported at the office to Nettell, and Cockburn and I went to lunch together. In the afternoon I called on my old tutor of 1917, C.H. Jackson, a Klondiker and Oxford scholar. Only years later was I to appreciate what his yarns of the Yukon really meant to me.

On Tuesday, Cockburn, Benedict (the cook) and I left with the equipment on the P.G.E. Railway for Williams Lake, going up to Squamish by boat to get on the train. We reached Williams Lake at 8:30 the next morning and went to the Log Cabin Hotel for breakfast. During breakfast Cockburn and I noticed a small Indian and a policeman sitting at the next table. The Indian was Neganie, on his way to Vancouver to be tried for murder and there will be more about him later.

We changed our clothes, repacked and walked over the neighbouring hills where the brush was alive with wood ticks, however, we got them all off. The town contained a movie house, church, school, liquor store, three hotels, drugstore and several general stores. It was the ranching centre for a large area as well as a railway divisional point. When we got back from our walk, Dolmage and Osborne had arrived by stage from Ashcroft and had already loaded the freight and equipment on a truck which had been hired to take us west.

The next day all five of us and our equipment and supplies, estimated at 4000 pounds set out on the one-ton truck. It was driven by an immensely powerful and cheerful man, Mainguy. He turned out to be a most expert driver and never was I on such a drive.

The first part of the drive was on a fairly good dirt road through typical dry belt plateau country with Douglas fir timber. Lupin, larkspur, dry belt sunflower and indian paint brush were all in bloom. After a while, we dropped down a tremendous hill to cross the Fraser on a suspension bridge. We had lunch at Hanceville with the Lees. When Mr. Lee heard my name he said there was a friend of mine staying with them. It turned out to be Miss Frances Lee, a nurse who had known my eldest sister, Marian, in London. Here Dolmage and Osborne left us to go to Taseko Lakes and Frances Lee got on. She alighted at Alexis Creek where Mainguy and I had a cup of tea.

Some time after this we passed through the Bull Canyon where the road was between vertical cliffs of lava. Only a short fence and gate were needed here in the earlier days to hold the bulls on the ranges to westward in the fall. Supper was at the store of Andy Stuart at Redstone Indian village. Then, we drove on to Chilanko Forks where we spent the night at Piper's cabin. About a mile before Piper's, the truck stuck but Mainguy held up a wheel while we put planks under it and got us out in a few minutes. His driving over this dirt road which had got progressively worse was amazing.

Piper wasn't in but Tommy Stepp was there. In place of one hand he had a steel hook, divided lengthways. One side of the hook was bent and fastened on by a hinge and spring forming pinchers which could be opened by pressing the upper end. This device seemed nearly as good as a hand. He cooked breakfast, rolled cigarettes with his good hand and was a chain smoker. Cockburn and I slept in our clothes side by side in a wide bunk.

We were off again at 4 the next morning and reached Bryant's place west of Tatla Lake about 10:00 a.m. There we put our stuff in an empty cabin of Bryant's. The last few miles we had to make in two trips as the truck stuck in crossing Bob Graham's meadow and we could only take half the load at a time.

The country was still dry belt, partly open and partly groves of lodge pole pine. To the west the snow peaks of the Coast Mountains showed up above the rolling timbered hills of the plateau. Cockburn, Benedict and I spent the rest of the day sorting the stuff for tomorrow. I found that we could get a team and wagon to move us to Tatlayoko Lake. The team was old and the wagon was wired together and in poor shape but the teamster, McGee was a powerful man of reassuring personality.

We heard a lot about the people in the neighbourhood, chiefly from Mrs. Bryant. They were nearly all Americans and had settled here in the last few years except Bob Graham who was an old timer and lived with his wife and children at the fine meadows at the west end of Tatla Lake. Mrs. Graham was a nurse and general caretaker of the people around. The Bryants came from Montana by wagon and their whole outfit had been burnt one night on the way; however, they continued their journey and started their homestead

here with practically nothing. The McGees came from Nebraska where he had been a horse raiser at first and then worked in a city at several well paid jobs as a mechanic but he said they saved no money and their children were ill a lot. Now they were always healthy and enjoyed the pioneer life. McGee's brother had followed him and settled near him. The Bellamys and others had much the same sort of stories. Nearly all were working at draining hay meadows as there was almost limitless summer cattle range, but though the winters were dry there was a lack of hay. We also heard about Bullshit Bello (real name Valleau) into whose trapping valley we were going at Bluff Lake.

On the 6th we started for Tatlayoko Lake with about a ton of stuff, far too much, as it turned out, due to my misunderstanding and poor judgment. As we left, Mrs. Bryant said to me, "Just remember Mr. Bostock, when the wagon is broke, as how it is troubles and trials what makes character." She had been a stenographer in Chicago and had no knowledge of cooking till she married Bryant but she had fed us well enough. The mosquitoes were in clouds along the wagon track we followed. We were quite unprepared for them and I don't think I have ever seen them so vicious as they were on that trip, even in the Yukon. The horses actually ran with blood. All we could do was brush the bugs away with aspen branches.

We stopped for the night at Lunch Lake and Benedict who had been talking of nothing but quitting, once he got a fire going and a spoon in his hand, proved a quick, good cook but not very clean. He had been on the Alaskan Boundary survey and in many lumber camps. He was a small man. His conversation was generally of his experiences sleeping with different breeds of women.

Next morning we were up soon after 5 a.m. and quickly on the road. Cockburn and I frequently manned the wheels to help the horses up the grades. We stopped for lunch at Bellamy's and he was quite annoyed when I offered to pay him as I felt I ought to. Bellamy's homemade rustic furniture was the finest I have ever seen. Each piece was a work of art. His big husky daughters were pleasant and well-behaved. They and the Graham girls were said by McGee to be excellent cowhands but they were intensely shy. At Moore's place we bought three dozen eggs, milk and cream. Moore had just shot, skinned and butchered a large black bear, some of which he was keen to sell to us but neither Benedict nor I wanted it though we had no fresh meat. Our staples were ham, dried fruit and so on as we had had last year. At last we reached Tatlayoko Lake about 5 o'clock. I chose a campsite on a bar of shingle on the lake shore so as to get the breeze. Behind was a lagoon and then a meadow. With the breeze off the lake there were no mosquitoes but when it dropped they were as bad as anywhere. It is a beautiful lake, elevation about 2700 feet*. The view was magnificient looking south down the lake. The water was clear and blue with the snowy peaks of the Coast Mountains at the far end and on the west side and the high plateau of Potato Mountain on the east side. This was the first camp I was in charge of and I laid out where the tents should go, put them up, and organized everything except the cook stuff which Benedict looked after.

*Hereafter the figures given after lakes, mountains, triangulation stations etc. are their most recent elevation above sea level.

When supper was over, McGee left and we three were alone except for the geese and loons on the lake. By 10 p.m. the camp was ready for the night. The following morning, not knowing quite what to do and having some things that still needed fixing, we stayed in, but in the afternoon Cockburn and I went out, looked over the country and found a fossil locality. Benedict proved willing and did everything I suggested. The following day it rained in the night and morning and we went out after lunch about 11:30. Cockburn suffered terribly from mosquitoes, his face, hands and even his backside were much swollen. Although my hands were covered with little red spots they didn't worry me much. I found I was a better walker than Cockburn which was a change after being the slowest in Walker's party the year before.

The next day we started up Potato Mountain but Cockburn was in no condition and kept wanting to stop every 50 feet or so. We passed through the ruins of an amazing great log establishment, house, servant's quarters, stables and so on which we heard later had been built by a wealthy Englishman for his bride but when she arrived there she did not like it. We got some way up the mountain, had lunch and found another fossil bed. When we got back to camp I was delighted to find Henry Alexis and his wife had arrived with 14 horses, 12 rented to the Survey, fully equipped at $2.50 per horse per day besides Henry's wages of $4.00 per day. He had a good outfit in every way and excellent horses. Henry had killed a deer on the way and about the first thing he said to me was "Me saddlem horse, me see'em mowich, me shootem, me skinem, heap fine". We had fresh venison for supper and Henry ate with us and always did. Fortunately, Henry was delighted with Benedict who had cooked a meal for them as soon as they arrived. Henry approved of the campsite and pitched his tent near the cook tent. The horses were turned into the meadow behind the lagoon but the mosquitoes were so bad in the warmth of the day they would not feed and stood around the smudges Henry made for them sometimes scorching the hair on their legs. The nights were quite cool and then the horses fed.

In the evening I thought over the work which had not progressed much and some of my confidence crumbled. Cockburn, though willing, was so untutored in camp life and in such poor condition that he was no help and talked too much. He felt useless and this upset him. I did not wish to use the planetable as Osborne had placed sheets with the plot of Davidson's triangulation on it and said he would start it. The thing to do seemed to be to go up to Davidson's triangulation point, on Mt. Skinner, take bearings and sketch. This would also give us a view of the country. I told Henry and the next day we rode up with Henry leading the way. Cockburn had never been on a horse before. Henry liked to talk and told us many useful things in his mixture of broken English, local Indian and Chinook. He had practically no R's and injected L's almost where ever possible. He was very proud of his wife (Doris) whom he referred to as "woman" and said she had been a wonderful rider as a girl but she was a butter ball now though she often amazed us with her agility. She was always on the job attending to something and had a large travelling bag full of all sorts of sewing equipment. She had put the deer skin in the lagoon to take the hair off. Of course this had to be done just right or the skin would also start rotting. Henry had a great opinion of Carl Tolman whom he said, though slim, often carried a heavier pack than Henry could lift. Henry had no inhibitions

about anything, and was amazingly observant of every little detail which was sometimes embarrassing. He was about 5 feet 9 inches tall, 160 pounds and about 37 years old. Dolmage said he thought Henry was not a full blood Indian and had a trace of Spanish in him. According to Henry he was an illegitimate son of a Chilcotin Indian mother but his father was also an Indian. His stepfather turned him out of his family to fend for himself when he was twelve. Through his teens he seems to have lived as a companion with two or three solitary wandering white men of some education. One, at least, must have been a military small arms instructor as he carried a rifle and bayonet with which he practiced at times on trees, according to the stories Henry told about him. For this reason Henry liked to be clean and took care of his things including his wife. He was reputedly the wealthiest man in the country, bar none. He trusted no one but Andy Stuart, the Redstone store keeper. Even the conditions of his job with Dolmage for whom he had worked the summer before had to be written out in detail as a contract and submitted to Andy Stuart before Henry had accepted it. Henry could not read, write or sign his name.

I took a lot of angles with the compass and sketched in the topography around. Later we found we were not on the actual Skinner triangulation point but on a secondary offset station on the same ridge where Davidson's crew had built a large tripod and cut down the forest around it. The day ended in disgust and discouragement. I did not even know how to start. When Henry asked me what we would do the next day, I told him to wait and see what the weather would be like but that probably we should go up Potato Mountain. I dreamt of all sorts of things that night, including triangles and when I woke up I had an idea. The compass was clearly not accurate enough. We needed the transit to take the angles. We should go up to the correct point on Mt. Skinner but the day was cloudy and I did not then feel I could tell Henry we wanted to go up Skinner again. We went up Potato Mountain and I made a sketch map of the opposite mountains putting in the contours and taking angles with the compass as well as I could. In the evening I told Henry we needed to go up Skinner with the transit the following morning if the weather was fine and that if it was cloudy, Cockburn and I would climb triangulation station Niut on the west side. This would be a precipitous climb. Anyway Henry gave his loyal support saying "Where you say I go allight".

It turned out cloudy so Cockburn and I headed for Niut which was more than 8800 feet high or 6000 feet above the lake. Cockburn soon began to tire. At 4800 feet we sat and I took bearings and made a sketch of Potato Mountain opposite. I gave up the idea of getting to the top of Niut. The going was very rough, all blocks of granite. After awhile however, Cockburn seemed to be coming along better and we got to a summit at 7800 feet or 5000 feet above the lake. Here we had lunch at 4 p.m. More bearings and sketching of contours. At 5 o'clock we started down with a long way to go over the extremely rugged mountain side. We took a short cut down a chimney filled with hard snow but very steep, the bottom out of sight. We slithered down this breaking our descent with our geological hammers, and passing the granite and sedimentary contact as we went. We ended by getting down to the lake in 2½ hours and Cockburn was pretty well played out. We rowed back along the lake shore in an old punt we found, arriving in camp at 7:45.

The next day we went up Mt. Skinner with the transit and got the true bearings of many points I had been sketching in. Cockburn was still pretty tired. I had a swim and wrote a letter to Dolmage as the Henrys were going to meet him the following day, taking some of the horses. I was pretty discouraged and had to say so. We did not seem to have accomplished anything worthwhile. When Henry went off in the morning we stayed in and I plotted what we had done on one sheet basing everything on the true angles taken with the transit from Skinner and making the best intersections I could with the compass bearings. It did not look so bad. Cockburn rested.

The following day Cockburn and I saddled two horses Henry told us we could use and rode to the west of Skinner. There we found the Triassic lavas and Cretaceous grits. The country was full of bands of wild horses. When we got back to camp Dolmage and Osborne had come in with the Henrys. I plotted the day's work on the map and showed it to Dolmage. He seemed quite pleased and said he had felt it was rather mean sending us off so unprepared by ourselves. Our map now showed the drainage, 1000-foot contours and geology over about 40 square miles. There was no mail for me. The next day we rested.

June 18th with five day's food and Mrs. Henry we went up onto the broad sloping upland that stretches from the ragged peaks of the mountains northeastward down to the Interior Plateau, between Tatlayoko Lake and Bluff Lake. Going along the wagon road to a mile beyond Bellamy's we then followed a blazed trail to 5500 feet winding through dense pine timber. At first there was good timber grass under the trees but further up only rocks and moss. Finally we came out through more open timber to the broad, undulating upland. We camped among the stunted pines tying our tents up between trees by ropes. Timberline in these mountains was about a thousand feet or more lower than in the Purcells in the same latitude. For supper we had stewed marmot, shot by Henry. "All same chicken" he said and it was good.

After supper Henry asked me if I would like to go hunting with him. Though I felt tired this was an opportunity not to be missed. He saddled his hunting horse and one for me and away we went at a very fast walk. I had the Survey 30/30 and Henry his 25/35. We soon picked up numerous deer tracks and after scouting about for an hour with the light falling Henry turned in his saddle and said "I tink no good tonight". As he said the last word, he spun his horse around and spurred away, at a gallop with me trailing. Equally suddenly he stopped and sprang to the ground signing to me to do the same. He said "You shootem". I saw nothing. He grabbed the rifle which I gave him. He peered through the pines and the rifle went to his shoulder - bang! Then he turned to me and said with glee "Plenty soon he die". A moment later a big deer walked slowly out of the brush about 50 yards away and after going a few paces in a dazed fashion fell over. Henry turned to me and said "I guess me bad man me shootem doe. But me no see em head". We found its udder full of milk which Henry enjoyed on the way to camp and tried to get me to have some but it didn't look very appetizing to me. He cut up the deer and skinned it at which I was little use. Finally he put most of the carcass up in a tree and tied the two hind legs on his horse behind the saddle and we returned to camp in very good spirits. What amazed me was the speed at which Henry had spun

his horse around and headed off the running deer so it stopped in the brush where he wanted it.

The next day we rode to within 800 feet of the top of Davidson's Niut II station, 8954 feet, Henry taking the horses back to camp. We had a grand view in all directions and were able to recognize many of Davidson's triangulation stations that became so vital to our mapping. I was surprised to see how much more rugged the Coast Mountains are than the Rockies. We could see a great array of peaks many of which were higher than 10000 feet and actually our view included Mt. Waddington which had not been named though. Bishop of the B.C.L.S. had roughly located it in 1924. The slope towards the plateau in the upper part had great stretches of coarse felsenmeer that reached nearly down to timberline and the park like areas before the dense lodge pole pine forest was reached lower down.

The day after we went up to a point between Niut I, that Cockburn and I had tried to reach, and Niut II. Cockburn and I had discussed Osborne's efforts with the plane table and both of us agreed that he had no natural gift for it. We had the advantage of learning to use the British Ordanance Survey maps in our teens and I had had a course at R.M.C. in planetable mapping and map drawing that had been very thorough. Dolmage now suggested to me that I should take over the planetable but I said that if I had anything to do with it I should like to have it entirely to myself and be responsible for it. But he said that that would not be fair. I suggested that we take it in turns for a fortnight each, so Osborne had it for a fortnight to himself. The only sign of life we saw were some goat tracks on the way back to camp.

On the 22nd we returned to Tatlayko Lake, Mrs. Henry guiding us back by a much shorter route. I asked her to make me a buckskin shirt like Henry's for $15.00 and she agreed.

On the 24th we moved north and as I had brought far too much grub in the wagon the horses were heavily loaded and we only had two saddle horses between the five of us to ride. It was a terribly hot day and very little water along the 25 miles of trail. We passed one or two alkali pans. Camp was pitched at 7 p.m. on a large open flat overlooking a brushy meadow. A small trickle of water ran into Patterson or Hook Lake. The country around was level, timbered with pine and aspen with here and there wide open glades of grass. The view across the rolling timbered hills rising southward to the mountains was lovely but this was one of our worst campsites.

The next day Dolmage and Osborne with the Henrys rode to Bryant's to take back some of the extra stuff and get mail. I read some angles with the transit to fix our position. There was not much for Cockburn and me to do here. With sharpened poles for lances we tried our hand at tent pegging lupin plants that were scattered over the open flat. Success was achieved when one sheared a plant off at the root. We could do this because Henry trained his saddle horses like troopers. One could do anything on them including shooting from their backs when they would stand motionless and when the lances came down past their right eyes, instead of shying away they kept straight on at the gallop. As for riding up and down steep places, Henry told us "Place too steep for walk, lide em horse. He take you". I believe this is the only approach to tent pegging in the history of the Geological Survey.

In the evening Dolmage and I had a swim in Hook Lake, and the water was just right. There were lots of coyotes about here. The place had once been the homestead of "Young" Gishan, 65 years old, but all that remained were the ruins of a cabin and stable and a grave that was the origin of the name, Graveyard Flats, by which it was known.

After two days doing geology we moved northwest to Bluff Lake. Nearly all the way Henry talked to Cockburn and me and told us some of his life. We changed horses for a while. The trail wandered through pine timber and past alkali lakes. Finally it crossed a wide muddy bottom and then we had to ford Mosley Creek (West Homathko River) which was up the horses' bellies. After this the trail climbed up a series of short, steep switchbacks between rock and dense brush to come out on a ledge a few yards wide that overlooked Bluff Lake, below which the cliffs drop some hundreds of feet to the water. The other side of the lake was much the same but rougher and not quite so steep. At the far end of the lake was an immense beaver dam. The beavers had long since been trapped out, and the stream escaped from the lake through a gap in the dam. East of the stream, Mosley Creek, was a series of meadows bounded by lower abandoned dams. On the nearer or west side of the stream a small log cabin stood in a dry clearing. The valley around the cabin is a huge amphitheatre with the floor a few miles in diameter, clothed by timbered slopes that rise to the mountains on all sides except at the gaps of Bluff Lake and where the creek flows south through the backbone of the mountains to Bute Inlet on the Coast. A band of wild horses guarded by a large black stallion grazed in the meadows. Such places generally only exist in the imaginations of writers like Zane Grey. After going along the ledge about 50 yards and we went down a steep but somewhat easier trail than the one we came up. At the side of the ledge and at intervals going down, were notices saying "Keep out. This is my valley". "No one wanted". "Indians shot on sight". "Beware of man traps and spring guns" and so on. This was Belloo's doing. Beside the cabin, which was close to the creek that could well qualify as a river was a lovely campsite. The stream was crystal clear and just the right temperature for bathing.

Cockburn and I continued to share a tent together and Dolmage and Osborne shared a tent while Benedict slept in the cook tent and the Henry's had their own tent. At meals Osborne generally supplied the conversation. He had an encyclopedic memory.

On July 1st we travelled southeast up a creek about eight miles towards Niut, camped and I went hunting with Henry but we got nothing. The others were out until 10:30 p.m. and Henry, Benedict and I wondered what had come of them. The next day we went out traversing on horses as usual and returned to Bluff Lake on the 3rd.

On the 4th we moved up to the northwest. Henry told us that formerly there had been an abundance of game and good Indian trails through most of this part of the country. Suddenly he said "Look em! Goat!" and in a moment was off his horse with his rifle. He asked Dolmage's consent to shoot one and it was gladly given. We had been riding along the rim of a large canyon and two goats were down in it. Henry lay on a projecting rock to shoot down at about 40°. He chose the younger of the two and got it first shot. The goats were more than 400 feet down below us but

Henry found a way down with two horses and Osborne went down to help him. The goat was good but rather tough and after a couple of days it smelt unbearably in camp so that much of it was thrown away. We continued up the valley side and at about 6500 feet came onto the broad rolling upland stretching generally down to eastward. It reminded me of Scotland. The valleys were 500 to 1000 feet deep. This day Henry's two dogs were a great amusement. One, Michelle, was a lovely dog, not big but very intelligent and of a definite personality. The moment the dogs saw a patch of snow they dashed to it leaping in the air and landing on their shoulders went sliding along on their sides. There were a great many grizzly tracks on the upland but we didn't see any bears. We hoped to see sheep and Henry said there used to be lots. Sighting a valley with trees in it we went down and camped in a pretty place, but the mosquitoes were very bad.

The next day Dolmage took Cockburn with him and I took over the planetable and went with Henry and Osborne. The planetable and transit were on Pinto, a powerful, mean horse that had been a wild stud. We needed to occupy a point Osborne had called Gizeh but when Osborne pointed it out to Henry he said it was too far away. In an hour and a half we reached another nearer point but it was no good and Osborne and I agreed we must go to Gizeh. Henry was very annoyed and turned back. Osborne and I went on, reaching Gizeh about 1 p.m. and set up the plane table and transit. The day was hot, clear and still. The flies were like a cloud around us but not biting much. We were finished about 4 p.m. As soon as the horses were saddled and Pinto was packed, Osborne led off directly for camp over a ridge of diorite felsenmere which was awfully hard on the horses and not the way we had come. Pinto would not lead over it. I shouted to Osborne that we would have to go the way we had come but if he heard me he did not answer. His horse was the best and he was soon out of sight. I turned back to the route we had come by but both my horses started being troublesome and snorting at something they winded. Finally when I got to camp I found Dolmage had told Osborne he had no business leaving me. Osborne and Henry were saddling up to come and find me. Henry said "Tlink you come that way. You hiyu good findem way. Osborne he say you come udder way".

It snowed in the night and in the morning Dolmage and I went to look for fossils. The following day Osborne and I went to a station Dolmage and I had picked out overlooking Mosely Creek valley and that gave a good view of the mountains and down the valley to Twist Lake. I called it Taragona after that memorable wine sipping of last year. We rode to higher than 7500 feet. Dolmage and Cockburn were with us and then went off to do the geology. Cockburn took what is the first picture ever taken of Mt. Waddington*.

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*The mountain, the highest in the Coast mountains and higher than Mt. Robson in the Rocky Mountains, was discovered by Bishop of the B.C.L.S. when doing the triangulation for Dolmage in 1924 near Chilko Lake. But its true magnitude was not confirmed until J.T. Underhill of the B.C.L.S. placed it from his triangulation on Vancouver Island in 1926 or 1927. The elevation first taken as 13714 is now given as 13168 feet. Our figures did not agree well, though three turned out about right, some were in the 14000 foot range. There can be little doubt that Cockburn's was the first photo taken as up to that time so few knew the mountain existed.

I was able to draw rays to a great many points in the mountains including Middle and Twist Lakes which were very important later. Taragona had three fingers on top. I set the plane table on the highest one and Osborne had the transit on the second highest. The day after we returned to Bluff Lake but on the way Dolmage, Osborne and I went to a point overlooking the valley and I drew in the topography while the other two sat around a fire it was so cold.

On July 9th Henry, Osborne and Cockburn went to Bryant's for supplies and mail. Osborne also went to Graham's to phone. I worked on the map joining together all that had been done including the 40 square miles Cockburn and I had done from Tatlayoko Lake. When this was plotted I showed Dolmage the result. Where he had seemed quite discouraged about the map before he now was pleased.

When the others returned Henry dropped a bomb. He said he must go home. Practically all the Indians and many of the settlers to the east of us were suffering from a severe form of intestinal flu. At Henry's ranch his young half brother, Billy Dagg, had stayed behind to look after the place and put up the hay. Billy had an Indian wife and two children. His wife had died and Billy was very ill leaving no one to look after the children or the stock. Henry had brought Neganie, the Indian that Cockburn and I had seen at Williams Lake, his wife and son of 10 to take his place. The Neganies had returned from Vancouver where Neganie's murder charge had been dismissed as the witnesses for the prosecution had failed to turn up. They had come back by Bella Coola instead of Williams Lake and Redstone where the Indians who had tried to frame him lived. As a consequence the Neganies had not been exposed to the flue. Neganie was a small, dark, quick, wiry man of about 40 years. His wife was a big husky girl in her twenties. Henry gave a good account of them, in fact we had heard before that he and Neganie were close friends. Henry would leave thirteen horses and the outfit with us in Neganie's charge and said Billy would come and take Neganie's place when he was well enough. Mrs. Henry was pleased as now she would have some children to look after. The lack of children for the Henry's was a great disappointment. Henry had told us how much he had tried to buy children for his wife. "Tloo, tlee hundred dollas no buyem blaby". Mrs. Henry had just finished my buckskin shirt which had used up three deer skins. She had done an excellent job putting the silk embroidery designs I had drawn for her, on the breast pockets, and R.M.C. brass buttons down the front. She said she wanted a little more for it and I haggled with her and gave her $16.00 and got an extra piece of buckskin. When Neganie saw it he said it would have been $35.00 at Williams Lake and I didn't doubt it.

Osborne became ill the next day. The only exposure to the flu he could have had was when he went into Graham's to use the telephone which was on the line connecting Williams Lake and Bella Coola. They had the flu there.

The Henrys left us and we were very sorry indeed to see them go. Cockburn and I had enjoyed so many interesting and instructive talks with Henry both in camp around his fire and when riding together on the move.

Here is a good place to tell a little more of them. In the winters the Henrys and the Billy Daggs were together. The wives kept house and the men looked

after the horses and stock and trapped. Henry's ranch was a few miles east of Chilko River near Choelquoit (Eagle) Lake and not far from Tatlayoko Lake. He had about two hundred head of cattle as well as many horses including a thoroughbred Texas saddle stallion, a Percheron stallion and some good mares. At Bryant's we had heard that Henry had the best horses in the country. He also had good meadows.

At the same time Henry and Billy, besides their trapping, hunted coyotes. After a fresh fall of several inches of snow, they both got their good saddle horses and their dogs as well as .22 pistols. They rode out through the generally open country with clumps and thickets of brush. Soon they came to a coyote track. The coyote being hampered by the snow was easily run down with the horses. Often they could be clubbed on the head which saved a cartridge and a hole in the skin. If they went into the brush the dogs working under the direction of the men drove them out and they were killed, slung on the back of a horse and away the men went after another. In this way during the winter of 1924-25 they had got 64 coyotes between them whose skins sold for an average $15.00 each.

In the spring, they worked at the ranch, branding, etc. then in the summer Henry took out Survey parties, either Geological Survey or B.C. Land Survey. Billy stayed at the ranch, put up the hay, etc. When fall came and the hunting season started they each took out hunters with packtrains and, of course, were well paid for that too. That completed the year as when the hunting season ended it was time for rounding up the stock, a cattle drive to Williams Lake and then time for feeding the stock.

Henry had a number of stories of Indian feuds and raiding that went on between the Chilcotin and Coast Indians. They were all stories of the Coast Indians raiding the Chilcotins, none the other way around. He said the Chilcotins did not like the Coast forest. In one story told both by Mainguy and Henry, a Coast Indian raiding party was caught by the Chilcotins on one of the bluffs of the Bull Canyon. The Chilcotins killed 92 Coast Indians. They spared one, they skinned the soles of his feet and sent him home to tell his people what had happened.

In another raid the Coast Indians found a party of Chilcotin women on Potato Mountain where they were digging Indian potatoes. The Coast Indians killed them all at dawn but there was with the women a Chilcotin boy who was sleeping off by himself. He escaped and told the Chilcotin braves who were hunting. The Chilcotins chose a number of their best runners and sent them down the trail to the Coast leading down the main Homathko River from Tatlayko Lake. Along the trail was a place where it followed a narrow low ledge on a bluff beside the river. The Chilcotin runners were armed with long spears with sharpened goat horn points. They arrived there first and blocked the ledge while the main body of the Chilcotins pressed the Coast Indians in the rear. The Coast Indians, finding their way was blocked, dived into the river and as each one swam by he was speared by the Chilcotin runners and all were killed.

This brings us to Henry and Neganie. Neganie was reputed among the white men, as well as according to Henry, to be the best hunter in the country. Indeed so many things that Henry told us were corroborated by the settlers that it appears that he was accurate and truthful. Henry had already told us that the murder charge had been framed on Neganie, and that Neganie was innocent. It appears that Neganie and a number of other Indians had been drinking home brew and had a brawl in which one was killed but who the murderer was, was uncertain. At any rate, said Henry, it was not Neganie.

A year ago Neganie wanted a "race horse", the desire of all Indian hearts. He went to Henry but he had no money to pay Henry for a good horse. Henry told him he could have one if he did exactly as Henry said. So Henry gave Neganie one of his best horses with $10.00 cash and instructed him to go to the Williams Lake fall round up. There he was to challenge an Indian named Gishan whom neither of them liked, to race, betting Gishan the $10.00 that he could beat him. Henry had already sold Gishan a "race horse" and kept careful track of the relative speeds of all his horses. He also knew Gishan had a good outfit. So he said to Neganie "You make like you beat your horse like hell and you let Gishan win and pay him the $10.00". Then he said to Neganie "You go spling lound up. You tell Gishan you feed your horse good and you bet him again you can beat him. You bet him everything you got against everything he has. He will tlink he can beat you again. I know you can beat Gishan easy. Your horse much better than Gishan's horse. You get everything Gishan got including his horse. Then you come pay me". Henry said they couldn't bet their wives and children because the police did not allow it. Neganie did as Henry instructed him, cleaned Gishan out of everything and paid Henry handsomely for his horse. Henry thought this was a masterly way of doing business. No wonder Gishan and his friends tried to frame the murder on Neganie.

The Henrys had gone off on the morning of July 11 and Neganie took us up to the southwest of Bluff Lake. Osborne was left in camp in the care of Benedict. We found at once that Neganie not only knew the country better than Henry but was a wizard at finding ways for the horses through the brush. To see the skill and grace with which Mrs. Neganie swung an axe one minute right handed and the next left handed was an education. When we got in Osborne was worse and looked terrible. Dolmage wanted to move down the valley to Twist Lake as we were in the sediments and the granite contact was somewhere in that direction down the valley; however, he was now certain Osborne had the intestinal flu. This disease starts with constipation and lack of appetite followed by retching and vomitting and passes on to violent diarrhea.

At supper Dolmage said he had to be prepared to take Osborne out and we just had to sit tight as there was nothing to do. To this I said that since Dolmage must have Neganie with him in case he had to move Osborne, Cockburn and I should take saddle horses and a pack horse each and see if we could not find our way to Twist Lake continuing the work. (Cockburn had developed amazingly by now. He was good with an axe, knew what to do, could pack and ride well. He had a natural understanding of horses. I had confidence in him). Both Dolmage and Cockburn were taken aback by this suggestion. After a little discussion in which it was decided that we should return on the 4th day if the main party had not followed us Dolmage agreed.

So on the morning of the 12th Neganie got us our four horses and helped us saddle and pack. We had our tent and the instruments on one horse and a large load of food, more than we two needed on the other in

case Osborne recovered and the rest of the party followed us. I asked Neganie about the trail and he said it was alright. Then after a moment's thought he added, "After Middle Lake you cross creek and then river. Bly and bly you come meadow, oil a time thail he go river". His final quiet but cutting remark as we rode off was, "You no get Twist Lake". I set off on a small white horse leading the horse with the instruments and tent on it while Cockburn followed on his big horse, Snake, that he rode all season, leading another big horse, Nuticul with all the food. We found the trail grew worse as we went along and we had to cut out a few small logs in one place. We examined one of Belloo's cabins and found it a dirty, smelly place. The trail along the side of Middle Lake was erratic, over a bluff, down under a cliff in the water, through a tunnel in willows and then up along a ledge and down back on the lake shore. After Middle Lake we lost it for a while but found it again and went down through some pine and fir to Hell Roaring Creek. The name describes it well. It was a large stream pouring down over great boulders but we got across and lost the trail on the far bank. We wandered zig zagging for half an hour before we picked it up again.

Now we approached the river (Mosley Creek), crossing several small channels before we came to the main stream. The trail was flooded by two feet or more of water. I was tired and I would have followed it right into the river to ford had it not been for some alder stems that I had to cut out to get the horses past. While I was standing in the water to my waist doing this Cockburn called out "You better look at the river. It doesn't look good to me". I looked at it and saw it was too fast and deep. The horses and all would have been swept off their feet and carried down stream into the deep water under sweepers (overhanging trees). We would not have had a chance. We turned back and after hunting for a better place, we worked our way down stream along the west side of the valley through a mass of brush. Finally we picked up a well cut trail and came to a small stream. I was about to cross after letting my horses drink when I noticed Cockburn had dismounted for a drink and was in trouble with Nuticul. I waited and when I looked again he was gone. I shouted and he answered some way back. I caught Snake, and soon he returned on foot panting. When he had dismounted to have a drink Nuticul had jerked the halter rope from his hand and bolted. It being 7 o'clock I decided to camp here at once; we had been travelling 9 hours and I was still wet to the waist. I told Cockburn to make camp and started after Nuticul on foot but seeing no sign of him I returned for my saddle horse and found Cockburn bewildered, had done nothing. I was annoyed, told him to tie up his two horses and unsaddle them and put up the tent. In ten minutes I had found Nuticul on the trail. He had picked it out better than I had. As soon as I approached, away he went. I remembered then that some way back there was a patch of grass and then beyond it a narrow place in dense timber where only one horse could just pass at a time between a tree and a big rock. I circled up the valley side well around Nuticul, got ahead and tied my horse in the narrow gap. Then I went around behind Nuticul who had now reached the grass and drove him up to my horse. He could not get past and after talking to him for a minute I easily caught him. Although his cinch and tarpaulin were off nothing was lost from his pack and I was back with Cockburn after an hour. He had the tent up and a fire going. We soon had the horses unsaddled, hobbled turned out, and had supper. We knew we were still four or five miles from Twist Lake and all we could do now seemed to be to follow the trail along this side of the valley.

The next day we found the horses easily and we were away by 9:45 leaving our tent up and our food and the transit in it. I was now riding Nuticul. The trail led over coarse granite talus, which was very hard on the horses, but there was no where else to go; the river was at the foot of the talus and cliffs above it. Number one objective, however, had been accomplished. Here was the granite contact. Now the thing we had to do was to make the topographical map to mark it on.

The trail showed well on the talus by the lichen being worn off. Finally it came down off the talus to the river side where there was a coarse gravel bottom and an island near midstream. After looking the place over we decided to try it. We got to the island with no trouble and then faced what was the main channel. It was swift and deeper but not dangerous as the banks down stream were shelving. Heading in on Nuticul I found there were about three yards where the horses lost their footing but being big and strong he made it and pulled across the little white horse which lost his footing and was swept down by the current. Cockburn's big horse Snake pulled the other across. Luckily I had wrapped up the planetable and alidade well as the pack was nearly submerged and on the big horses we were wet to our waists in mid channel. Finally we picked up the main trail and after three miles came to a low spur from which we could see a lot of points including Taragona. It was then 1 p.m. and coming to a little knoll which gave a still better view I decided that was as far as we would go today and set the planetable up. We would see if we could not get to Twist Lake tomorrow which we thought would be easy. We got back to our tent by 5:30 and had supper in good spirits as we had not only found the contact but also drawn in much of the topography of the valley.

We were off about 9 in the morning and reached the knoll by 11. After another mile the valley floor was largely meadows walled in by cliffs and talus. Forgetting Neganie's advice to go along the river, we followed a nice trail to the meadows where we soon found ourselves struggling through willows, water and swamp. Finally on what looked like a well worn trail Nuticul and I went right down in a hole in water and mud. I was up to my armpits and soaked. It was 1:30 and the horses were tired from ploughing through the deep mud. We decided to go no further and turned back to a cabin which we heard later referred to as Irvine's that we had seen on a rise. I took off my clothes, except my shirt as the sun was hot, hung them to dry and set the planetable up on the roof of the cabin. This gave an excellent view all around including a waterfall almost opposite across the valley which Neganie had told us was close to the end of Twist Lake. It seemed futile to go any further. We crossed the ford again for the last time with relief and were back at Bluff Lake camp the following day, by 4:40 p.m. Knowing the trail, there being no cutting and the horses travelling well, we made good time.

Benedict was alone in camp with a great tale and after a while Dolmage and Belloo rode in with the horses from Bryant's. Dolmage got off his horse and shook hands with both of us without saying a word. He looked a wreck after what he had been through and was dead tired. He told us afterwards that he was

afraid he was going to have to move down the valley to look for us.

Belloo had arrived in camp on the evening of the 13th. The first thing anyone knew, he was standing by his cabin and abusing Neganie, who was at his tent with his wife, in the foulest language at the top of his voice. Dolmage came out of his tent where Osborne was lying delirious and Benedict stood at the door of the cook tent. Belloo was a big man with blue eyes, long light reddish hair to his shoulders, a large knife sticking out of his shirt another knife and a revolver on his belt. On his head was a stetson hat with no dents in it.

Belloo, with much swearing and abuse, told Neganie to get out of his valley or he would shoot him. Neganie answered that he was working for Dolmage and wasn't going, saying "You Hiyu bullshit Belloo. You scared shoot me. You scared shoot any man". As he said this he sauntered over toward Dolmage and the cook tent with his wife behind him. Belloo drawing his gun and making for Neganie struck him on the head and knocked him down. Mrs. Neganie flew at Belloo hitting him in the face but was seized by a fit. She fell on the ground, frothing at the mouth. Neganie still on the ground at the feet of Belloo who raged on at him gathered her in his arms as the blood poured from the long cut Belloo had made on his head. Mrs. Neganie continued to rave but soon became unconscious as Belloo stood over them brandishing his gun and continuing a stream of abuse against them. Dolmage tried to quiet Belloo and was terrified lest Neganie who was so amazingly quick would knife and kill Belloo. Benedict enjoyed the excitement and fetched water to throw on Mrs. Neganie, who soon came to. Neganie turned to Dolmage and said "What I do?" Dolmage told him he would have to leave the valley and wait for us at Graveyard Flats. Neganie said "I cetchem police. You tell em straight for me", to which Dolmage said "Yes" and bound up Neganie's head and asked Belloo to be quiet as there was a sick man in the other tent. To this Belloo said "I'll cheer him up", and rushed into the tent where Osborne was and talked to him for an hour. Osborne never said a word. He had been quite delirious and Dolmage had found the only way to keep him peaceful was to give him morphine.

Next morning Neganie went to Dolmage and said "I don't care Belloo, I stay". But Dolmage told him he must go to the doctor and have his head sewn up and soon after he and his family casually departed. Belloo now said to Dolmage "Seeing I have fired your packer I guess I better give you a hand". From then on he behaved well, doing all he could to help. Indeed, sugar would not melt in his mouth. That evening, the 14th, he took the horses over the trail and Dolmage rowed Osborne up the lake in Belloo's boat so as to avoid the heat of the day. At the far end of the lake they tied Osborne on to a saddle horse and rode to Graveyard Flats where they rested until 3 a.m.. Then they rode into Bryant's where Dolmage phoned Mrs. Graham. Her family had all had the flu and she said to bring Osborne to her. She gave him some whiskey and soon had him better. The following day, 15th, she escorted him in a truck to the doctor at the new hospital at Alexis Creek. A number of the Indians at Redstone who had no idea of helping each other died in this epidemic. It was from this trip with Osborne that Dolmage and Belloo returned just after Cockburn and I had got in.

The morning of the 16th Belloo helped us pack and saw us with the horses over the trail past the bluff on our way to Sapeye Lake. No one could have been nicer. Dolmage then paid him and he went back saying that he had some stuff to take down the valley to his cabins and that he would be very pleased afterwards to be our packer. So we rather expected his reappearance in a week or so.

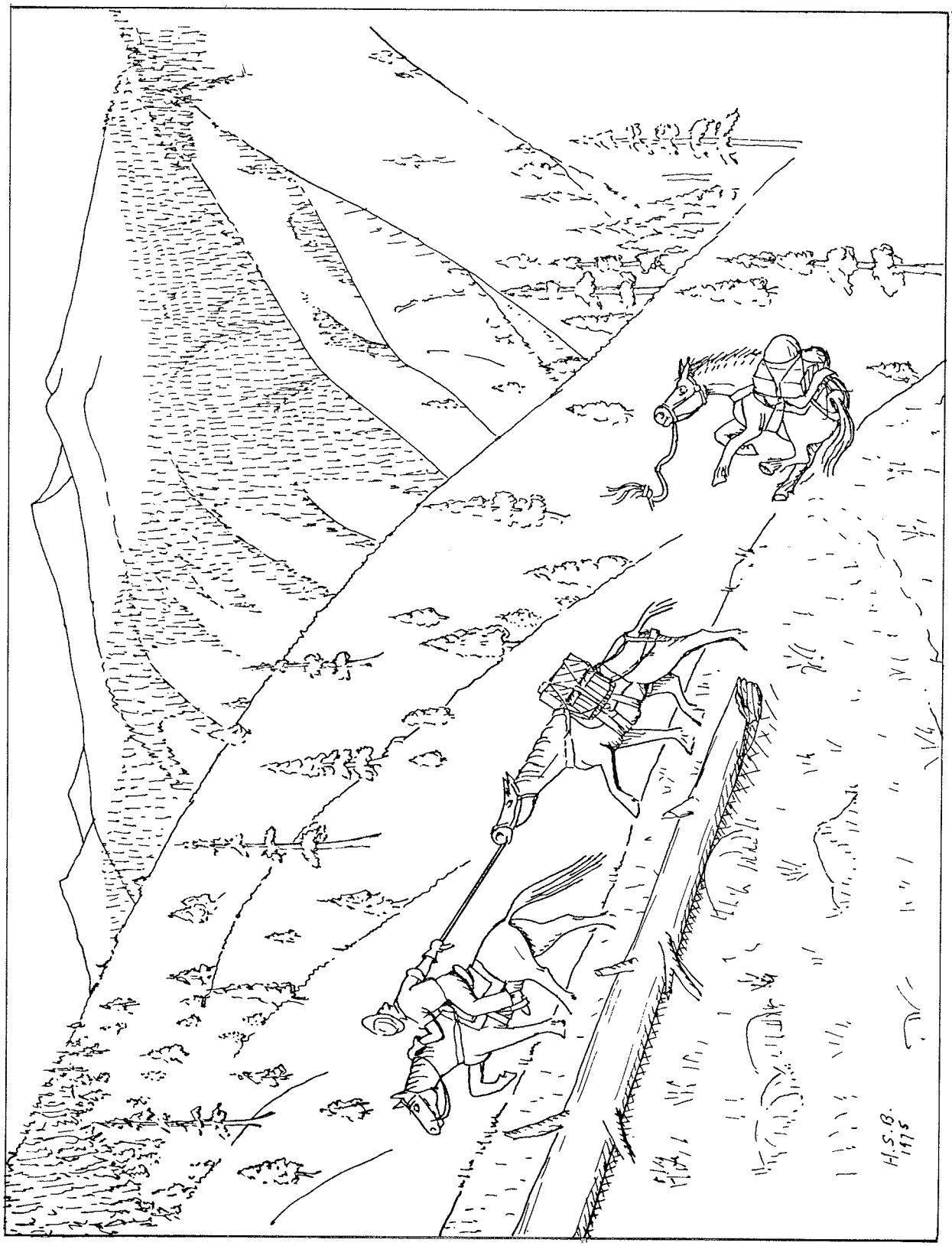
Sapeye Lake camp site was nice but not as nice as Bluff Lake. We rested the next day and the following day the three of us went out on a short traverse and found a good fossil locality. Dolmage was recovering from his ordeal quickly and now meals were cheerful sitting around the table.

On the 19th we went to Bryant's and sorted over the spare equipment and supply of food which took a long time. We had supper there and got back to camp at 11:30 p.m. Dolmage saw Neganie who had been to the police but everything had blown over. He also saw Osborne at Graham's where the latter had just arrived. Osborne was terribly weak and could hardly walk. He was to stay there and then join us near One Eye Lake with Bryant after a fortnight. Moore of Tatlayoko Lake turned up with a lot of butter for us. Also we met Bowser and his wife who live a little west of One Eye Lake. We were all impressed by Bowser's strong, straight forward personality.

The next day Neganie rejoined us alone as our packer. Osborne had told Dolmage that the doctor at Alexis Creek had told him to warn Dolmage that Neganie and his family were all suffering from gonorrhea. This worried Dolmage very much as were eating our meals with and handling the saddlery handled by Neganie. When Dolmage told Neganie that he had heard that he had gonorrhea Neganie acknowledged it with a laugh and Dolmage gave him a piece of Lifebuoy carbolic soap and instructed him about washing frequently with it all of which he listened to with quiet amusement.

On the 20th we moved to Kleena Kleene Flats glad to have seen no more of Belloo. Cockburn and I rode beside Neganie whenever we had an opportunity. He was much quieter than Henry but now and then some little gem of interest came from him. On our way Neganie pointed out and described with glee a place where his father and some other Indians one night had crept up to our four sleeping white men and cut their throats. A little farther on he suddenly sprang from his horse and drawing his battered old .22 rifle shot into the brush across a creek to no purpose as it seemed to us. He threw down his rifle and ran across a stream in his moccassins as a large buck wandered out of bushes shaking its head. Drawing his hunting knife and holding the buck's horn in his left hand he plunged the knife into its throat and jumped back. The blood gushed from the buck and in a moment it fell over. We thought this a lucky shot until during the following days we had seen him repeat the whole performance exactly a number of times. His rifle was an old single shot and fired nothing bigger than .22 "long" cartridges, not even "long rifle" cartridges so that there was no question he was a dead shot with it, hitting the bucks in exactly the right spot to stun them.

From here we moved to Miners Lake. As I was unpacking Pinto I walked around behind him a little close. He lashed out at me and I felt the touch of his hoof on the side of my face but I was just beyond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his effective reach. Had I been a foot nearer he would have killed me. Neganie who saw it, said with a laugh, "Pinto, he pletty near kill you". The fishing at Miners Lake was excellent. I reminded Dolmage that it was now time to turn the plane table over to Cockburn, but he said he wished me to continue with it for the rest of the season. I was pleased as I liked the work.

This calls for a few lines about Davidson's triangulation on which the accuracy of our plane-table map was so dependent. Besides what Dolmage said we gleaned scraps of information of Davidson's work from the settlers. In the spring of 1924 Davidson had measured a baseline near Tatla Lake and then expanded his triangulation net northwestward placing his stations on prominent summits along each side of the broad depression that extends along the border of the Interior Plateau in front of the Coast Mountains to beyond the Rainbow Mountains along the Dean River Valley. As he approached Bella Coola he occupied our "Last Plane Table Station" so that his work could readily be tied in to sea level. During the first part of the season signals, either big tripods of poles covered with white cloth on forested summits or dry stone cairns 10 to 12 feet high on mountain peaks were built at the stations. In the central part the triangle sides were tens of miles in length. When the signals were all built Davidson and his men started from the northwest and made the final precise readings of the angles. The instrument could be set up under the apexes of the tripods but where there were cairns it had to be set up first on one side and then on another in reading the angles. The Bryants told us the snow was on the ground and the temperatures were below zero when the party came into their place. What it must have been like on Niut's peak reading angles in zero weather can be imagined. The purpose of this triangulation was to establish a control for any surveys, legal or topographical. With any three stations in sight we could fix our position by "cutting in" on the plane-table.

From Miners Lake on July 24th we moved up to timberline and camped, east of Perkins Peak, 9380 feet, up which we were able to ride to 8500 feet saving packing the instruments far. Perkins was the highest point occupied during the summer and commanded a magnificent view in all directions so that despite the visibility this day being little more than 15 miles a lot of country could be drawn in on the plane table. It was such an important point that I asked Dolmage if Cockburn and I could return there the following day and he agreed. This was most fortunate as on the second day the air was much clearer. The great cairn on Kappan Mountain about 40 miles away could be seen clearly through the telescopic alidade.

In this work after setting up the planetable and orienting it, rays were drawn to features whose positions and elevations were needed. After each ray was drawn I gave the point a name and read the vertical angle. If it gave an intersection the distance was measured on the board. These were recorded by Cockburn who then calculated the differences in elevation by logarithms. The calculations were kept to a minimum while on the station but in the evenings all elevations likely to be useful the next day were worked out and doubtful ones checked. This sometimes took us past midnight but Cockburn was a cheerful and willing helper.

The second day on Perkins we saw for the first time a grand peak standing up away to the west and when I read the angle Cockburn said "What are you going to call this point?" I said "Monarch, because it seems to have a circlet of vassal peaks in front of it". Dolmage suggested this name to the Canadian Board on Geographic Names and it was accepted and is now on all the maps. My position was just about correct but the elevation of 11714 feet has now been reduced to 11590 feet. All Davidson's elevations have been reduced about 150 feet. It was climbed in 1936 by Hans Fuhrer and Henry Hall, Jr.

There was a hematite prospect in the cirque on the east side of Perkins with a wonderfully constructed dry-wall stone house in which hardly any wood had been used. We also looked at an arsenic prospect on the northwest slope of the mountain.

From this camp we moved to the other side of Miners Lake, Neganie guiding us with ease through what looked like miles of inpenetrable forest in the valley. Now we were on a beautiful high rolling upland bounded by the deep valleys of the Klinaklini River and its tributaries. Here some days I went off alone on my nervous little mare. I had the planetable, 18 x 24 inches, in my rucksack on my back, the alidade in a box slung under one arm, my lunch and notebooks in a haversack slung under the other arm and the big oak tripod slung on my right arm like a lance and the points of the legs resting in a "lance bucket" I had made and fastened to my right stirrup.

On the 31st Billy Dagg rode into camp to take Henry's place instead of Neganie and Benedict gave notice. We were not sorry to see Benedict go. Cockburn and I suspected he also had venereal disease. The following day Neganie left taking Benedict with him. We regretted Neganie's departure as we knew we were losing the best guide in the country and he also had told us many interesting things. Dolmage and Cockburn rode out on a traverse to the west and Billy Dagg came with me. Billy was a big, cheerful fellow in his early twenties.

In the Vancouver Province, August 24, 1926, a short note said that Neganie after drinking home brew had beaten his wife unconscious and on sobering, thinking he had killed her, shot himself dead.

On August 3 we moved down to Bowser's place and Osborne, now recovered, returned.

Bowser consented to be our cook for the rest of the season and proved good and clean as well as very much more one of the party than Benedict. He was a cousin of Premier Bowser of British Columbia and had been brought up as a roving horse raiser on the Prairies. His place was neat and clean and he was broadaxing logs square for his new house and doing a beautiful job. He must have been 55 at least.

From here we mapped the surrounding country, making trips up to the edge of the mountains which were all granite. One evening after supper Dolmage asked me to ride with him to see Sam Caldwell, the telegraph operator at the west end of One Eye Lake. When we approached his cabin we could hear someone shouting and yelling inside. The door was open and we stood at it listening before we went in. He was sitting alone with his back to us at a table with radio on it and head phones on making all the noise and waving his arms. He professed to be a zealous Communist and he was listening to a communist rally in San

Francisco. In Caldwell's eyes all government jobs except his own were graft; however, he was good hearted, generous and liked by everyone. His place had a beautiful site by the lake and it was well kept. His Clydesdale team and a little black saddle or packhorse, all fat, were grazing nearby in unfenced pasture. He had come into the country as a prospector and finding he needed winter quarters had settled here. When he had leave from the telegraph he went prospecting into the mountains taking his packhorse with a load on a homemade pack saddle. On reaching an area he liked he threw away his pack-saddle and turned his horse loose to go home, which it always did. He worked till his grub was finished and walked home with his tools and blanket.

After Dolmage had given him his telegrams we sat and talked. Caldwell said "I hear you have Billy Dagg packing for you" and then reeled off the names of about 8 Daggs, all children of different Indian mothers. I said Dagg must have been quite a fellow with the girls. "Oh, no" he answered, "nothing unusual. The whole bunch of old timers here were like a bunch of stud horses running around. Only Dagg, he was a sure getter".

On August 12th we moved to Caribou Flats and Billy rode to Towdystan to arrange to have our spare equipment, supplies and our suitcases taken to Atnarko at the end of the road from Bella Coola. Two days later we moved to a lovely campsite on Charlotte Lake. The following day, the 15th, we moved to Kappan Mountain. We lost the trail Davidson's party had cut but finally reached the mountain late after cutting trail most of the way through deadfall. All day we had seen its beautiful green slopes on the upper part and expected a good campsite and grass. Instead in the failing light we found nothing but weed growing on coarse broken rock and no water. We dropped back down about 1500 feet into the last creek bottom we had crossed and camped after midnight in dense second growth jackpine and deadfall with no grass. Billy hunted the horses throughout the next day. Here we were in what Henry had aptly described as "the stick country", of the "Stick Indians". Formerly this was caribou territory and we saw a number of old heads but no fresh sign. Now moose had spread into it.

There was a lot of work to be done now to finish the first planetable sheet of the map so that Dolmage could take it with him when he left us at Precipice Camp in a few days. Cockburn and I occupied Kappan Mountain on the 16th. It was another of Davidson's stations, a key point for us, and gave a splendid view in all directions. A particularly fine monument of rock about 10 feet high and 10 feet in diameter at the base, had been erected on the summit. Several other monuments were visible through the telescope of the alidade to the north and northeast. I oriented the planetable on Perkins and so had good rays. To the south and west stood the Coast Mountains, an unbroken array of peaks including Mt. Waddington and Monarch. The only trouble this day was that the wind was strong and icy cold. The planetable had to be held down by 100 pounds or more of rocks suspended by rope from its legs and I had to hold the alilade to keep it from being blown away. I was thankful to Mrs. Henry for my buckskin shirt. It was ideal on such a day. We could see the fall in the stream coming out of Turner Lake, the Hunlen Falls, reputed to be the highest of any volume in Canada. The top shear drop is about 800 feet but altogether it is 2300 feet. That day as far as we could see the water turned to spray before it reached the bottom of the upper drop. We could just see the bottom in the great canyon-like valley that stretched from Bella Coola to Knight Inlet. We could also see Anahim Peak, Clu-Beece, as Henry had referred to it, and the Rainbow, Ilgachuz and Itcha Ranges. But we could not see Lonesome Lake, famous as the home of the hermit family of Edwards and the winter resort of trumpeter swans.

On the 19th we headed for Precipice Camp on the Lunos Trail that leads to the valley and Atnarko. At first we followed down a meadowy and brushy creek bottom. Dolmage and Osborne were ahead looking for a trail. Cockburn and I were driving the horses behind Billy and Bowser. Suddenly there was a rifle shot ahead, then, bang, bang, bang. We let the horses graze and galloped down the meadow to see what was going on. When we arrived Billy and Bowser were standing looking at a moose calf, the lower jaw of which Billy had blown away with the first shot. He had then become excited and could not hit it. Bowser who was holding the horses said "Someone shoot it", so I shot it in the neck just behind the head and down it went. This was my first moose. I had not shot anything bigger than a cat before. It was a big bull calf and good eating. The mother had gone.

Finally the creek bent westward and no longer in the direction we thought we should be going so we struck straight north to try to hit the Lunos Trail with the telegraph line along it. Now we were cutting trail through the second growth pine again. We crossed a small meadow and headed on north but seemed to be getting no where so turned back to camp in the wet meadow on the little creek. Dolmage was worried as he had arranged to catch the boat at Bella Coola on August 24th, and there was still a considerable journey to be made.

I suggested that Cockburn and I start directly after breakfast and cut trail down the creek valley as it seemed to bend around to the northwest. We were up early and we did this, leaving the others to pack up. We cut as hard as we could go. We always seemed to hear the pack train coming. Finally the pine got thinner and we came upon a narrow game trail enabling us to make better progress. By mid-day we had cut about 3 miles and found ourselves going down into a large creek valley to the north just as the others caught up to us. A poor trail led down the north side of the larger valley and after a couple of hours we reached the Lunos Trail with the telegraph line.

We soon reached Precipice Camp and camped. The next morning, the 21st, Dolmage left us with Billy for Stuie at the end of the road to Bella Coola. I was now in charge of everything except the geology which was to be Osborne's responsibility.

The day after the weather turned misty with rain. We were shut in on both sides of the valley by the high lava walls and the cloud was down on the rim of the cliffs so we had to stay in. Here, at Precipice Camp, the floor of the canyon-like valley broadens to half a mile or more and there was lots of feed for the horses as well as a beaver pond. About mid-day a Scot, Jack Gregg, arrived riding a very nice horse which Bowser said had been bred by Henry. He stopped for lunch and then for the night and kept us in fits of laughter at meals with his stories of the Indians, particularly the old chiefs, Squiness and Capoose. George Powers, a white man was camped with his Indian wife, Jessie, about 300 yards from us. We had heard of Jessie. She had a tremendous reputation for wisdom

all through the country with white men as well as Indians. She was the princess of the Anahim Indians. Bowser and I went over to visit them. They had no tent but were under an immense spruce around which the ground was dry for about 8 feet radius. A flock of geese on the beaver pond were held down by the fog.

On the 25th Billy returned with Dolmage's horse and the next day went to Atnarko by the Lunos trail to fetch some things which had been stored there that we needed. During these days we three assistants rode out on traverses along the valley but it was still cloudy and wet. Osborne examined the lavas and I set the planetable on a promontory and cut our position in when the clouds opened. The day after Billy got back we moved to the Little Rainbow Mountains, taking two days as the trail was bad and unknown to us. The morning after we reached this range Billy and I started to the southwest end where I planned to set up the planetable but just as we got there it started to rain. Billy spotted some goats which disappeared over the crest and after a climb we suddenly came upon them again below us under a cliff where they moved out of sight before we got a shot. After running we caught up with them at less than 50 yards but could not hit them. When we had only two cartridges I told Billy to have a rest and then see if he could get one. I went back to the horses which were standing untied in the rain. After a while Billy arrived with a goat on his back. He roared with laughter and said he had hit it with the last cartridge when aiming at the second one from it. Anyway we had the young goat which was delicious and a reward for our soaking.

On September 1st we moved down north to find Capoose's summer trail, reaching it about 2 p.m. Soon after, to our surprise, we met two young fellows and two girls with five packhorses on a pleasure trip.

When Henry was not around Pinto was often troublesome with the packtrain, viciously kicking the other horses and scattering them. His value was the heavy pack he could carry. This day he was particularly bad so I rode behind him. Suddenly he backed up and kicked my mare on the neck narrowly missing her head. There wasn't going to be any more of that. I cut a good sharp lance and carried it at the trail. Soon he tried again and gave himself a good jab in the leg. After that he behaved when I was behind him.

Next day Cockburn and I occupied a first rate point "Rainbow". After all the rain the air was beautifully clear and we could see Mt. Tatlow beyond Tatlayoko Lake more than a hundred miles away. The colours of the lavas of the Rainbow Mountains are spectacular and showed vividly. Around us was a magnificient summer sheep or cattle range. The day was the only one all summer that I was able to occupy two plane table stations in a single day. They were six miles apart. Osborne, with Billy, went to find the granite contact to the south of us.

From this camp we moved to a particularly nice one. Cockburn wasn't well so Osborne and I went out together and I occupied a very good station. We also saw lower parts of the hind legs of a freshly killed caribou. This was the only sign we saw all summer that there were still caribou in the country.

On the 5th we moved to Fish Lake at about 4500 feet, our last camp. Cockburn was still not well but he recovered the next day and we occupied Canoe Bluff overlooking the Bella Coola valley, the floor of which lying close to sea level is about 6000 feet below. Right opposite the great buttress of Mt. Stupendous rises shear to 8500. At this camp looking south towards the mountains it appears that one can walk right up to them with no sign of the great chasm of the Bella Coola valley between. That night it snowed on camp and though it melted there it stayed on the mountains down to about 6000.

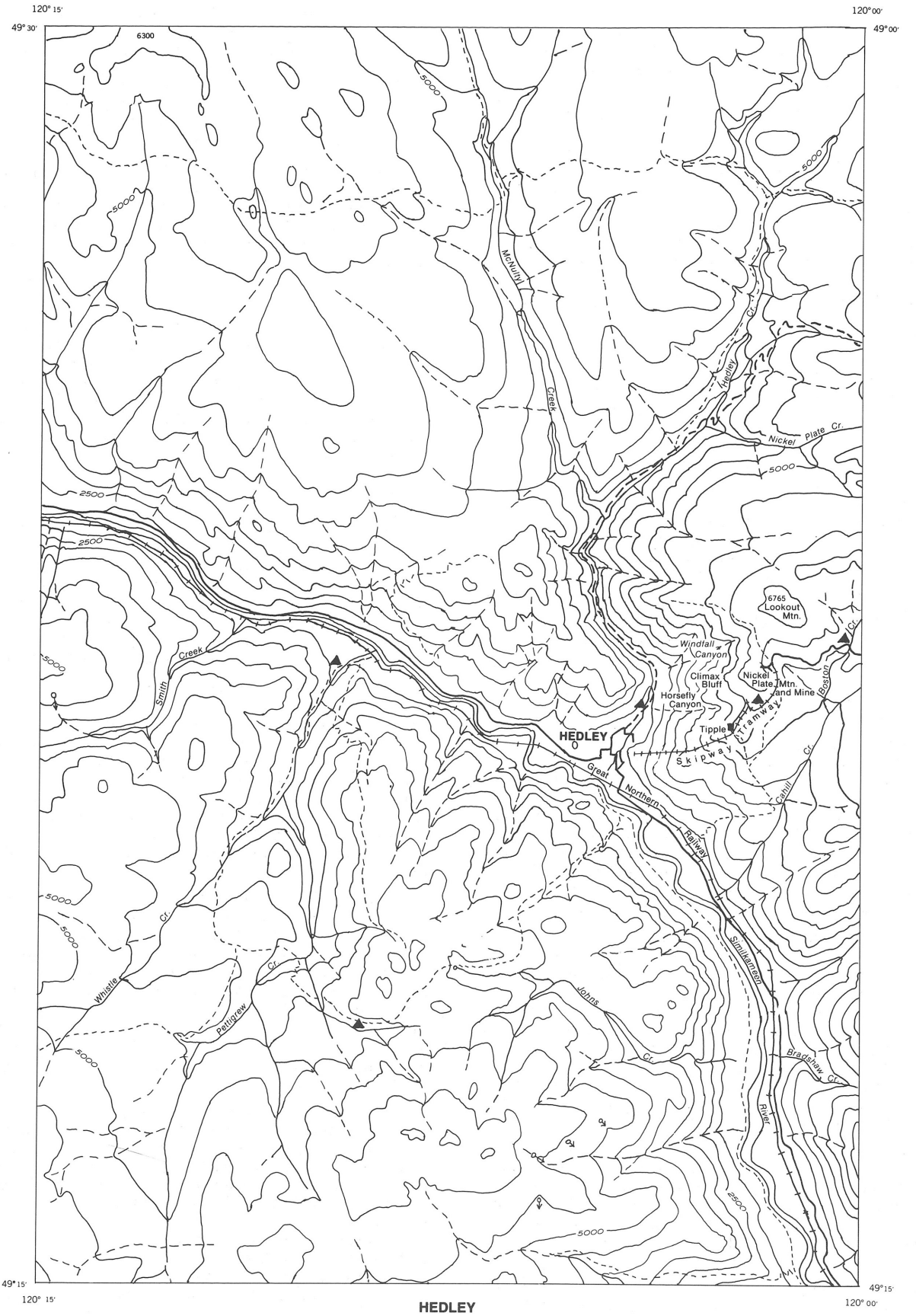
Some Indians were camping near us and one evening there were screams and wailing in their camp. Some women came running over carrying a baby that was blue from suffocation hoping we knew what to do. Luckily Bowser did, and holding it on its face gave it a good pat on its back. A moment later it was breathing normally. He said this was not uncommon with babies.

At supper there was the thunder of galloping hoofs approaching. We all came out of the cook tent to see what was coming. An Indian rider came tearing up leading a little black packhorse with its head roped to his pummel. He pulled up with a jerk. Both horses were streaming with sweat and foaming. The packhorse was loaded with a case of whiskey on each side. He brandished a rifle shouting "My name, Jack James. I cetchem Scotty Gregg. He stealem my horse". He pulled a police summons for Gregg from his breast pocket and showed it to us. No wonder Gregg had said he must be getting along. The rifle was a new 30 30 Savage he had picked up on the trail on his way up the valley from Bella Coola and belonged to a traveller whom he said had promised him $10.00 if he found it and sent it down to Bella Coola. He wanted one of us to give him $10.00 but none of us wanted to take a chance on finding the traveller and we did not want the rifle. James had ridden up from the valley 4800 feet that afternoon. His horses looked like it too.

On September 11th it cleared up. We broke camp and made our way down the terrific switch back trail into the Bella Coola valley. I rode ahead to phone for a truck to come and take us and the equipment into Bella Coola. The phone was about two miles down the road and I passed a very curious sight. An Indian family walking towards Bella Coola all strung out along the road. The last one was the matriarch, a stout old woman lacking one eye and corncob pipe sticking out of her mouth. She looked me over with a measured penetrating gaze.

I had asked Osborne to look after the sorting of the equipment as he knew best what was Survey stuff and he had agreed. To my surprise when as I was leaving the house with the phone, he arrived with his own things on a truck. He asked me if this was all right. When I got back to the others I heard what had happened. The truck going to Bella Coola had come along almost as soon as the party had reached the road. Osborne happened to know the driver and knowing we would not be in until late, asked for a lift to Bella Coola. He put his own things on the truck and left.

We sorted the things and bargained with a local man over some extra flour in exchange for pasture for the horses. Bowser cooked an early supper and I made out and gave Bowser and Billy the cheques for their wages. They now had about 170 miles to ride back with the horses, a trip which we estimated would take 10 days to Henry's. Cockburn and I left for Bella Coola, very sorry to shake hands and see the last of Bowser and Billy. Both had been good, loyal, cheerful men. The truck arrived just before dark. We arrived at Bella Coola about 8:15, had another supper and went to bed.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Mine
Tramway
Boston Cr.
HEDLEY
Tipple
Skipway
Great Northern Railway
Cahill Cr.
Smith Creek
Whistle Cr.
Pettigrew Cr.
Similkameen
Johns Cr.
Bradshaw Cr.
River

HEDLEY

After waiting 24 hours in ceaseless readiness for the Union Steamship, Comosun, she finally arrived and took us to Vancouver. We were greeted there by Dolmage with some surprise as he had intended we should continue the work a week longer until the next boat trip. None of us had understood this; however, he was pleased to see us.

Cockburn had taken a lot of excellent photographs with a postcard size camera and gave Dolmage and me both complete sets. He returned to Edinburgh University and took his Ph.D., continuing at the University to teach for several years when he died suddenly.

Osborne got his Ph.D. and at his oral his professors found him an unstumpable encyclopedia of geology.

Dolmage resigned from the Survey in 1929 and went into the private practice as a consulting geologist in Vancouver where he still works.

The Henrys lived on prosperously at their ranch with their two adopted children. In the early 1950s Mrs. Henry, Doris, died and a few years later Henry married a widow, Mrs. Johnnies, also a good help mate but she died in 1964. The granting of liquor privileges proved Henry's undoing despite his professed determination when with us never to drink. Bit by bit he sold his stock and his properties so that he had little left and was living on his old age pension when he died about 1968, approaching 80 years of age.

Billy Dagg became foreman of a ranch near Towdystan and in the 1940s moved to near Kamloops and later to Creston where he now lives.

During the summer I had never shaved and at Fish Lake, before cutting my beard off, Cockburn took my photo. At Monte Creek while showing Cockburn's pictures to the family, when Mother came to my photo she exclaimed, "Who is this awful looking gorilla?", to which I answered "It's a wise mother that knows her own son". And so on to Madison, Wisconsin for the winter.

## Section III: 1926 to 1930, the Similkameen and Okanagan Country

### The Season of 1926

At Easter on hearing that I was to be sent to Hedley, B.C. to work on the geology of the mine on Nickel Plate Mountain for my thesis, I went to Ottawa where Father and Mother were for the session.

I called at the Survey in the Victoria Memorial Museum Building. Dr. Clive E. Cairnes had already written my letter of instruction and made out my estimate, instrument, equipment and stationery lists. He told me that I would have one assistant but did not need a cook as there was a good cookhouse conveniently located at the mine. He had been there a number of times. Dr. V. Dolmage, in Vancouver, was to be my supervisor.

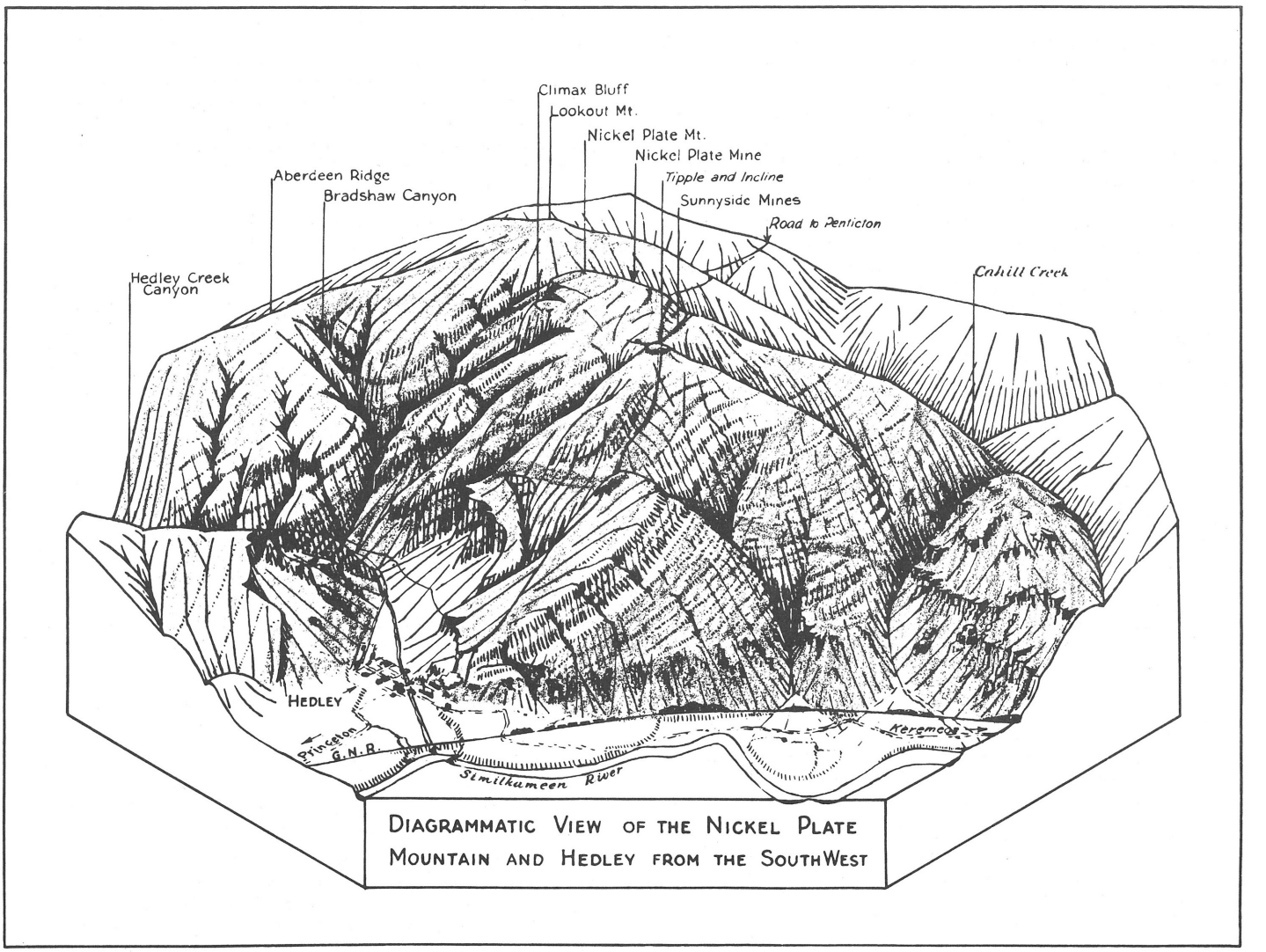
I took the papers into Dr. W.H. Collins, the Director whom I had already met the year before when I called to tell him that I wished to join the Survey. He read them carefully and said "But I have $500.00 for wages and food for a cook for you". I told him what Cairnes had said. He looked over the lists again and finally coming to the bottom of the stationery list, he said, implying that the list was extravagant "One art gum eraser is enough" and changed the two on the list. "You may have $500.00 for a cook though". I was flabbergasted and explained again this was unnecessary. I learnt later that he had recently had a kidney removed and this made him temperamental.

Dr. Collins then told me to call on Dr. Charles Camsell, Deputy Minister of the Department of Mines of which the Survey was a branch. Dr. Camsell's office was along the hall from Dr. Collins'. He was an old friend of the family so that I already knew him. He received me almost at once with his natural, gracious, friendly manner. In the summers of 1907 and 1908 he had worked at Hedley for the Survey (Memoir 2) and now gave me the historical background of the mining camp, pointing out that the Nickel Plate Mine was the basic support of the livelihood of a considerable population. He stressed the necessity of helping to find more ore as the reserves were running low and he explained that the geology of the orebodies was unique among lode gold mines. He said that for a brief period, until the development of the South African Rand the Nickel Plate Mine had been the largest lode gold producer in the British Empire.

I left Madison, Wisconsin for Monte Creek where I arrived on May 25th and was met by my younger brother Norman. On the way I had been with Professor W.J. Mead and a group of fifteen students on the Lake Superior trip. When the trip broke up my suitcase and bag of clothes were checked to Minneapolis but did not arrive with me. I had to recheck them on by the Sioux Line and C.P.R. to Kamloops and go on. At Minneapolis I was a little short of money for meals and went to the First National Bank to get some. I had my cheque book for the bank in Madison and said I wanted to cash a cheque for $20.00. I was ushered in to an elderly man and sat down. He asked me every conceivable question as well as what I had to identify myself. I only had my pass on the C.P.R. Suddenly he said "You say you are a student from Wisconsin. What was the score at the Wisconsin-Chicago football game?" I told him I hadn't the least idea. That being a foreign, graduate student I didn't pay much attention to the football matches. He said "Give me your cheque but my God young man if this cheque bounces I'll curse you to the end of my days".

The clothes didn't arrive while I was at Monte Creek and I gave the two cheques to Norman and borrowed some clothes from him to go to Nelson in. I left Monte Creek on the evening of May 27th by C.P.R. and slept at Revelstoke. The next day I went down the Arrow Lakes on the S.S. Nasookin and was met by the Hamiltons at the C.P.R. Station at Nelson.

On the evening of June 1st I left on the Kettle Valley Railway, Coquihalla line for Hedley. I arrived at Princeton at 2:40 the next afternoon and took a taxi 25 miles to Hedley at a cost of $7.00 instead of going to a hotel for the night and taking the Great Northern Railway train to Hedley in the morning. At Hedley I found Britton B. Brock, my assistant. He had had as many years on the Survey as I had and was well experienced. We got on together as once. His father was Dean Brock of U.B.C., formerly Director of the Geological Survey. After supper in the only hotel we went to see Mr. Gomer P. Jones, the general manager of the Nickel Plate Mining Company. Jones was most friendly to us. He allotted us a room with a bathroom over the head office of the company and introduced us to Messrs. Roscoe Wheeler, the mill




DIAGRAMMATIC VIEW OF THE NICKEL PLATE MOUNTAIN AND HEDLEY FROM THE SOUTHWEST

foreman, Harry D. Barnes, the time keeper, and others of the office staff, all of whom became good friends of ours, especially Harry Barnes. They had all, including Jones, been originally in western Australia. Our room we found comfortable but the roar of the mill close by day and night was something we had to get accustomed to. The stationery and equipment arrived but no instruments. We spent the evening with the Joneses, Mr. and Mrs. and young Gomer about our own age. Jones discussed the problems of the geology and the mining. To bed at 10 p.m. and very thankful I hadn't spent the night in Princeton.

The following day, June 3rd, we were up at 6:30 a.m. and after breakfast at the hotel met Jones about 7:30. We studied several maps and sections with him in the office and then went up the cable skipway which consisted of two buckets in balance on a steep outside track up the face of the mountain. The skipway was built in two sections, a lower longer section and an upper shorter section at an angle to it. The buckets were really specially shaped cars on four wheels attached to the cable ends. At the top of the skipway at 4000 feet above Hedley was "the tipple" and from there we rode on the electric tramway about a mile around the mountain to the mine and buildings of the camp. First Jones showed us the two Sunnyside glory holes and then took us on to meet the mine manager, Mr. B. Wallace Knowles and Mrs. Knowles. They were very nice and I kept in touch with Knowles until he died in Colorado years later. After lunch at the mine cookhouse where we were to have our meals we went down to Hedley again by the skipway. Jones drove us around Hedley and up Hedley Creek to view the structure of Nickel Plate Mountain.

On June 4th Brock and I got our equipment up the mountain and met the men who ran the skips and trainway. They were a good bunch and we became friends with them all as the summer went on. They consisted of the track man, the two men in charge of the controls of the skipway and four men who ran the two trains at the top. We became particular friends with two brothers, Charlie and Alec Saunders, who worked together on one of the trains hauling the ore from the mine to the bin at the tipple. They arranged for us to sit beside them in the mess house and during the course of the summer they gave us several useful tips and warnings that stood us in good stead of the characters of the various miners. We pitched our tent above the Sunnyside No. 4 glory hole, where we had a glorious view to east, south and southwest across to Apex (Independence) Mountain on the ridge of hills between us and the Okanagan Valley and over the great valley of the Similkameen River to the Okanagan Range. Here we felt we had a certain degree of safety from having our things touched as the tent was in full view of anyone on the tramway below.

Some days later my baggage arrived from Kamloops. Norman had got it through customs saying it was all clothes. He did not know it contained my new 22 Colt automatic pistol and it was just as well it was not opened.

The following day Brock and I walked around the upper levels of Nickel Plate Mountain and up to Lookout Mountain. We found some fossils. They were little star-shaped crinoid stems standing out in relief on the surfaces of two large limestone boulders beside the tramway. In the five years of mapping on the mountain and in the country around, we never found an outcrop of similar limestone but they have always been assumed to belong to the limestone horizon under the Sunnyside orebodies as they are close to it, but this limestone has few natural outcrops and those there are as in the mine workings show it to be coarsely crystalline. In 1927 Dr. Camsell asked me if I had seen these fossils and said he had walked past them many times without realizing that such tiny things were important fossils. In 1919 Dr. S.J. Schofield visited the mine with him, spotted them and published a paper on them. When working down the mountain we used the skipway to come back up again in the afternoon.

On June 8th we went around the mine with Knowles who gave us the necessary lights and equipment to go underground. He was a powerful man, 6 foot 7 inches, but he was supple as a weasel and he seemed to be able to get through any small opening underground with ease. The next day Brock and I went over Windfall Ridge and down the canyon to Hedley where we had supper in the hotel about 5:30 p.m. In the evening Knowles drove us with one of the shift bosses back to the mine in his new big Studebaker. The trip around by road was about 45 miles and we had seen nothing like it. The scenery on the great through, dry belt valley of the Similkameen River was something new to us. From Keremeos we went up Keremeos Creek and up tremendous switch backs to the west again. The sheets of lupin, larkspur, penstemon and a red flower as we approached the pass north of Apex Mountain were magnificient. When we got to the top it was snowing all the way to the mine.

It snowed most of the next day, June 10th, and we spent it in the mine drafting office. The following days we spent trying to get familiar with Dr. Camsell's map of the mountain by going to various parts. We found the detail very much generalized as it had to be on a scale of 500 feet to 1 inch. We heard that in former years there was a band of ewes and lambs in the Windfall Canyon on the north side of the mountains. These formed an interest to the miners in the camp but one day a new miner hearing of them, bought a rifle and shot them all. He was run out of camp. On Tuesdays every week there was a movie shown at Hedley and we went to see Douglas Fairbanks in the Thief of Bagdad. June 16th we went up Stemwinder Mountain and down to meet the train hoping Dolmage would arrive. The evening was spent playing bridge with the Joneses and drinking beer. We were both tired of this scouting around and felt we were not getting anywhere. A few days later when we were underground exploring the Sunnyside 4, we heard Jones's voice shouting, "Jones, Jones, Jones, Jones", and climbing out of the workings to see what on earth was going on we found Dolmage and his assistant P.G. Patterson had come up to see us with Jones, who was reminiscing to them. They had driven to Hedley in what I believe was the first Survey car in British Columbia, a Ford. We discussed what we had been doing and Dolmage asked us what plans we had. We decided to make a planetable map of the top of Nickel Plate Mountain showing the geology and topography with 25 foot contours on 100 feet to the inch and map the geology of the mine workings underground on 30 feet to the inch, the same scale as Knowles mining maps. Dolmage promised to provide us with the necessary instruments and paper. The latter included a huge sheet of paper. This was for the surface map. As Dolmage was leaving for Princeton he asked me if there was anything else we needed. There was a small brewery in Princeton known far and wide for making the best beer in the country. I said, "Yes! A case of beer". We had become rather tired of the sump-

fuous meals at the cook house and felt we needed something to break the monotony. When they had gone Brock said to me, "You have your nerve. Don't you know Dolmage is a strict teatotaller." The beer arrived on the next stage from Princeton. Patterson told us afterwards it had worried Dolmage for some time.

We now had the problem of getting the 24 bottles up to our tent. We knew if any of the miners got wind of it, that it would be stolen. We packed the bottles loose in our rucksacks but they stuck out and there were a few over we had to carry in a bag. We gave Bob, the track man a bottle as the skip went by him at about 3 mph. It was a scorching hot day and we could see the delight on his face. Then we gave the two men at the skipway controls each a bottle and the same with the two on the tramway, Charlie and Alec Saunders, two of our best friends. They all saw what we had but never a word was said to anyone else. We hid the bottles under the canvas floor of our tent and had a bottle between us sitting in front of our tent after supper every evening enjoying the magnificent view as the long shadows crept over the high undulating surface. We buried the empties in an abandoned prospect trench by our tent.

Soon the paper and instruments arrived and we began our map of the top of the mountain. The sheet of paper for the surface manuscript was the biggest I have ever seen and we needed it. It was kept in the mine drafting office and Knowles helped us lay out the co-ordinates used for the mine on it so that one could match our map with the mine maps. Our first job was to lay out a triangulation control with base line. We had all the instruments but there was no where to lay out a base. Finally Brock got a bright idea. I had a legal claim map giving true north and all the dimensions and angles of the claim boundaries. The claims extended over Lookout Mountain to the north and far past the tipple of the tramway to the south. One could see from beside the tramway track near the tipple to the bald top of Lookout. We decided to put up a signal near the track and another on Lookout and then traverse from the nearest claim posts with transit and chain to the signals. All the claim posts were up and well marked. We worked out the distance between the claim posts by three different routes on the claim map and then averaged them. They all came within a couple of feet of each other. We had the angles between the line of the Lookout-Tipple signals and claim lines and so we were able to calculate its azimuth from the claim map. Furthermore any error was minimized instead of expanded as is the usual way with triangulations as the area to be mapped was wholly between the two extremities. It all checked well with Knowles' surveys.

This took us about a week and then we started. Brock ran the planetable and I went from outcrop to outcrop with the stadia rod, hammer and notebook recording the geology of each point. Brock read the distances by stadia and vertical angles working out the horizontal distances and vertical differences by stadia rule. The pattern of the gabbro sills soon began to appear and was much more complex than Dr. Camsell's small scale map was capable of showing.

We now worked steadily at the planetable mapping except in wet weather when we mapped the geology of the mine workings underground using copies we had made of the mine maps. The second time Dolmage came to see us we had something to show him. When we needed a break we went down to Hedley. In going down we discovered the quickest way was to run with great leaps down in the fine cherty talus of the steep Horsefly Canyon. This route took us about 25 minutes but it was hard on our boots and the talus was soon worked to the bottom making the canyon unusable. In Hedley we had supper at the hotel and the change of food was welcome. We saw the show occasionally or visited Harry Barnes, who lived alone in a cabin, or the Joneses.

We stayed down in Hedley some nights and went to various prospects in the surrounding area that we heard of. I was amazed on reading Clive E. Cairnes' report of 1922 to see the tremendous amount of information on the camp generally and on prospects he had accumulated in three days.

One of the famous characters of Hedley was old, Dunc Woods, known as the dirtiest man in the region, but he was the owner of the famous Mascot Fraction claim that cut a big wedge through the Nickel Plate orebodies. Jones tried by every device he could imagine to buy the fraction from Dunc but he would not sell it to anyone if there was any chance it would end in Jones' hands. In the end after Dolmage had left the Survey and was a consulting geologist he was instrumental in buying it for a most successful mining company that took the name of Hedley Mascot. Cairnes told me later of his visit to Hedley and going to see Dunc Woods in his cabin on the way to one of his other prospects. Dunc said he would cook lunch which was to include bacon. He laid out the bacon and went for the frying pan but the bacon disappeared. All this time he was chewing tobacco and spitting liberally on the dirt floor of the cabin. Finally after tramping all around the cabin he found the bacon stuck on the heel of his boot. Without cleaning it off or washing it he put it in the frying pan. Cairnes said he never ate lunch and smoked his pipe.

One Sunday we decided we would visit the Apex Mountain ridge. It was about 6 miles to the pass along the road. We took our lunches and arranged to have a late supper when we returned. On coming to the pass we turned south along the ridge and in going over the second summit we were surprised to see four red Hudson's Bay blankets tied up in different places on trees as well as many large tin cans. Below smoke rose from a bivouac amongst a clump of trees. We approached and called "Anybody home" in the usual manner. We were invited in and found an elderly man of 67 who said he was C. deB. Green and we introduced ourselves. He said at once he knew both our fathers by reputation and later he told me that his son was in the troop of the Lord Strathcona's Horse (Royal Canadians) that my elder brother Alex had commanded in 1915. We had a friendly visit and found him most interesting. He said he put up the blankets and tins to frighten the coyotes away from where his sheep that graced on the ridge in the summer slept. He believed coyotes were afraid of red. At that time it had not been shown that dogs are colour blind. The first years he said he lost no sheep. Then the coyotes learnt to kill them. In recent years they killed about 100 sheep a year which he thought was about what a shepherd would cost him.

The Greens lived in summer down at Twin Lakes about which more in 1928. We subsequently found that Green had come from England as a young engineer to work on the construction of the C.P.R. line to Vernon. Later he joined the B.C. Lands Survey and lived in Victoria. In this, one year he made $25 000, a fortune in those

days, in one season working on the Queen Charlotte Islands. This was possible because at the time as the B.C. Land Surveyors were given the total amount of the estimate for the summer and kept any balance they did not spend. Green's predecessor on the Queen Charlott's had gone broke doing the Land Survey of a forested part of the island and as a consequence Green was given a very generous estimate but his area proved to be largely open. We were told that due to his generous nature he had given it all away by the spring. Later he homesteaded in the Okanagan Valley near Spotted Lake where he made his winter home. His memory we found was phenomenal and he had an ingenious mind for inventing gadgets. He was well known as a keen amateur naturalist and went by the name of "Catch de butterfly Green" on account of all the collecting he had done. Among his close friends were Alan Brooks, the famous bird artist and P.A. Taverner, the ornithologist, author of "Birds of Canada".

After a talk with Green we went along the ridge and met a highly respected old prospector, Jimmy McNulty in his cabin.

Some time about the middle of the summer Dolmage visited us again and left Patterson with us for two or three weeks as well as his Survey car at Hedley. We heard the Grenadier Guards band was giving a concert in Penticton so we took the car and went to hear it. When Dolmage returned I told him what we had done. He said had he known the Guards were coming he would have told us to go.

One day in August we traversed to the southwest of Hedley crossing the Similkameen by the railway bridge. The day was terrible hot. About noon we met the section men on the track. One of them said "Want a cold drink?" We certainly did. "Go into the tunnel beside the trace there" pointing. We went into this small tunnel which had been excavated in a coarse talus above which was a horseshoe of cliffs. The inner end was filled with ice and indeed about four feet below the surface all the spaces between the rocks on each side were filled with ice too. Apparently the sun never shines on this talus.

Brock was much in love with a girl in Kelowna and asked if he might visit her for a week-end. I consented as we had been working seven days a week almost steadily. So we agreed to say nothing about it. Later they were happily married.

The note books of this summer give no clue as to the date when we closed the season but I have a photograph of the snow around our tent and a note saying we took it down on September 19th. I returned via Monte Creek to Madison, Wisconsin.

## The Season of 1927

In 1927, continuing as a graduate student at Madison, on applying for field work on the Survey, I was instructed to study and map the geology around Hedley and eastward, an area that included many old prospects, notably for gold and copper as well as the White Lake coal mines. The area was to be bounded by meridians 119°00' and 120°00' and latitudes 49°15' and 49°30', enclosing two 15' areas, Okanagan Falls on the east and Olalla on the west. The topographical base map was supplied by the Surveyor General for British Columbia some of whose staff were engaged in mapping in the southern part of the Province. The method they used was to take panoramas of photographs from commanding localities whose positions were fixed by triangulation. The manuscript maps were plotted with a contour interval of 100 feet on a scale of 1:40 000 during the winters in Victoria. Preliminary prints of the maps covering irregular, adjoining areas were sent to me at Hedley. This topography was satisfactory to use for my maps which were to be published on 1 mile to 1 inch.

I was to be employed on this work from 1927 to 1930. In May 1931 after Dr. W.E. Cockfield was moved from the Yukon Territory to southern British Columbia I was instructed to take his place in the Yukon and told to drop the work in British Columbia completely as will be seen.

In the winter of 1938, Dr. Collins asked me to prepare my maps of the Okanagan and Similkameen country for printing as with the revaluation in the price of gold pressure had risen for geological information of old gold prospecting areas. This was done and the maps with marginal notes were published in 1940. Too many years had elapsed since I had done the field work for me to write the comprehensive report the work deserved and as my work in the Yukon had precedence I could not take a refresher field season in the country or spend the office time necessary.

During the first two summers, 1927 and 1928, the area covered was relatively small each summer but in succeeding seasons it steadily grew largely due to the introduction of motor transport and altogether after four years more than 1100 square miles were completed as well as considerable reconnaissance in the adjoining country.

The lower Similkameen-Okanagan is a lovely country to work in. Though the hottest part of Canada in the valleys there was enough high country to keep us occupied and escape the heat in July and August in 1927 and 1930 when we had horses.

After leaving Madison I went to Monte Creek for a weekend and then Jean and Nan drove me down to Princeton on May 16th. We spent the night at the hotel there. The weather was unsettled but the drive through Nicola and Aspen Grove was most enjoyable.

The next morning Ted C. Hay, my junior assistant, an electrical engineering student from U.B.C. arrived on the train from Vancouver by the Coquihalla line at 6:15 a.m. and after breakfast we all drove to Hedley. We called on the Joneses, Harry Barnes and Roscoe Wheeler and stored our stuff in the rooms in the office building that Brock and I had occupied last year. The Nickel Plate Mountain was covered with snow and it was cold so we did not go up on the skipway. After a picnic lunch the girls left about 2:15 p.m. Hay and I sorted the equipment and visited Harry Barnes again in the evening. Our base maps not having regular boundaries and on poor paper had to be fitted together and mounted. This was a considerable job. On the 18th we did a short traverse. We called on Mrs. Jones in the evening and Jones talked to us. On the 20th we continued working on our maps and I engaged George Pettigrew as cook at $3.50 per day from May 25th. My own wages were $3.55 per day. I had started at $2.50 with Walker in 1924 and been raised 0.35 per day each year and this continued until I was appointed to the G.S.C. in the fall of 1929. Pettigrew had been recommended as an all round man, good with horses.

On May 21st Hay and I went to Whistle Creek by taxi and traversed. Patterson, my senior assistant who had been with Dolmage the year before and now had his M.Sc. in geology arrived in the afternoon. The next day, Sunday, we traversed on the south side of the Similkameen. Patterson went off by himself looking for an interglacial period in the river gravels which he thought were till. The following day we visited Knowles at the mine. On the 25th we went up on the skipway again and over to George Cahill's place in the valley southeast of Nickel Plate Mountain but were caught in a snow storm. Yesterday we heard Pettigrew had celebrated and was put in jail in Princeton but he was soon out. On the 30th I hired a truck to move us up Keremeos Creek Valley to the foot of the switch backs of the Nickel Plate road and camped. Camp consisted of a cook tent and two sleeping tents with flies. We had folding camp cots, chairs and table. We stored our surplus things at LeLievre's Springbrook Ranch about a mile down the road. I sent Patterson and Pettigrew to Penticton by the stage that used the road passing our camp where they took the train to Nelson to get our seven horses. When they got to Nelson the way freight for the west had left and Patterson who could be most impressive persuaded the agent at Nelson to hold the freight and send them after it with an engine, cattle car and caboose. This was the outstanding thing that Patterson did during the summer. In the meantime Hay and I had our meals at LeLievres, sorted the stuff and traversed. I had my first experiences with rattle snakes which were plentiful. The LeLievres had many stories of them and the eldest boy, Bill, had been bitten in the hand. They opened the wound to bleed freely and put baking soda on it. A big scar showed where the wound had been.

On June 5th I went to Penticton by stage, met the others with the horses and we spent the night there in the Kalamalka Hotel. I put the horses in a livery stable. The next day we were up early, sorted the horse equipment that had come with the horses, packed them lightly and shipped the supplies by truck to camp. We left Penticton at 11:45 a.m. and reached camp about 5:45 p.m. after 20 miles along the road.

The horses were then hobbled and turned loose along the valley. There were no fences except around LeLievres meadow. On June 10th Patterson was left to watch them and see they did not stray. When I got back from traversing he had lost them. After supper we went after them. Their tracks showed they had headed for Penticton. As soon as we came up with them around a bend Patterson shouted, waved his arms and ran after them. Away they went at the gallop in spite of their hobbles. This was typical of Patterson. He was of agreeable nature but knew nothing of outdoor life, however, he could talk about anything in a most authoritative manner and made grest impressions on people including myself last year. The horses got nearly to Allen Grove before we could get around them as this part of the road, along Shatford Creek valley was fenced on both sides and they could see us in the fields when we got through the wire fence trying to get by them. We finally got back to camp about midnight.

On June 11th we moved along the road and camped in a field in which the fence was down south of Allen Grove. Here I fixed up the fence and bars so we could keep two horses in the field and we had an irrigation ditch for water. It was a very nice camp site for this part of the area. The move was our first by pack horse and as I found Pettigrew's experience with horses amounted to driving a team one summer I had all the sorting, saddling and packing to do myself. Having got in late the night before with the horses I had not got anything ready and as a result we did not get off till 12:20 p.m. It was a tiresome move. First the stove came off. Then one pack slipped after another. The first mile or so took about an hour. However, by that time I had the packs fixed and all went along the rest of the way well but we had far too much stuff.

The next morning the owner of the field, Mr. Howles, came to look us over but was agreeable and did not turn us out. While at this camp, one of our best horses, a mare disappeared. She was a real loss and I had to hire an Indian on contract to find her. Two days later he brought her in with a nice wild saddle stallion that he had caught with her. The stallion had evidently driven her off. I paid him $25.00. From here we could traverse to the north edge of the map area. On some days we used a couple of saddle horses. No matter what I said or how often I showed him, Patterson could not tie his things securely on his saddle and accordingly lost all his instruments. The next day I sent him with Hay on foot to find them. Starting along the same stock trail about five minutes after them I found the instruments with their foot marks beside them. They had almost kicked them though they were in a white bag.

One day I rode to Penticton for mail and groceries. On the way I passed a big stout Indian driving a buckboard slowly along the road. Returning I passed him again, "Hello cowboy" he said with a big sarcastic smile. I had on a new pair of batwing chaps. He had sized me up exactly. The chaps would have been just the thing in the Chilcotin in 1925 but were not suitable here and I gave them to Norman in the fall.

Patterson read text books on geology in the evenings and expounded the wonderful things to be seen in volcanic rocks. We were in an area of fascinating volcanic features but to him there was no connection between what he read in the text books for which he had a good memory and what he saw on the traverses though we encountered excellent exposures. This made him useless as a geological assistant. He was simply in the wrong profession.

On one traverse we came out of the timber into a clearing on the upland and found a cabin where two men were living away from everywhere. They had a small hay field, potato patch and vegetable garden. One was an old man and the other considerably younger. Some how they seemed a bit queer but after a while we learnt that there were many such isolated places with odd characters hidden away all over this country.

We moved south through Marron Valley to near White Lake and camped close to Mr. Guernsey's place. I had known him and his family when at Westwold years before. On his small ranch here he said he had to feed his cattle for only about six weeks in the winter.

In this area when examining an outcrop it was often very disconcerting to look up and see we were being closely encircled by wild looking cattle. One good whack on an outcrop with a hammer and they fled. Also here there were a number of large, log corrals with long wing fences to their entrances. These had been used some years earlier to round up the wild horses that had become very numerous and a problem to the ranges.

I had no rest days with this party as they were so incompetent. In practical things and so on most of our moving days it fell my lot to track the horses if they had strayed far. I had thought I could arrange a party like that of 1924 with Walker but had not realized what it took in the way of previous training to make up such a party. Sundays were often occupied with riding to get more supplies and mail. From the White Lake camp I went over to LeLievres' past Twin Lakes. I rode "Dirty Face", a nice light roan gelding with small brown spots on his face and led the "Long Mare" which was an indifferent pack horse but followed well behind Dirty Face. It was a long way around to LeLievres' by the only road I knew then but when I got there one of the boys told me there was a trail leading up the steep draw in the lava cliffs just north of their place that was a considerable short cut. I could see where this led on the map so I went back that way. The trail up the talus under the lava cliffs was exceedingly steep and narrow with large trees crowding it. In one place the Long Mare almost fell over backwards but she had a good halter and rope on and I snubbed her on the pummell of my saddle and as Dirty Face was a strong horse we saved her from going over. When I got through the pass between the lav cliffs at the top, the trail wound through about a mile of close growing timber and then came out at the top of a beautiful great open sloping valley like a half saucer. The slopes were bunch grass, "dry belt" sunflowers and sage and scattered cattle were grazing on them. It was a lovely view with the sun going down behind me and Marron Mountain standing up across the valley. All was serene and peaceful. The only sounds were a bull bellowing in the distance and a cow or two lowing for their calves. One of those evenings never to be forgotten. Even this route was a long ride and sometime after dark I got into camp.

During this and subsequent field seasons White Lake was a virtually dry, white alkali pan with hardly any vegetation around it. Great was my surprise in 1960 to see birch and other brush along its shores and reeds in it and that it had several feet of water in it.

On July 2nd we moved to Keremeos Creek valley and camped between Olalla and Cedar creeks. This was a poor place for the horses and ourselves and the horse bells were taken by Indians whose reserve I found later they had been grazing on. We moved from it on the 9th as the weather was getting very hot. This time the move was on a very steady steep trail up Cedar Creek and required quite a lot of cutting which I had to do myself. We nearly lost a horse that fell down a steep place but finally got it up and reached a good campsite at 6050 feet. We had stored the camp cots and table at LeLievres'. They were used in subsequent seasons when we had a truck to move with.

We called on old Jimmy McNulty and went over all his claims along the Apex Mountain ridge. On the 11th two of us luckily met Knowles in his car going along the Nickel Plate road. He took us to the mine where we got some fresh groceries we needed and brought us back. We could now traverse all over keeping on the upper levels where the temperature was moderate. At first the mosquitoes were a little troublesome but the country dried up and they were soon gone.

Another day I rode Dirty Face into the mine for some more groceries and mail. Knowles said "You should give yourself a rest once in a while but you look like a bit of leather." When I mounted Dirty Face at the mine to leave there was quite a crowd around. He went straight up in the air on his hind legs. I did exactly what we had been told by Major Inken, riding master, at R.M.C. Slipping my feet from the stirrups, I put my left hand on the pummell ready to jump and struck him with all my might with the side of my right fist on the top of the head. Down he went on his four feet. He never tried that again with me, but the next spring when Allison who was reputed to be a very good rider took the horses away to Dr. C.E. Cairnes he did the same thing. Allison was scared of him and packed him all the rest of the summer. Before I had Dirty Face he had been Dr. Bruce Rose's favourite saddle horse in the East Kootenay. In mornings when I went for the horses after the assistants failed to bring them in, I carried a bridle and caught Dirty Face after taking all the hobbles off then riding him bare back drove them in at the gallop. Dirty Face thoroughly enjoyed chasing the other horses.

That afternoon on the long ride back to camp from the mine it poured rain. This year I started wearing thin Jaeger woollen underwear next my skin and a tightly woven work shirt over it. I found this combination good in the mountains where the temperatures were so changeable. In the heat I could open the shirt and vest and pull them out, or in the cold button everything up and the shirt kept out the wind. It was good for showers too. In British Columbia we wore 8 inch hobblenailed miners boots, with sole leather heel counters, and tucked our trousers in to keep the dust out. The boots were the most expensive part of our clothing costing $25.00. We completely wore out a pair each year. The rocks cut them to pieces.

From Cedar Creek camp we moved to Boston Creek near the mine. Here Dr. C.E. Cairnes who was now my supervisor visited us. He spent one day with me and then I took him down the Nickel Plate road to catch the Penticton stage at the foot of the switch backs. I thought of course he would ride but found he insisted on walking the whole way. He was quiet, smoked his pipe for lunch and was forever taking a small note book from his hip oocket and jotting things down.

On July 22nd I was at the mine and met Paul Billingsley widely reputed as the greatest authority on sulphide deposits on the continent. He and his assistant, Townsend were making an examination of the mine. He asked me if he could use my map of the top of Nickel Plate Mountain made in 1926. Knowles had told him of it. I explained that it was part of my thesis and I did not wish anything from it published before I was finished. This he said he quite understood. I said, "Alright if you will spend a day with me going over the mountain". To which he agreed. I went down to Hedley and brought up the map and we had lunch together. We spent the 24th together on the mountain and this was most instructive for me. He took pains to explain his ideas to me and his quick grasp of things and imagination were inspiring. None of my professors at Madison had the knowledge of sulphide deposits that he had besides which he had a friendly personality. We discussed many things that I showed him. At one place where we examined a massive, white outcrop he said, "Well here we have the white gabbro prophyry again". I said "I don't think so. I believe this is a fine grained, light, cherty tuff with small black chert fragments scattered

through it." He was a bit taken back. The rocks looked very much the same. After a long careful scrutiny of several pieces with his hand lens, he said, "You're right". This gave me a big lift and indeed the whole day was most encouraging to me.

On the 27th Mother came to visit us for the day and Knowles took us all including the mine doctor, Dr. McQuain, in his car for a very happy picnic on Apex Mountain.

We had now done all we could from Boston Creek including some work in the mine. Our next move was into the north part of the map around Brent Mountain. Patterson went off to see his wife who had driven from Montreal by herself across the continent although she only had one good arm.

On the 30th the rest of us packed camp to move but did not get away until noon as the horses had strayed. We went over to the Golden Zone road which had not been used for years and required some cutting as there were many dead trees across it. We missed the trail leading north from it and went too far so struck over the next ridge without a trail. The going proved awful. First a lot of deadfall followed by dense brush. Then we got over the summit of a low ridge and started down the other side through dense brush again and into swampy ground. What had started a nice day had changed to steady pouring rain. The three of us were soaking wet and tired out as well as the horses. One horse became stuck in mire. We got the others down into the first clearing in the valley and went back and pulled it out. It was now dark and still pouring. We got up the tents and had some supper after turning the horses loose. I piled all the wet equipment into my tent in Patterson's place, got into my eiderdown and went to sleep to the roar of the rain. When I awoke the sun was out and we found ourselves on the edge of a small meadow in an excellent campsite. There was everything here, horse-feed, poles, wood, fishing, a place to bathe in the stream and deer to shoot if we had wished. We took the day off, dried the equipment and our clothes. The horses were close by. The next day Patterson returned and complained that his skin was very sore in places.

On August 3rd Patterson and I walked over to the mine, having found the proper trail to the Golden Zone road. We spent the night in Hedley after arranging everything with Jones for the Princeton University students tour of the Nickel Plate Mountain the next morning. When they arrived there were about 30 of them including Prof. Richard M. Field who was running the tour, Sir Edward Bailey of the Scotish Geological Survey and Prof. Collett, famous for his work in the Alps. We planned to take them up the skipway, out to Climax Bluff to see the view, and the almost unique white gabbro, back past Sunnyside 4 glory hole to see the skarn the ore was in, to lunch at 11 a.m. in the mine cook house and then down the face of the mountain to Hedley to see the diorite sills and granodiorite contact on the way. All went well until we sat down for lunch at the cook house where Field started dancing with the waitresses instead of letting them get on with serving and delayed the whole timetable. I went on with Bailey, Collett and the more energetic students telling Patterson to follow at the rear. My group saw what we had planned they should see. We were down on time. While we were waiting for Field and the stragglers several of the students including an assistant professor from Princeton with Bailey gathered around me and told me it was the best day they had on their trip so far. Bailey and Collett were particularly appreciative. Patterson and I saw them off on their bus and had a late lunch in Hedley. Afterwards Bill LeLievre drove us back around by Keremeos and up the Nickel Plate road, putting us off at the old road leading to Hedley Lake. We were in camp by 7 p.m.

We had several long weary traverses from this camp, few outcrops, miles and miles of dead fall and dense second growth lodge pole pine. It was from this area that in June each year we saw vast great clouds of pollen going up on the wind like dust storms.

On August 8th we moved to another nice camp in the pass at the head of Shatford Creek. It was not a long move but the horses being hard to find in the morning we had a late start. Soon after camp was up Knowles and another man walked in with our mail and a telegram telling Patterson Billingsley was offering him a job in South America if he would go to Vancouver to see him for an interview. I let him go as being married he wished to get an all year job.

From this camp we traversed over Sheep Rock and Brent Mountain and all around the upper part of the Shatford Creek basin. The weather now turned bad again and on the night of the 10th as I got into bed I heard the patter of the rain change to that soft sound of snow. About 6 inches fell. There was dense fog in the morning and we spent the day in camp. Cairnes had sent me a detailed recipe for making mince pie. Hay and I sat in the cook tent while Pettigrew made two pies which were most successful, so much so that we ate them both for lunch. Pettigrew never made another. The next day it cleared and the snow went.

On the 14th we moved to the abandoned townsite of "Centrameno" where the Apex road on the east side of the Apex ridge branched south from the N.P. road. Patterson was back and I sent him to the mine for mail.

On August 21st Knowles and his wife took us with the exception of Pettigrew who watched camp, for a picnic up the West Kettle River valley beyond Rock Creek. On the way back we spent a delightful evening with Mrs. Knowles' family, the Dalys in Keremeos. The whole family was musical and either played some instrument or sang. Hay played the piano well but I could add nothing to the occasion. Old Mrs. Daly was the matriarch of the clan, a pioneer and very impressive character. We met some of the Willis family there including Mrs. Garnet Willis mentioned in 1930.

Now Pettigrew was suffering from rheumatism and Patterson did the cooking. On August 26th we moved camp to a point at the south end of the Apex ridge overlooking the Similkameen valley and where it seemed as though we could lob a stone into Keremeos, more than 5000 feet below. Again we had to make camp in rain. It continued to rain off and on each day with fog much of the time. We got in some traverses with tally which we didn't generally use, and compass. Patterson woke me up in the middle of one night and said there was a big animal at the back of the tent. I got up and looked out. Everywhere was snow and I could hear the horses stamping or running some way off. We were now getting out of food as we had planned to be out of here before this but the weather had held us up. We had luckily lots of cornstarch and raisins that Pettigrew made a sort of pudding out of. It was the only food we had the last day here. On August 31st still in the snow and fog we found the horses, packed

packed up a wet camp and moved to Nickel mine. It was a long weary move in drizzle and fog and coming along behind I often could not see the horses in front but they knew the way. One horse seemed to have something wrong with its saddle and continually gave trouble. Even though I repacked it I could not make out what was the matter. When we got to the mine and unpacked I found a loose nail had worked through the saddle blankets from a box it was packing and made a bad sore. We took the horses down to George Cahill's ranch where they were to be wintered. The next day Pettigrew and Hal helped Cahill take the shoes off the horses. Patterson and I packed and took the stuff down to Hedley. September 2nd Patterson left, I wrote letters and did accounts while Hay and Pettigrew dried and oiled the harness.

Hay and I went to the Horn Silver mine high on the west face of Richter Mountain in the Similkameen Valley and were graciously welcomed and given a place to sleep and do office work. We planetabled the area around the mine, examined the workings and left on the 23rd when I paid Hay off. The report on the Horn Silver mine was my first publication. Jean and Nan came in the old Dodge from Monte Creek to fetch me home for a few days before I returned to Madison, Wisconsin.

## The Summer of 1928

After leaving Madison and spending a few days at Monte Creek I went down to Vancouver where Dolmage and Nettell were at the office. I was glad to see them again. I collected, sorted and packed the equipment. This and subsequent years in the Okanagan Similkameen country we used 2½ pound hammers with 18 inch handles as the rocks were nearly all igneous and we could not get fresh specimens with the smaller hammers. On June 8th I left Vancouver with Ted C. Hay who was to be my senior assistant this year. We arrived at Penticton by the Kettle Valley (C.P.R.) train in the morning. Going to Chevrolet garage I bought a new half ton pick-up truck. The garage owner was reluctant to let us have it as it was the only one he expected to have for some time. We collected the baggage and express and drove to Hedley via the Fairview-Blind Creek road which was terrible. We camped the night up Hedley Creek (Twenty-mile). On the 11th we drove to Penticton where we were to pick up Buckland who was to take over the horses for Cairnes and C.N.D. Taylor, Kipper, a forestry student who was to be my second assistant. There was no sign of Buckland and we returned with Kepper to Hedley. The next day I traversed up Hedley Creek while Ted and Kipper went to Princeton for Buckland in the afternoon but he arrived independently. The others got back at 10 p.m.

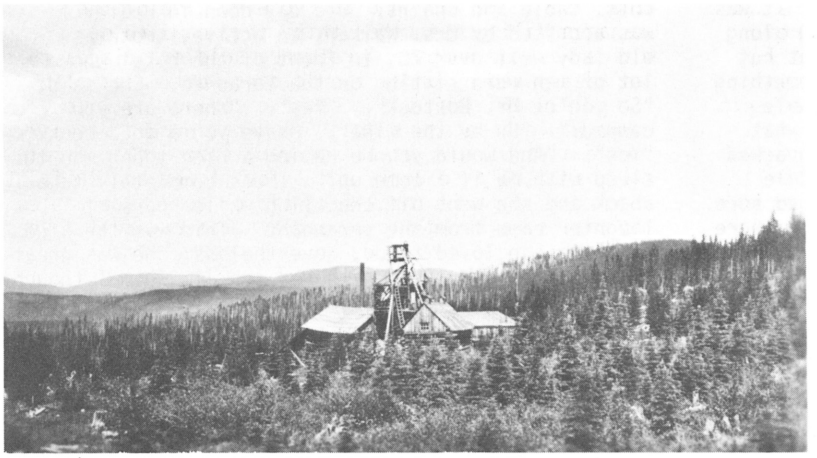
On the 13th we were all up early and caught the first skip up the mountain. We met Allison who was to be packer with Buckland, got the horses from George Cahill's and saw them start down on the Nickel Plate road. As already mentioned when Allison mounted Dirty Face he reared up. Allison packed him and rode one of the other horses. During the next few days we finished the section along the Similkameen Valley southwest of Hedley and drove to Penticton making a section along the road. We worked from this camp for a few days having our meals at the hotel. Then Clarence C. Sherlock, our cook arrived on the 23rd. We moved up the skipway and set up camp on the site Brock and I had used in 1926. It consisted of a cook tent and two sleeping tents with flies. We used the cots, table and chairs. One day down in Hedley I was accosted by Mrs. Walker, an active, toothless old lady well over 70, in front of the hotel where a lot of men were sitting on the verandah. She said, "So you're Mr. Bostock". "Yes". "Where are you camped?" "Up by the mine". "Have you a good cook?" "Yes". "And would you be having a nice young man to sleep with me if I come up?" I was completely taken aback and she went off chuckling while roars of laughter came from the verandah. This was the kind of thing she loved to do, nevertheless, she was greatly respected and lived with her son Jim whom I thought was the best man in the village.

On July 12th we worked mainly in the mine as Dr. Collins had given me permission to do so. We also made a number of scouting trips in the truck to inspect camp sites and roads and brought the truck up to the mine. The following day we moved to Windy Gap on Apex ridge about a mile and a half south of the Nickel Plate road. Mosquitoes were bad and greatly bothered Clarence. A few days later we all backpacked along the ridge to the head of Cedar Creek and for three days traversed to the west from there.

Charlie Richter rode into camp with a cowboy. They had put some cattle on the south end of the ridge for the summer. Just south of Cedar Creek the deadfall was impenetrable except along the trail which had been cut through it. When this trail was barred the cattle could not get back or down off the mountain. Richter asked us if we could spare them some food. We had come light and all we could give them was a tobacco can of white beans. He received this gladly as he said they would enable them to stay on the ridge for some days.

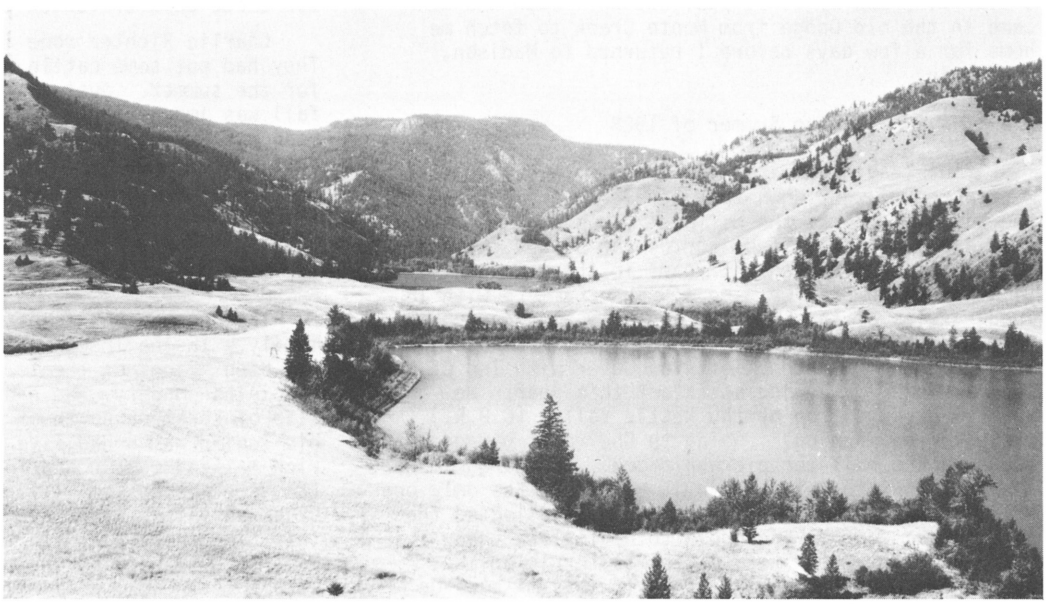
This was my only contact with any of the Richter family. In the 1880s and 1890s old Richter, a German, had been "king" of the lower Similkameen valley and adjoining country. He had a house on the old townsite of Keremeos north of the present town. He and his Indian woman had five children. He became very rich raising cattle and invested his money well. In the same period Tom Ellis was "king" of the southern Okanagan valley also being a cattle rancher. During this time there was said to have been a real wild west rivalry between the two establishments and we were told their cowboys rode armed. Both made big sales to the railway construction companies but when the railways were finished the settlers came in with law and fencing. In 1896 my father ran on the Liberal ticket for the Federal election and as Ellis was a Conservative he stayed with Richter who supported the Liberals. Richter was living with his white bride upstairs while his Indian woman cooked for them and lived on the ground floor with her children. Richter died a multimillionaire leaving the cattle range and land to his Indian children and his fluid assets to his two white children, so we were told. Charlie Richter, the eldest of the Indian children had a good reputation and in later years at times accounts of Richters from Keremeos, B.C. were reported in papers as carrying off prizes in bucking horse and roping competitions at the Calgary stampede.

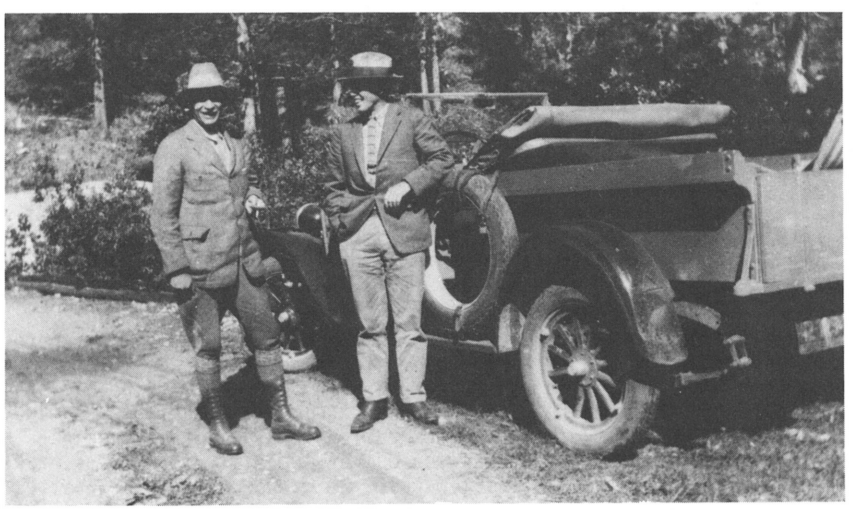
On July 21st we returned to Windy Gap camp. We found that our truck increased our mobility tremendously as there were many side roads which we could use though sometimes chopping and digging were needed in places to get along them. Also it took far less time to move camp and generally I was able to traverse while the others moved. At the start we cut and peeled Douglas fir poles which we carried on the truck



*Golden Zone mine, 1928 (202013-L)*

*Horn (Twin) Lakes (71050)*





*Dr. Charles Camsell (Deputy Minister of Mines, 1920-1946) on visit to Nickle Plate Mine, 1928. H.S. Bostock on right (202085-P)*

for the tents throughout the season so that there was no delay in getting camp up. Another very important factor was that Kipper, though he knew practically no geology, was a thoroughly practical man with no lack of initiative as well as being an expert mechanic who kept the truck in perfect condition. Also Clarence had been an Army cook who gave us a variety of dishes though as Kipper remarked the volume varied considerably. Ted knew the country from last summer but their lack of basic knowledge of geology meant the traverses I cared to send them on were still few.

On July 23rd we moved down to the southwest end of Twin Lakes getting permission from C. deB. Green to camp there. A little creek runs into the south lake but the outlet is by seepage. We put all the tents in shady places. The lake was a good place to swim. This I believe was the best campsite in the lower parts of the whole area for hot weather. Keremeos was often more than 105°F and Oliver considerably hotter at this time but we were cool.

We didn't see much of the Greens but I did have some chats with Green himself. Mrs. Green was very religious and on the east side of their house was a small chapel. I asked Green if the German carp that were all through the Okanagan drainage were a useful fish. He said he had assumed that an imported fish was a good one and had caught twenty to put in his lakes as there were no fish in them. He put the carp in a barrel in the shade at his winter place near Osoyoos and changed the water every four hours for fear they would die. Before he had a chance to take them to Twin Lakes, Alan Brooks came to stay with him and when he left he asked if he could take one for a biologist friend. Brooks wrapped it in newspaper and put it alive in his suitcase. Two weeks later Brooks wrote that the carp was still alive in his suitcase. In the meantime with great care for the remaining nineteen fish Green took them by wagon at night and put them in the lakes. In the morning he started back along the road that bends around part of the lakes he gave a stranger a lift. The man said "Those are pretty lakes. Any fish in them?" "Yes", said Green, "Nineteen". Nothing was seen of the carp for some years, then huge carp appeared in the lakes. Twin Lakes had been weedy at the south end and a wonderful place for water birds. The carp cleaned out all the weed and there were no more birds. While we were there, there were shoals of little stunted carp.

We were told the carp were originally brought into Washington State by a German farmer who put them in a land locked pond to clean the water for his stock to drink. Unfortunately a few years later there was high water, the pond overflowed and some of the carp escaped into the Okanagan drainage. They spread all through the river system except up the Similkameen because they could not get past the Oroville hydro-electric dam. They multiplied enormously and ate the weed out of many lakes, such as Vaseaux Lake that had also been wonderful bird sanctuaries.

We stayed at Twin Lakes as long as we could traverse a great deal of country by the three of us going up some road in the truck and then traverse back to camp or having the third of the party pick us up with truck at the end of the day. We met two fine old men living independently near the head of Park Rill, Henery Thyen, a German and an Englishman. They were both keen and interesting to talk to being educated and well read. Also we found there is an "island" of big tamaracks near the head of Park Rill, otherwise there was none on the west side of the Okanagan Valley. Another thing that came to our notice was the number of returned soldiers places that had been taken up under the Soldier Settlement plan about 1920 and then abandoned due to lack of water. There would be a frame house in great need of repair, the remains of a vegetable garden, some broken fencing, what had been a tenderly cared for flower bed in front of the house, a few broken rustic or home made tables and chairs, a child's pram and a burst rag doll. They were pathetic.

On August 9th we moved to the east shore of Skaha, or Dog Lake as it was then generally called, about a mile and a half from the north end and not far from the south end of the road. We did not hesitate to drink the lake water and bathe in it. The weather was hot and it was not a good camp site. We were not far from Penticton and there were undesirables about. Men and girls spent the night on the beach right in front of the tents. From here we traversed all the northeast and eastern parts of the map to about halfway down the lake. Some disconnected stretches of road had been started in places along the east shore to the south of our camp.

On the 11th I met Dr. C.O. Swanson, Cosine, of the University of Wisconsin who later became Chief Geologist for the Consolidated Mining and Smelting Company. We had a good day looking at and discussing the more interesting geology and I saw him off at Penticton on the 13th.

From this camp we moved on the 20th to a place on the southeast lake shore in an abandoned orchard near Okanagan Falls. This was a good shady place and Kipper found we could get all the fruit we wanted by calling at the cannery as they gave away the fruit too ripe for packing. Clarence was in his element here and excelled himself. We lived well.

When in Ottawa at Christmas, Dr. Charles Camsell, Deputy Minister, had told me he was going to visit us about this time and here I received a telegram telling me to meet him at Penticton. I did and brought him to camp for lunch. We had put up a spare tent and Kipper had made him a comfortable bed. In the afternoon I took him to see his elder brother, Fred, a fruit farmer at Kaleden. When we arrived and were seated, Mrs. Camsell brought their six daughters in to meet Uncle Charlie. They were like steps, the youngest about five. In 1966 I was having supper in Whitehorse with a number of mining men and their wives and we got on the subject of Dr. Camsell's explorations, and when I had finished, Mrs. Al Kulan, who was beside me, said "I was the youngest of those six girls".

I left Dr. Camsell there and fetched him late in the evening. The next day I took him up Nickel Plate road to the mine where he met Jones whom he had known there in 1907. On the way up the switch back hill the road was narrow and at one place one had to jump the truck across a deep little washout, the outer wheel being right on the brink of the precipitous slope below. While with Jones he suddenly said "Have you driven with this fellow?" Jones said "No! But I have seen some dust fly by". Dr. Camsell said, "Jehu isn't in it". I knew exactly what he meant as it says in the Old Testament that the watchman called from the tower to King David and said "Behold! Jehu cometh, for he driveth furiously". I made some remark to this and Dr. Camsell said, "But I didn't say you weren't a good driver". I had Kipper drive him most of the time after this. Now, 50 years later, one must

remember that most of the roads were not even gravelled and 35 mph on the best "highways" was terrific.

The night before Dr. Camsell left I tried to have a little supper party for him in camp. The only guests I knew who could come were two from the water power department who were measuring Okanagan Falls. One had the nerve to ask him endless questions sometimes of a rather personal nature, but he just answered them with story after story. We sat around the table until 11:30 p.m. He told us most of the stories in his autobiography "Son of the North" and several others.

During one of his first five years with the Survey Dr. Camsell was returning to camp in the evening when he was knocked down by a blow on his back. As he lay a little stunned, he heard a voice say "You got him. I saw him go down". A moment later his cook and another member of the party came up. They had taken him in the dusk for a moose but the sack of rocks in his rucksack had absorbed the bullet.

On another occasion in the Tulameen area coming into camp a bullet whistled past him, then another. He ducked behind a large tree but every time he started to come from behind the tree a shot flew by or hit the tree. There was a pause in the shooting but he did not dare move from behind the tree until he heard his assistants on the other side. They had a target on the tree.

One Sunday morning at Hedley in 1907 Dr. Camsell and his assistants were waiting for the skip to go up the mountain when a short, stout man walked up smoking a cigar and asked him who he was and who he worked for. On being told, he said "I am Mr. Dewdney, your Minister. No one in my department works on Sundays. Go back to camp. I shall be with you for supper at 5:30 p.m. and I want lots of fresh cream.

Harry Barnes told us a story that showed Dr. Camsell's remarkable, natural aptitudes. In those days Hedley was a booming camp and chosen for Labour Day sports being dry and having a broad flat overlooked on two sides by steep slopes like an amphitheatre. To these occasions sportsmen came from all over B.C. as well as some from the western States. The winner of the skeet shooting competitions in California was there this year. Dr. Camsell entered the skeet shooting and won the event though he had never shot skeets before. When he found this out the Californian was furious and saying it was luck challenged Dr. Camsell to shoot over again at which Dr. Camsell beat him again. Harry Barnes also told us that when Dr. Camsell came to Hedley he called arsenopyrite "arsen-op-yrite" for a lark and had all the prospectors doing the same.

Noisy Bill McMaster, a tall, gaunt, powerful old man who worked in the Nickel Plate mill and earned his title from his habitual silence came up to me one day in the hotel and asked me if I knew Camsell. I said I did. Then he told me he had been Dr. Camsell's packer in the Tulameen and that Dr. Camsell was a greyhound in the hills. He said that one day in camp Dr. Camsell had received a telegram, told the cook he would not be around for a few days, put some crackers in his pocket and walked 60 miles across the mountains to Hope. I heard this story also from A.J.C. Nettell.

One evening in the Tulameen Dr. Camsell said he had supper with an old prospector. After the meal a group had gathered in the cabin and most of them had rocks or minerals that they wanted him to identify. After he had left on his horse for camp he heard a shot but this was a common occurrence and he didn't think anything of it. The next morning he met one of his friends of the evening before handcuffed between two constables. He said "Tom, what's the matter?" Tom answered "Camsell, you know the rock Joe had, you said was serpentine, well Ed said it wasn't so I shot at him". Luckily no one had been hit.

On August 27th all but Clarence drove with Dr. Camsell to Tulameen and up Eagle Creek for lunch. Going through, I bought some beer from the Princeton brewery. Dr. Camsell said with a laugh "That's something you won't get past Dr. Collins in your accounts". We had a delightful picnic and he jumped from rock to rock across the creek like a boy though he was over 50. After lunch I took him as far as we could go up the creek in the truck where we found a cabin. On knocking a large white haired women came out with a cry, "Why Camsell!" This was Mrs. Marks, wife of a prospector of his day there. We then took him to Tulameen where he looked up some other old timers and later saw him off on the train to Vancouver.

From our Okanagan Falls camp we traversed all around and finished the east border of the map. Marian and Ruth also visited for supper at this camp.

On September 6th we moved to Preston's ranch west of Myers Flat. This was not a bad camp but no place to bathe, so the first day after traversing we drove to beautiful, clear Green Lake. It was lovely to swim in but when we got out the salt nearly drove us crazy and we drove seven miles to Twin Lakes to wash it off. Kipper told me he had killed a large rattler right where he had put my tent. A few minutes after supper when in my tent there was a noise outside and looking out I saw Preston, a big man about 65, Highland Mary about 45 and a husky teenage girl slaughtering a calf a few yards away. This was the locality they regularly used. However, they had everything down to a system and when they had finished there was neither trace nor smell. This was the trio who lived on the place and ran it. We found them agreeable and hard working.

A few days later Kipper and I were traversing north of White Lake when going through some timber we came upon an open glade with a new but poorly built, flat roofed log cabin and a well by it. We knocked on the door and a woman looked out. We asked her for a drink of water. She seemed quite frightened of us at first but after a little guarded talk became very confidential. It was like a dam bursting. She told us that the man in a dirty soldier's uniform we had seen was her husband and the father of the girl at Preston's. Since the girl was born she had been pregnant 19 times but he would not let her have another baby and had beaten her each time until she had a miscarriage. She had no shoes on and said he had taken her shoes away to stop her from getting away and seeing anyone but she did manage to walk barefoot to Penticton from where she got a drive back. She said she could not break away from him as he had threatened to assault their daughter if she did. We assured her that the girl was well and safe with Preston and Highland Mary which comforted her. Indeed the girl was as big as her father.

From Preston's we moved to a nice camp in Shingle Creek valley. This turned out to be on the Indian Reserve, a thing I had never thought about. One morning three Indians came into camp. There were two

young men and a fine looking powerful old man. The young men asked me if I knew we were on their reserve. I had to admit I hadn't thought about it. I explained what we were doing, showed them our map, said we were only going to be there a few days and was as nice as I could be. All I said was translated into Indian to the old man. Finally the old man turned to me with great dignity and said in broken English that it was alright this time but that after this we must get their permission to come on the reserve. He continued with a twinkle in his eye that if we did not they would come, lasso us, tie us to trees and burn us. We used this camp site a number of times in the next two years but always with permission which was readily given.

We moved on September 28th to Olalla Creek where we discovered and outlined the pyroxenite body. The next day I took Ted to Penticton to see him off and tried to see what I could get for the truck as my instructions were to sell it but I had no luck at all. We were camped in a nice place beside the little creek across which an old prospector lived. We had him to supper several times which seemed to please him. After the meals he told of prospecting and experiences in Alaska that were very interesting and recalled in later years.

Father wrote to say that he would pay $800.00 if I could not get more for the truck. Kipper and I discussed the matter and it seemed the best thing to do as we could not get an offer in Keremeos either and trying to find a buyer had already taken more than a day. After closing camp on October 5th we took Clarence to Princeton, saw him on the train and then drove to the Ranch at Monte Creek arriving quite late after dark. Kipper stayed with us for several days. The truck lasted at least 15 years and after the body wore out the motor was used to run the grain crusher. In my estimate I had been allowed to drive 1500 miles at 5 cents per mile for the season. We had done more than 5000 miles but the cost was only a little more than the amount allowed and nothing was said when I explained how we had used it.

Both Father and Sheriff Woods of Kamloops were shareholders in the Homestake Mine up Louis Creek and wished to see it. Five of us went in the old family Dodge, including my brother-in-law, Victor Sherman and Kipper. Victor drove there slowly and cautiously. When we started home Father said to me, "You drive and see if you can make better time", as it was late. We did travel faster but it got dark and the acetyline headlights were none too good. Going across the big flat north of Kamloops suddenly a large black steer wandered across the road. I saw it in time to slow down but even then we bumped it pretty hard. The car seemed alright but with the Sheriff sitting beside me I thought we should stop and see if the steer was hurt. "We didn't hurt it" said the Sheriff and away we went again.

A few days later I returned to Madison.

## The Summer of 1929

Early in May I left Madison, Wisconsin where I had successfully qualified for my Ph.D. I went to Nelson to see Violet and gave her an engagement ring which I had bought in Chicago before I wrote asking her to marry me. Then on to Monte Creek for a week-end and to Vancouver. Here I collected and packed the equipment, shipping it to Penticton where I went by C.P.R. over the Coquihala line with Clarence Sherlock and my three new assistants. Kipper Taylor could not come this year. Clive Cairnes who still was my supervisor picked them for me from the applications. My senior assistant was Ken W. Martin, a nineteen year old organic chemistry student who had spent last summer with R. Bartlett of the Topographical Division of the Survey. Then there were two younger ones, J. Lloyd Green, a student working toward medicine and John R. Johnson in science. All were at U.B.C. They all proved agreeable and ready to do anything. Ken, although he knew little geology, I found had a sharp eye and was quick to grasp the main problems and ideas of geology. Ken and Lloyd were both tall and could outwalk me. John had a keen, subtle sense of humour, and was quiet and a very good companion. He also was an exceedingly sharp observer. He had had a course in geology. All three could drive the truck, a new Ford pickup which I bought in Penticton on arrival and placed in Ken's charge.

Our first camp was on the bank of the Similkameen River, half a mile west of Keremeos well hidden in the shade of poplar trees. We were now to do the Keremeos map area which stretched along the 49th Parallel 30' west from longitude 119°30'. We started traversing at once as well as scouting about for camp sites. Two traverses were soon being run each day. All started out in the pickup together and one pair were put off to traverse on foot while the others took the truck, parked it some where, traversed and returning to the truck picked up mail, groceries, and gas and finally picked the others up and we all returned to camp where we had a plunge in the river before supper. In a few days I heard some people in Keremeos had seen us in the river without bathing suits and were horrified but I took no notice. We had a lot of drab traverses here, just climbing up from about 1500 feet to 5500 or 6000 feet in the heat but we also had some interesting ones around the Olalla stock and on the Tertiary sediments as well as finding the only respectable fossil locality, except Tertiary plants, in all the time I was in this country. This was in the limestone on the west of Blind Creek. That day we had two traverses there and met for lunch. In this hot country we carried a quart aluminum water bottle between each pair. The rule was not to drink before lunch. It wasn't much water for two on a hot day and when ever possible I laid out the traverses to hit a creek or spring at lunch time and saved our water for later in the afternoon. Coming down to Blind Creek we four had lunch together and Ken was the first to have a drink. He came back saying the water tasted awful. I went and looked at it and my nose told me there was something dead around. It was a rotting sheep carcass in the creek about 10 yards above where Ken had drunk. We drank above it. Ken was none the worse.

We crossed the river where ever there was a bridge, as at the Ashnola River, opposite Keremeos and the Great Northern Railway bridge, south of Cawston. In this way we got all of the northeast side of this tremendous valley and mapped parts of the southwest side as well up to about 5500 feet. We found the great fine cherty quartzite talus screes west of Keremeos wonderful to come leaping down 1500 to 2500 feet like Horsefly canyon at Hedley had been. The Ford was a good deal better than last year's Chevrolet in climbing the long hills such as that up Blind Creek.

Keremeos was a small friendly well stocked place and we got everything there including our laundry done. I needed a hat. At the general store the owner could not find a suitable one but at last he

said "I have a hat that I have had for years and can't sell on account of its colour". He brought it from the back of the store. It was a bright, pinkish mauve felt hat of excellent quality with a wide brim and fitted me perfectly. For $4.00, much to the amusement of my assistants, I bought it. It quickly faded in the bright sun to a light grey and I wore it until I lost it in Edwards Creek at the east end of Mayo Lake in 1938. It kept off the sun and shed the rain indefinitely. I never found another its equal.

We had trouble finding good camp sites well placed for our work and took a day looking around Kruger Mountain, Boundary Valley and along the lower Similkameen. Finally we found two plausible localities, one a spring surrounded by brush in the meadow in Boundary Valley and the other by the river on Newby's ranch. The meadow was fenced with barbed wire but there was a cariboo gate opposite the spring. While we were having lunch there, a man drove up and hailed us. He had an old, high wheeled light wagon, piled with all sorts of prospecting equipment and besides his team pulling the wagon a mule was tied at the back. He was on in years with his full grey beard. He said he was a prospector and there was nowhere left in the Western States for him so he thought he would try Canada. Could we tell him where to go. We talked for some time but could not help him much. He was a unique type. I have never seen quite the like.

We decided to go to Newby's first and got permission from him. We moved there on June 14th. I spent two or three evenings with Newby and he told me a lot about the surrounding area and things about himself came out. He had been a boy in Liverpool when his gang had killed a policeman and he escaped that night by ship to Canada where he first worked as a shepherd in Alberta and finally came to own a large sheep ranch in the foothills. He married, had two daughters and built his wife and girls a nice home in a fashionable part of Vancouver but he could not stick the city life and bought this ranch to come to. One could see he was quick as a flash although perhaps 60. I had heard of him before as a tough character to tangle with. It was said when the police in that area had a dangerous man to arrest they swore Newby in as a special constable and gave him a gun. The whole neighbourhood on both sides of the International Boundary knew if there was going to be trouble Newby would shoot first and ask questions afterwards.

He told me that when one of his men was driving his team in the meadow, one of the horses had been bitten by a rattler up between the forelegs. The horse had swelled enormously and died in 24 hours. This area was full of rattlers. We all killed a number. On traverses generally when homeward bound along some stock trail through the sage brush the second man was the one who ran the risk of being struck. Going quickly along the leader was past before the rattler was ready but when the second traverser 5 to 6 yards behind came by the rattler was aroused. We each carried a tourniquet, a long, strong leather thong with a loop already in one end to check the circulation of blood if bitten. In those days serum had just begun to be developed. I think some was kept at Kelowna. Also our 8 inch boots, thick socks and our trousers would have been a considerable protection. Ken had a narrow shave which might have proved fatal had he been bitten. He was going along a coarse talus slide when he saw a big rattler coiled asleep on a rock about five yards below. As he stooped down to pick up a rock to throw at it, one a little above him struck at his face but he was just out of reach. He kept track of the number he killed that summer and at the end found it was more than 100.

From Newby's we used the railway bridge to do all we could of the west side of the valley and finished all the east side taking in part of the famous Kruger Mountain alkaline intrusion on Mount Richter. This is an extraordinarily interesting body having zones roughly like a section of an onion.

Newby's camp was too far from Kruger Mountain and the southeast corner of the map so we moved on June 24th, to the spring in Boundary Valley as the only feasible place. From here Lloyd and I one day were put off at Kilpoola Lake to traverse westward over the ridge back to camp. It was a terribly hot day. The country was bare of trees except near the top of the ridge and the slope faced the sun. About lunch time we came upon an abandoned house with a well to our delight. The water was beautifully clear. We hauled some up with a crumpled bucket and old piece of rope. To our utter disgust it was brine. We went on up the slope and became exhausted. Finally we reached the trees and lay down in the shade till nearly sundown. I have never suffered so from the heat. Later I learnt that probably we needed salt as much as water. Other days on sunny slopes we were often able to go up from the tree shadow to tree shadow.

One notable thing about Boundary Valley was the enormous size of the insects in it, particularly the daddy long legs and bumble bees. They were about twice the size of those in the Okanagan and Similkameen Valleys. There were also a lot of grasshoppers about in this country. Often when one jumped, at the same moment a large, black, slender bodied fly would alight close to it. The hopper would jump again and the fly would be up and catch him in the air. The fly thrust its jaws through the wing and side of the hopper's body and in a minute there was nothing left but the dry shell of a dying grasshopper and the fly was after another. There were also lots of ant lions.

In many places in the dry belt but notably on the west side of the Similkameen Valley floor where there are dry, sparsely clothed long gentle slopes there are numerous little flatly conical ant hills about ½ to ¾ of an inch high with a hole in the centre where the ants go in and out. The soil was largely fine silt with very few coarse heavy particles in it, yet the hills were almost wholly of the coarser heavy particles. The reason for this was easily seen one day during lunch as any gust of wind blew away the silt leaving the few heavier pieces. Here is a possible explanation of Pliny's ancient story of the gold gathering ants of the Nubian Desert. If the ants were living on an abandoned gold dust-bearing river bar such as those on the lower Fraser in British Columbia or the Stewart River in the Yukon there would be a concentration of fine gold particles in the ant hills due to their high specific gravity and the ants would appear to be gathering the gold.

On July 11th we moved camp to the west bank of the Okanagan River about 50 yards north of the bridge, three miles north of Oliver. This was a good shady place in the brush but rather close to the main road. Here as at Okanagan Falls camp the year before we had an abundance of fruit. Lloyd's parents visited us at this camp and stayed for supper.

It was about this time that Ken got a minute chip of clear quartz in the pupil of one of his eyes and I sent him to an oculist in Penticton. The man said

there was nothing there though we could all see it with my X20 hand lense. I sent him back the next day with Lloyd to support him and it was removed.

Though we got permission from the chief to go on the Incaneep Reserve it was reluctantly given. The Incaneep Indian village is in a beautifully secluded side valley, watered by Incaneep Creek and completely hidden by high rocky bluffs from the main Okanagan Valley at Oliver. No one travelling along the main valley and looking at the east wall would suspect such a choice spot could exist there.

After working out to the borders of the map from this camp and making some traverses in the corner of the Okanagan Falls map we moved on July 26 to a spring in the pass at the head of Blind Creek on the road between Oliver and Keremeos. Though there was nowhere to swim it was at 3500 feet and fairly cool and shady. There were a number of cattle about here and we were told that a brown and a black bear were killing them. We didn't take this seriously until early one morning about 20 head of cattle stampeded among our tents with the bears right after them. We found the remains of one carcass.

Here Clive and Addie Cairnes visited us and stayed three days which were most instructive and enjoyable. He had quite new ideas, now generally accepted, of the age and origin of the Shuswap terrain on the east of the Okanagan Valley. It was on one of these days that driving along the main road near Kaleden I was suddenly confronted by a car out of the dust, travelling as fast as I was, about 50 mph. There was no room to pass it. I drove across the shallow ditch between the telegraph poles, through the sage brush and back across the ditch again onto the road. Neither of the Cairneses said a word. This gives some idea of what the main road of the country was then like. In 1972 Addie said to me "Do you remember the time you were driving Clive and I near Kaleden and we almost ran into a car? Clive and I thought our end had come."

On the 10th of August I drove the Cairneses to Penticton and on returning found a forest fire was creeping up towards camp so we moved the next day to a few miles up the Ashnola River. Here was a good shady camp site by a pool in the river. On the 11th Father visited us and the day was taken as "Sunday". The next few days we worked around camp but also drove back to traverse the Blind Creek area.

Instructions arrived to collect 1500 to 2000 pounds of dunite and the same of pyroxenite from the Tulameen ultramafic body and ship it to Ottawa. On August 21st we moved camp to the Tulameen River two miles west of the town. This was close to the body on Dr. Camsell's map. Looking at the map I thought we could easily find good accessible outcrops of these rocks but we had to hunt all over the stock to find where its rocks were not serpentinized or otherwise altered. Finally we discovered an area of dunite near the top of Olivine Mountain and a dyke of good pyroxenite in Eagle Creek. In Ottawa that fall, Dr. Potvin, Chief of the Mineralogy Division asked me where we had got the material. I told him and he said he had been one of Dr. Camsell's assistants while they were mapping the stock and that there was one other small area of fresh dunite but the dyke was the only unaltered pyroxenite. Next I engaged a prospector, Leslie Fripp, who had a miner's license to use dynamite. Then I needed a man and pack train of 10 horses to bring the dunite down off the mountain. The pyroxenite was close to the road. Fripp was engaged to a girl in the Rabbitt family and naturally recommended his future brother-in-law. I called on Rabbitt and found him a good type and he said he had 10 horses he could pack and would do the job. They both proved satisfactory. We had brought a good supply of heavy ore sacks from Hedley and put about 80 pounds of these heavy rocks in each sack. I was doubtful whether I had got enough but on weighing the sacks at the station found we had about 1800 pounds each of the dunite and pyroxenite. I paid Rabbit $26.00 for wages, 10 horses, and saddlery and Fripp $12.00 for his work, steel and dynamite.

On August 25th we returned to the Okanagan and camped at a small lake west of Oliver. The fire was now all around our former camp at the spring in the pass up Blind Creek but the new camp site was not nearly as good a one. Also the fire fighting gang was camped there but there was no other site. We worked all the east side of the ridge we were on and went over the old mines of the Fairview camp. In three places we came upon abandoned homestead where farming had been attempted and dropped for lack of water.

On the 27th I went to see Spotted Lake. This is as far as I could see the only lake in the region which could not have overflowed out of its basin since the retreat of the ice. In dry summers a man could walk across it on solid salt provided he kept away from the spots. These were circular pools scattered at intervals all over the surface about 15 to 30 feet in diameter filled with crystal clear blue saturated liquid and lovely big crystals could be seen growing on the sides of some of them. C. deB. Green told me his "winter" quarter section homestead near Osoyoos had included the main part of this lake. As he had a number of his cattle die from drinking the brine liquid and did not want to pay the expense of fencing it, he sold it for $15.00 to his neighbour who owned the remainder. The next year his neighbour sold $7500 worth of epsom salts from it.

On August 31st we moved to our former camp on Shingle Creek and traversed in various far flung places where I thought the mapping was weak in the Okanagan Falls and Keremeos maps.

September 6th we packed our camp, stored the truck for the next year and the party left. I went to Nelson and fetched Violet to Monte Creek where we stayed for a week or so and returned to Nelson. I then drove with her and her parents to Pasadena, California. From there I took the famous train the Santa Fe Chief to Chicago and thence the C.N.R. to Ottawa arriving early in October. I stayed with Dr. Bonar, Master of the Mint and his family and on the 12th I reported for work at the Victoria Memorial Museum as my application for a permanent position in the Survey had been accepted.

On seeing Dr. Collins, Director, he asked me how much money was in my field appropriation that had been added to pay me for writing my report. There was an amount equal to about 2 months for my wages. He said I would be paid from this until December 14th when my appointment would be ratified. I objected saying that it would almost certainly delay my promotions in future years. He declared it would make no difference and so instead of being appointed on October 12 I was not appointed until December 14th. Had the earlier date been used promotions and annual increases would have come on the 1st of October each year but as December 14th was closer to January 1st instead they

came on that day. Worse was to come since as of January 1st, 1932 the Hon. R.B. Bennett, the Prime Minister stopped all promotions and reduced all Civil Service salaries 10 percent. That was the day I was due for promotion to associate geologist. But, due to Dr. Collins' arrangement instead of being promoted on October 1st, 1931 before Mr. Bennett's ruling as I normally should have been, I did not get my promotion until late in 1935.

## The Summer of 1930

I left Ottawa on April 14 by CNR to Chicago and thence by the Santa Fe Chief to Pasadena. Father and Mother saw me off at the station. The entire funds for the field season had been paid to me and I deposited nearly all of it as usual in my own name in the Bank of Montreal in Penticton. This was the way things were done in those days. Violet and I were married on April 21st and I had with me the money for our honeymoon as well as some to start work with. We stopped for a few days at Santa Barbara and then travelled north by train crossing from Seattle to Victoria at night on an American boat. In the boat we were bitten by fleas but managed to get rid of them. We went to the Empress Hotel and in the morning I called on Mr. F.C. Green, the Chief Geographer of the B.C. Department of Lands whose topographic maps we were using. I introduced myself and we had a short chat. Mr. Green seemed very agitated and excused himself. He was away for about three minutes and when he came back he said "I am terribly sorry to tell you but the radio has been calling for you. Senator Bostock has died at Monte Creek and your family wants you back at once". We caught the first boat we could to Vancouver and the CPR evening train reaching Monte Creek in the morning. Father's funeral was in the little church he had built in memory of my elder brother Alec, killed in 1916 on the Western Front. From there he was taken to the graveyard overlooking the Ranch. Five cabinet ministers were present as well as a number of Senators and members of all political parties from the House of Commons, some of whom had come long journeys by train to be there.

After three days Violet and I went to Vancouver. I collected the equipment and baggage and we took the Coquihalla line to Penticton where we stayed in the Kalamalka Hotel. I got the truck out of storage on May 13th and we made a trip to look at a point in the Kruger Mountain alkaline body I thought I had mapped incorrectly. The dry belt sunflowers were a glorious sight on some hill sides and the Mexican grease wood was in bloom south of Okanagan Falls. The next day the party arrived, including Ken Martin, John Johnston and a new assistant, Gibb Henderson, as well as Clarence Sherlock, again our cook. We sorted equipment, bought our groceries and moved the following day to our old camp site on Shingle Creek. We traversed in a few places in the Okanagan Falls map including up Shatford Creek with John. The day was windy and bitterly cold though sunny. For lunch we lay on a sunny hillside sheltered in tall thick bunch grass. It was the only warm place.

May 23rd we moved to the mouth of Whistle Creek valley west of Hedley. This proved a good camp site. We now had a spell of very unsettled weather and it rained all the next day. We traversed along the Similkameen Valley to westward, crossing the river by very precarious, rusty old cable ways from the road on the northeast side to the southwest side. Each man crossed by himself. We found we could often see the other pair traversing up on the other side of the valley and could hear them hammering on the rocks distinctly but no amount of shouting was audible. The sound of our hammers on the solid rock travelled amazingly.

Violet and I called on the Knowleses, Joneses and Harry Barnes. This gave Violet a trip up and down the skipway but after the trip she had had with me in 1922 on the Molly Gibson aerial tramway it was nothing in the way of excitement.

On the 30th it rained hard all day and the creeks rose but most days we were able to traverse. There was a palatial log establishment in ruins on the valley side west of Whistle Creek with a lovely view down the Similkameen, but there was no water. A lonely dying lilac bush was all that remained of the garden. This place was reminiscent of that on the east side of Tatlayoko Lake in the Chilcotin seen in 1925.

On June 19th I went with Charlie Camsell, Dr. Camsell's son who was one of Cairnes' assistants to call on his uncle at Kaleden and then to Penticton and back. With Bert Cudmore the packer who was a sailor by profession he had arrived the day before with nine horses and a colt. The young colt had a big open cut on one shoulder made by getting caught in a barb wire fence. Bert filled the cut with pine tar and in a few weeks time it healed leaving no mark. The string included one first rate saddle horse, a big buckskin gelding and three mares. The next day Violet and I went with Charlie to Penticton and he went on with the truck to Clive Cairnes in the northern Okanagan. I saw Violet off to Nelson on the train and returned by stage to Hedley walking up to camp. In the meantime that day the others had moved camp up into the pass between Whistle and John's Creek. We were now on the fringe of the high rolling plateau to the south and west of the Similkameen. It was densely forested with second growth lodgepole pine for miles and miles. There were very few outcrops and traversing was frustrating. When we came to move again, one of the mares had been driven off by a wild stallion and we never found her. Camp was now on Pettigrew Creek. From here to find a way through the forested hills was the problem. The first traverses were planned to find a route and camp site as much as for geology. I believed I would be sent to map this area in 1931 so that to find a truck route through it seemed the first thing. There were no fire trails in those days. Most of the work of the next two days was cutting trail to a poor camp site in the pass between Smith and Willis creeks. The pine was dense. The trees were 4 to 8 inches in diameter and a recent fire through part of it made the job terribly dirty. To make matters worse the weather was unsettled. Bert took three horses and fetched more supplies and mail from Hedley. We moved on June 22nd to the camp site we had found but still four of us had to go ahead to finish cutting trail while Bert and Ken, who quickly learnt, packed the horses. Clarence liked using an axe, was good with it, and helped with the trail. We cut steadily without stopping for lunch. The horses caught up with us at 4:25 p.m. and we still had a quarter of a mile to cut so that we did not reach camp until 6 p.m. when it began to rain and poured until lunch time the next day. There was little feed anywhere for the horses. In the afternoon we scouted for a route and camp again and the following day two of us cut trail and two of us traversed. My parties have always used 3¼ or 3½ pound axes with

32 inch or longer handles as I believe short handled axes are deadly with those who are not accustomed to using them. On the 25th two of us traversed and the others moved camp. In starting out up a bank the grey mare, the mother of the colt, fell over but was alright. We met the pack train in the afternoon and camped at the only plausible place we could find, about 3900 feet on Willis Creek. We were still in thick timber. We had not gone far. The following day I went down the creek to try to find a way out. We hit a poor trail leading to a meadow, the north end of which was all oats and a road led north from it. The next day was spent in cutting trail again and then the others moved camp to the south end of the meadow, putting up a brush fence to keep the horses out of the oats, but this was not easy. The meadow, though it was near Princeton, belonged to Garnet Willis of Keremeos whom I had met in 1927 at the Dalys'. On this move Bert didn't find the horses until mid-day and then was very slow in packing. However, the camp site was an excellent one and we had five good days traversing around the area, in spite of unsettled weather. I rode into Princeton and got the mail and groceries. On July 6th, we packed up and when starting the buckskin mare gave the greatest exhibition of bucking with a pack on I have ever seen. Round and round she went twisting and turning but nothing came off. We camped at Hayes Creek on the Princeton-Hedley road. Now we were again in the great trench-like valley of the Similkameen and on the sunny side. It was terribly hot and dusty. We stayed here traversing for three days. On the 10th we were up at 4 a.m. and got off to an early start to camp up Hedley Creek. It was a long, weary, dusty move along the gravel road and the day was one of the hottest of the season. On the 11th I went to Princeton by stage and brought Violet to camp. In the evening we called on old Mrs. Walker and though she was a rascal I had a great respect for her. No one could have received us more graciously.

It was time to be going to the higher levels and our next move was to last year's camp site 3½ miles up the Ashnola. Bert and Ken brought the horses unpacked along the road starting very early and everything else was taken by truck as it was a long way. We now had before us that lovely high plateau and mountain country, the Okanagan Range, to do between the Ashnola on the west, the Similkameen on the north and east and the International Boundary on the south. The hot weather had set in with a vengeance and it was time to get up there. That evening Bert said to Clarence "This is another damn bridle couple. Last year I was with the Gunnings and the year before with the Cairnes".

Again we got up early and packed going up the Ashnola Valley nearly to Webster Creek, then crossed the river to the east side and started the long climb from 1900 to 7250 feet on a steep trail. The day was hot and we had trouble with the packs. Bert tied the grey mare's halter to the tail of a horse that led and kept up well. The rider of the big bucksin led them. The wretched grey mare hung back and the other two horses pulled her up the trail. In a particularly steep part the hair of the tail of the second horse pulled out and the mare went over backwards, cart-wheeling down the mountain. After two somersaults she ricochetted off a tree which turned her sideways and she came to rest on a little flat space against another tree. When we got to her, her pack was simply shattered and empty. After a minute or more we managed to get her upon her feet and she seemed alright. The pack had saved her. She had a few cuts and that was all. It was getting on in the day and we hurried on, finally topping the summit and dropping steeply down about 1000 feet to the head of Gilanders Creek in the pass to Susap Creek. This was a good sheltered camp site and very pretty with a small pond. We were all weary and so were the horses. The next day we took it easy and the following day Ken, Gibb and Bert with a pack horse returned to the site of the grey mare's roll as we had left some of the pack there. They brought back the equipment and Ken and Gibb looked for any cans of jam that might be recovered. They found empty tins that had rolled down to a thousand feet below where the mare had come to rest. Now we had no jam but Clarence made some dried apples and sugar do instead. The weather now was densely foggy with showers. This camp was too far south for traversing the spurs overlooking Keremeos so we moved a fly camp a few miles north leaving the tents up. We traversed from there for three days and returned to our main camp on July 25th. Then it snowed and was down to 28°F. When the snow stopped we moved to the head of the south fork of Susap Creek to a very good camp site. The area around was scenic with beautiful open undulating grassy summits to the north and the north end of the Snowy Mountain ridge immediately to the south. There were a lot of horses running loose here which gave Bert some trouble.

On the first traverse over Snowy Mountain we saw two bighorn rams, a large and a small one. These were the first bighorn sheep I had ever seen except from the train near Banff. Ken and John had come upon a ewe with a lamb among the timber and cliffs overlooking Keremeos. We watched the two rams travelling along the ridge to southward which was all bare granite blocks. The trail they followed showed plainly shining in the sunlight as along it the rock surface had been polished by the feet of countless generations of sheep. By going over Snowy we could look at a good section of the granodiorite contact and the next day John and I went up there. When we got on top we were in dense fog threading our way along through a field of great boulders with grass on the soil between them. Suddenly immediately in front I saw rams. I turned to tell John signalling silence, grabbed him by the shoulder and shoved him behind a boulder. A thing I could have done with few others requiring as it did a high degree of mutual understanding. Then I signed to him to peek slowly over the boulder. There within 5 to 10 yards of us were 9 big rams dimly silhouetted in the fog, quite unconscious of our presence. This was a priceless sight. We watched them most of the rest of the morning, as the fog slowly thinned and finally they moved down into the cirque to the southwest without being disturbed. Thompson Seton says in his "Lives of Game Animals" that there used to be a greater concentration of mountain sheep in this general area than in any other part of North America. We saw these nine rams again on several other days but always at a distance. As Ken remarked one day "You always see something when out with John". It was almost uncanny.

The same day while writing notes I remarked to John that I wished we could find striae up here at 8500 feet. He said "I think these are striae". He was down on his knees where he could get the sun-light reflected on the surface of the only positive outcrop. The rest of the rock seemed to be loose blocks. Standing up in relief about 1½ to 2 inches on the weathered surface were small fine

grained xenoliths and silicified areas. He pointed out that the surfaces of these were polished and crossed by distinct, deep, parallel scratches. After examining them with our hand lenses we could not take them for anything else but striae. They even showed the direction of movement by the way they tapered out.

From this camp Bert and Gibb went back to Keremeos for mail and grub as we had lost some with the grey mare's accident. Gibb though an absolute greenhorn who had been kept on a strict diet at home as his parents believed there was something wrong with him, was now a changed man. He had a natural aptitude for handling the horses and was good with an axe as well as everything around camp. At first he had been particular what he ate but now took everything though parcels of food continued to come from home. They got back in five days and with the things ordered, had a side pack of goodies for Gibb which he promptly shared. At Christmas his father wrote saying how much good the summer had done for him.

Now we moved to the head of the northeast fork of Ewart Creek. Violet and I went up over Snowy and climbed along the sheep trail vainly hoping to see the rams. From this camp we traversed around and then leaving some of the tents up made two fly trips, one to the head of the north fork of Snehumption Creek and the other across into Washington State near Chopaka Mountain. We saw a shepherd who was herding his sheep on both sides of the Boundary. The weather was unsettled with rain and hail.

We had now mapped all around R.A. Daly's Similkameen batholith and found his classical, original roof-pendant was not one at all by his own definition but a projection of the general contact of the intruded rocks. We found that the slabs of syenite talus on the west side of Snowy rang like a bell when struck with our hammers.

In this area there are two islands of alpine tamarack in the cirques on the east side of Snowy ridge. We also saw the holes of those curious little animals, the mountain beaver. While we were up here on top we had seen a lot of grouse, mainly blue grouse but some Franklin grouse. When the young birds were flying well in August I used my 22 colt automatic pistol and shot 67 with 100 cartridges. I always aimed at their heads and either knocking their heads off, broke their necks or missed them entirely. They frequently gave us a meal of a grouse a piece which was a nice change from ham and canned meats.

On some hot days looking east across the Similkameen and Okanagan Valleys to the broad upland beyond, where big ponderosa pine, tamarack and Douglas fir formed the forest, we could see spectacular forest fires. There vast pillars of yellow-grey-white smoke rose in immense cumulus-like clouds far into the atmosphere, supported by tremendous up drafts created by the intense heat below them. Some of the deplorable devastation wrought was seen from the Kettle Valley Railway in subsequent years.

On August 21st we started to move back by stages towards Keremeos and on the 23rd down that steep trail to the Ashnola. Before the trail dropped off there was a wide open slope approached from the plateau by a narrow trail cut through timber for about a mile. Bert who was in the lead should have foreseen what was going to happen when the horses came to the open. The moment they got clear of the forest there was a general stampede. Away they all went at the gallop down the slope. Tarps flying, fibre cases falling off and general chaos. The one redeeming thing was that Big Paul whose cinch rope was off and trailing but still tied at the end to the halter on his neck, trod on it, turned a complete somersault and thinking he had been roped, stood stock still. I never saw a horse look so self-conscious as though he knew he had been a fool. We all had a good laugh.

From this scene when the horses were caught and the packs on again I went off on a traverse and was rather late getting to camp. When I came in Ken said to me with enthusiasm "We killed the biggest rattler I ever saw right where we put your tent. We cut him open and he had two ground squirrels in him." I said "Don't breathe a word about it, Violet is nervous of snakes."

Monday the 25th Bert and Gibb again went with some of the horses to Keremeos for supplies and mail. This was Violet's birthday and I had a quart of gin and two dozen oranges saved up for the occasion. They make one of the best drinks for the hot weather and all enjoyed it including Gibb and Bert when they got in at 8:30 p.m. Next morning I happened to wake at dawn and see a large bushtailed rat nestled in Violet's hair. I gently nudged it out with a book. We always had our tent wide open.

We traversed around this camp doing some exploration into the next map to the west and then worked our way to a very poor camp site about three miles above Keremeos, on the south side of the Similkameen. We could only get two poles per tent and no fir bows for beds. From here we worked and moved south along the same side of the river, filling in the gaps that we had missed last year below 5500 contour. Our most southern camp was only about three miles north of the International Boundary. We then moved back to the lower end of Keremeos Creek which sinks away before reaching the river and I was told it gave the old townsite its Indian name Merameoos (G.M. Dawson). I tried to sell the grey mare and colt but without success. An arrangement for wintering horses was made with Grant Willis in Keremeos. The horses were of course shod in the spring and their front feet kept shod throughout the summer. If the hind shoes came off during the season they were left off. Then, at the end, all the shoes were removed and they were ready for winter.

The party broke up on September 12th. Violet and I joined Clive and Addie Cairnes with his party on Kalamalka Lake. There we stayed until September 20th after a most interesting week looking at features of the Shuswap terrain. We then returned to Ottawa after a weekend at Monte Creek.

In making up my accounts I found I owed more than $500.00 to the Receiver General that I could not account for. I knew I had got some of our honeymoom money mixed up with the field funds at the beginning of the season but could not believe I had made a mistake of that proportion. I was disgusted. I could find nothing wrong. Finally, I made out a cheque for the amount owed and took it into Mr. Sawyer, my accountant. Two days later he brought the accounts back and my cheque with a big laugh. I had put down Clarence's wages at $5.29 instead of $529.00.

PART II: THE YUKON TERRITORY

## CHAPTER 2: THE SEASONS 1931 TO 1934, THE LABERGE AND CARMACKS AREAS

### Section I: 1931, Laberge Area and Freegold Mountain

In 1930 Dr. W.E. Cockfield took charge of the Survey office in Vancouver after Dr. Dolmage had resigned to enter consulting work. Cockfield had worked in the Yukon since the summer of 1915 when he was a student assistant to Dr. D.D. Cairnes. In the spring of 1917 Cairnes died suddenly and Cockfield, still a graduate student, took his place in charge of the work in the Yukon, continuing in this capacity until 1930 when he was 45.

In the spring of 1931 I was all steamed up to return again to Similkameen and Okanagan country and thought that now I could expand the mapping at a much greater rate. In April Dr. Collins sent for me. I expected to discuss field work in British Columbia. When I went in he signed me to a chair and said that he thought that as Cockfield was now in charge of the Vancouver office he should have field work in southern British Columbia. He went on to say that he had asked Dr. C.E. Cairnes if he would like to take over the Yukon and Cairnes had said he did not wish to. He had discussed the matter with other members of the staff and they had chosen me. There was a pause of nearly a minute. I was completely taken aback. I said abruptly, "I'll go". At which Dr. Collins' bushy, black eyebrows just about went back down his neck. I explained what a surprise it was to me, that I realized I would have to leave Ottawa in the middle of May, that Violet and I were expecting our first born early in that month, the doctor had advised that she should not travel until after four weeks and that we hoped she would spend the summer with her parents in Nelson, B.C. Dr. Collins, if he was difficult to understand at times, was always a great gentleman. He was sympathetic and said at once that he could arrange things so that I would not have to leave until sometime on in June as Mr. E.J. Lees, a graduate student, who was doing his thesis on the Laberge map area, had been in the Yukon before and could start without me, and I could join Lees when I was ready. He went on to say that he was sorry that the work I had been doing would have to be dropped.

My instructions were to continue the work Cockfield had laid out and begun, namely to extend the methodical topographical and geological mapping of the Territory with 4 mile to the inch sheets, each one degree of latitude south to north and two degrees of longitude east to west, giving priority to the more accessible areas along the main rivers and to active prospecting and mining districts. In addition like Cockfield I was to act as resident government mining engineer for the Territory, to visit active mining and prospecting localities and write an annual report on the mineral industry that was to be published before the prospecting season of the succeeding year began. This was a lot but with the responsibility I was accorded a great deal of freedom.

Hewitt was born on May 7th and we all went by train to Nelson in the first week of June. I left them in Nelson and took the Kettle Valley Railway to McCullough where I boarded a motor stage for Kelowna, where I caught a bus to Monte Creek. After a day there I flagged C.P.R. N$^{O}$ 1 to Vancouver where I met Cockfield for the first time and renewed my acquaintance with Nettell. Cockfield gave me a lot of advice about the Yukon but I was so ignorant of the territory it did not mean much.

I left Vancouver the evening of June 17th on the C.P. S.S. Princess Louise. This was a lonely trip for me amongst a horde of tourists. We stopped at Alert Bay and Prince Rupert on the British Columbia coast and then at Ketchikan, Wrangell and Juneau in Alaska, and went in to the Taku Glacier on the way. The weather was lovely and the whole trip so interesting as well as the scenery being grand and new. The Louise docked at the wharf on the east side of the inlet at Skagway about 8:00 in the morning on June 21st. As the U.S. Customs and Immigration authorities had been through the passengers on leaving Ketchikan we were free to leave at once and walked along the long plank causeway carrying our suitcases to the White Pass and Yukon Route railway station in Skagway. We got our tickets and boarded the train that left at 9:30 a.m. This is a 36 inch gauge railway and all the engines and cars seemed like miniatures after the C.P.R. Having always enjoyed looking out of a train I took every advantage given by the observation cars at the back of the train which was made up of freight cars in front and passenger cars behind. The climb from Skagway up to the White Pass is as fine a piece of railway scenery as anywhere in Canada and though short it is very steep, much of the grade being 4.2%. Here we were climbing through the Coast Mountains with their snowy, granitic peaks so familiar in character after 1925 on our way to Bella Coola. The whole journey interested me intensely. At the B.C.-Alaska Boundary at the pass, the Canadian Customs and two R.C.M.P. constables boarded the train and started going through the passengers as the train made the final, gentle climb to the actual summit near Log Cabin and then ran down to Bennett. Here it stopped for lunch and to allow the train for the "outside" to pass. The passengers of both trains were given a sumptuous lunch together which I soon found, as in after years, gave me indigestion. From Bennett the track extends along the steep east shore of Lake Bennett with the mountains across the lake rising abruptly from the water. We were soon past the B.C.-Yukon Boundary and stopped at Carcross for a few minutes. Here I was glad to see we were back in dry belt country. It made me feel at home. We reached Whitehorse about 4:30 p.m. I got my things from the baggage room and went across the street to the White Pass Hotel on the corner opposite Taylor and Drurys store where Cockfield had told me the Survey parties always stayed and stored their equipment. Here I met Mrs. Viaux, a stout, old, Belgian lady. I gave her Cockfield's regards and told her I had come to take his place. She had old hotel registers from the time when the

place was built and they contained the names of R.G. McConnell, J. Keele, C. Camsell, D.D. Cairnes and innumerable other important people of earlier years in the Yukon. Unfortunately, they were burnt with the building some years after she died.

On the street Bob Bartlett hailed me and I was cheered to find someone who knew me. He was one of the staff of the Topographical Division of the Survey and was collecting his equipment and instruments to start with new canoes and new outboard motors to traverse the Teslin River and do the topography of the Teslin Valley. His stadia traverse of the river on one mile scale is the first accurate detailed record of its course for the study of changes.

After supper on the 24th I boarded the White Pass or British Yukon Navigation Company steamboat, Casca for my first trip on the Yukon River. Dapper Captain Malcolm Campbell, was her Master and she was the tourist boat. Her hull was 180 feet long, 38 feet in beam and drew 4 feet or more of water when loaded. Above the main deck she had two decks of passenger cabins, the second and third decks. Each cabin had an upper and a lower berth, enamel washbasin, water jug, slop pail and stool. On the second deck, in front was a sitting or observation room with short passages extending aft on each side of the column that contained the funnel and control wires running from the pilot house on top to the engine room and leading to a dining room, while those on the third deck above opened outwards onto the open deck. This made a great difference to their warmth in cold weather. The main deck contained the boiler in front with piles of four foot spruce cordwood on each side. Aft of this was freight space, kitchen, crew quarters and finally the engine room and paddle wheel. The engines were steam, single expansion, with the pistons driving the paddle-wheel directly. Above all on the fourth deck was only the pilot house. The officers' cabins were on the third deck, forward of the passenger cabins and directly below the pilot house. In general this was the plan of all the steamboats used by the W.P. and Y.R. during my years in the Yukon.

Captain Bruce of the R.C.M.P. was on board and we talked nearly all evening. He asked me if I knew Mr. K.G. Chipman of the Topographical Division and I found he had been, for a short time, with the Canadian Arctic Expedition of 1912. I told him I knew Drs. J.J. O'Neill, R.M. Anderson and Diamond Jenness, all of the expedition, as well and we talked of their time in the Arctic. As far as Capt. Bruce went he corroborated all they had said about Stefansson's behaviour. The Casca stopped at an Indian camp on the left limit (the left side looking downstream). A constable came up and saluted Capt. Bruce and was put off with a boat while we stood by the rail talking. Capt. Bruce told me than an Indian who had been arrested for a minor infraction of the law had been allowed to escape by the recruit who was guarding him. The constable who had just got off was to talk to the Indians and particularly one, Jim Boss, who had a great deal of influence among them and to explain that if the prisoner would return he would suffer no penalty. Jim Boss I met in later years. He lived on the west side of Lake Laberge about two miles from the south end. Opposite his place, across the lake, lived Dutch Henry. Dutch Henry was a German who had come in on the Klondike rush and married an Indian girl though he was reported to belong to an aristocratic family. He changed his name and lived out his years in the Yukon with a large family.

At 10:30 p.m. we reached Scow Point on the right limit about half a mile or so up the river from the lake. Lees had written that I would be met here but there was not a soul or building in sight. Only a steep silt bank 10 to 15 feet high with brush on top of it. As I looked the Casca had turned slowly around and now with the bow upstream ran gently into the silt bank. My baggage and some twenty boxes of supplies for Lees Survey party were put up on top of the bank. Onshore I counted the pieces, signed the freight bill for the Purser, Mr. W.E. (Bill) Bamford, the landing plank was pulled in, the pilot blew the whistle and rang the engine bells, the Casca slid gradually out from the bank with her wheel turning slowly astern. The wheel stopped and went ahead as her bow swung first upstream and then pointed across the river. She leisurely continued to turn around in the current and then headed for Lake Laberge her wheel churning steadily. The sun had been down behind the Miners Range to the northwest for some time and I was alone in the dusk and silence as the sound of the Casca's wheel died away in the distance. Behind the pile of goods was second growth aspen, willow, and spruce. I sat on a box and found myself in clouds of mosquitoes. I was quite unprepared for them. I had expected someone would meet me. After a while I scouted around and found a flat roofed log cabin without door or windows. I walked out along the bank towards the lake. Not a sound. Not an animal. Nothing. I walked back to the landing and sat down again. About three o'clock I again went out to the lake. It was now getting light and some horses had come on to the broad grassy flat that shelved into the lake. I was just about to go back again in disgust when I heard someone starting an outboard motor about a mile or more away over the still lake on the east shore. In a minute the motor was running and then approaching. I went over to the low river bank. After about ten minutes a boat appeared in the early morning light and as it drew nearer I was delighted to see John R. Johnston who had been with me in the Similkameen. He gave me a wave and came into the bank. "Glad to see you" he said. "I looked over here about twelve o'clock and though I saw somebody but then decided it was a horse". Before this I had not been aware that I bore that resemblance. We packed the stuff into the boat and returned from whence he had come. He and the packer, Joe Martin had reached the lake yesterday, from Lees camp near Lime Peak, some miles to the northeast, to meet me and get some of the supplies. We stayed there that day at their base camp a short distance from Dutch Henry's. John sorted the stuff, and I repacked my things. Finally all the surplus food was put up in a high cache. These caches I soon learnt were a feature of every place where there was a decent cabin or occasionally, they stood alone in the woods. They were usually supported by the lower parts of one, two or three large close standing spruce trees cut off about 12 or 15 feet from the ground. The trunks were peeled and the tin sheets from 4 gallon gas cans tacked like shingles on a roof up the stems above six feet. In those days in the Yukon all gas came in wooden cases of two, four Imperial gallon cans. Everything had a use and every wooden box as well as can was valuable. On the top of the spruce posts an overhanging platform was built and often housed over with canvas or sheets of knotless spruce bark or gas can tin. Such a cache, if well built, and out in a well cleared space was proof against wolves, dogs, bears, and squirrels, provided the ladder was not left against it. If there were big spruces near, flying squirrels

were impossible to keep out unless the whole house, including the door, was sheaved in tin.

The next day we loaded some of the horses and returned to the main party which consisted of Everett J. Lees, with assistants Nick O. Solly, Y.Y. Smith and Clarence Sherlock, the cook who had been with me in the Okanagan. Everett had shot an animal that had been hanging around camp that he thought was a wolf with this 38 Smith and Wessen revolver.

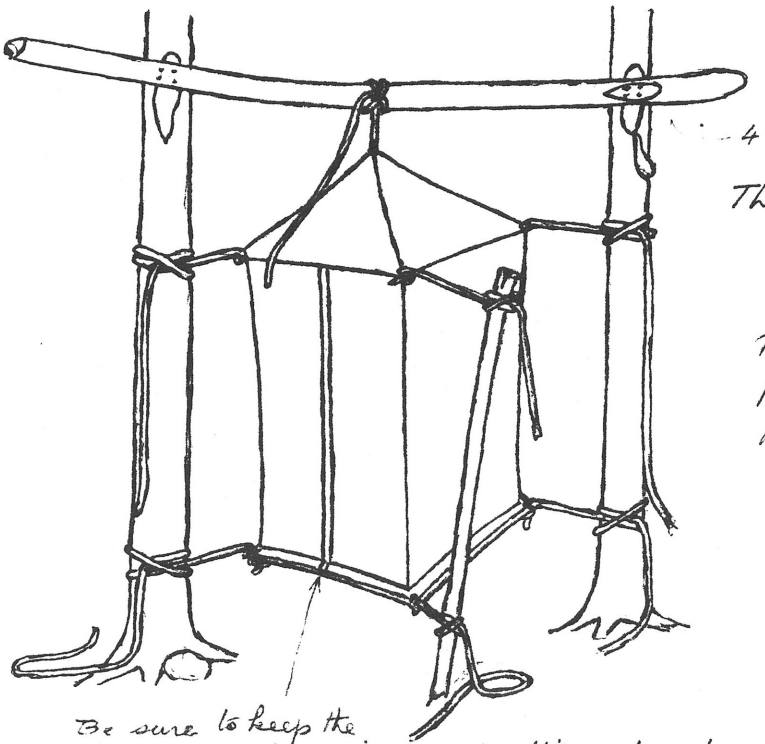
On June 29th we moved back to the lake. John and Joe took the horses to Scow Point to be brought by steamboat with them to Hootalinqua where the Teslin River joins the Yukon (or Lewes as it was then called as far down as Selkirk) at the lower end of the "Thirty Mile" which is the name used for the part of the Yukon River between Lake Laberge and Hootalinqua. The rest of the party including myself went down the lake in our two "Whitehorse" boats. These were flat bottomed row boats with wide square sterns built of local spruce lumber. For them we had two old six horsepower twin firing Johnson outboard motors. The boats were heavily laden and we were, as I learnt in later years, extremely lucky to have a calm day, a most exceptional thing. This was particularly the case, as we found out that day, there is no good refuge whatever for small boats in a storm on the east side of the lake for the whole length. When landing the only thing to do was to unload and pull the boats well out of the water on gravel beaches. We camped the night at Lower Laberge, the head of the Thirty Mile. Here we met Ed Morrison and his wife. They had met in Montreal on his return from overseas at the end of the war. With their children they were a happy family. Mrs. Morrison ran her own trapline in the winters and had the most beautiful silver fox fur I have ever seen, trapped by herself. Morrison was the telegraph operator. He told us that ducks wintered in the large shallow area at Lower Laberge as with the water rising from the depths as it flowed towards the outlet the area only froze over completely when the temperature was lower than about 50$^{0}$ below zero, and then for seldom more than for a day or two. We reached Hootalinqua the next noon. As we came out of the Thirty Mile and turned upstream into the Teslin River we were swept backward downstream at about three mph although we had made more than six mph along Lake Laberge. We made for the far side of the Teslin and landed as quickly as we could. Here we decided all we could do was camp where we were although there were a lot of Indians camped about 100 yards away. Late that day the Whitehorse, a sister steamboat of the Casca, landed Joe and John with the horses just below where we were. The following day the triangulation and planetable work were started in this part of the area and joined to that done the year before on the west side of the river. After some discussion with Everett it was decided I could be most useful helping J.Y. with triangulation. Nick and John ran the planetable and Everett traversed for the geology. In this way we worked throughout the season with some variation at times according to circumstances. The planetable work was done on the 2 mile to the inch scale and controlled by the triangulation stations. These were tops of hills, shot on blindly, without signals or cairns built ahead. Then we went up and tried to find the points shot at. When we were satisfied we were in the right place J.Y. set up the transit, a mountain transit with calibrations of 30 minutes. I chopped down obstructing trees and when J.Y. was ready, recorded the angles, drew a panorama and put in the names of points chosen as possible later stations. Many more points were recorded than occupied so as to help the planetablers. When this was done we packed up the transit in its heavy, mahogany box and built a tripod signal of poles, wrapped around with white cotton cloth. When above timber we built stone cairns. Due to poor light, cloud shadows and showers delaying observation this often took all day. In the evenings the latitudes and longitudes of the stations were worked out by logarithems. I was surprised in 1966 to find one of our pole tripod signals still standing.

The Teslin was now the problem. It was in flood and crowding the clear water of the Thirty Mile, then about a quarter of the united rivers into a narrow strip against the far bank. We watched the Indians in their boats with smaller motors than ours. They did not attempt to breast the mid-current but crossed back and forth as quickly as they could sneaking up along one bank and then the other in the slacker water. We could do the same. I asked one of the Indians how Bartlett's party with his new eight horsepower motors and canoes had got on. He gave a grunt and said "Bartlett he-" making a gesture with his hands to indicate that Bartlett had shot up the river.

July 3rd we started up the Teslin. The horses were heavily loaded and the boats relatively light with two of us in each boat. Our worst difficulties were sweepers, tall spruces undermined by the river and leaning far out over the water. We had to go outside around these in the current. However, with the motors going and the second man in each boat rowing with an oar on the side away from the bank, we got past them though in several places two attempts were needed.

At the end of the afternoon we were getting on better. Everett was ahead in his boat and flying up a long backwater. The next moment I saw him head his boat out into the stream. He was swept into the rough water in midstream and boat and all disappeared. I went into the bank at once and was thankful to see him a minute later about a hundred yards below us but rather low in the water. He managed to get his boat into the bank. It had shipped quite a lot of water but the motor had not stopped. We decided to camp then and there. One of the party went to find the packtrain which luckily was about abreast of us on the trail along the old disused telegraph line that once connected Hootalinqua with Mason Landing up the Teslin. We put camp up, had supper and I went to the head of the backwater to see how we were going to pass it. A point of rock projected into the river and we would have to line the boats up empty past it. I cut down a spruce about 30 feet high on the bank that I thought would be in the way. It floated out into the current, was drawn into the whirlpool at the head of the backwater, up ended and was sucked down in the vortex out of sight in the vertical position. This was what Everett had seen just in time and turned out into the midstream to avoid. An inspection of the other side of the river from higher up on the bank showed we could cross and sneak up the other side, which we subsequently did.

On the sixth, J.Y. and I crossed the river below camp and started for a triangulation station we could see. He was sure he could pick the way there better than I, so I let him go his way and I went mine. When I arrived there I had to wait 40 minutes for him. He never went off again. When we got back to camp we found the bolts holding one of the motors onto its bracket were gone. We cut some wire from the old



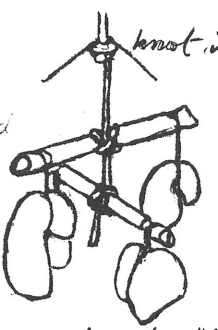
4"+ nails

The Meat Tent.

Put it in a shady place among the trees

Be sure to keep the long zipper fastened to keep the flies out and no pieces of meat touching each other on the sides, arranged on cross bars as below. Well put up and the meat boned and hung soon after the animal was shot it lasted for two to three weeks. It was important that the first night should be cool and dry. These tent well arranged would contain some hundreds of pounds of meat. One moose yields a lot.

The inside should be like this.



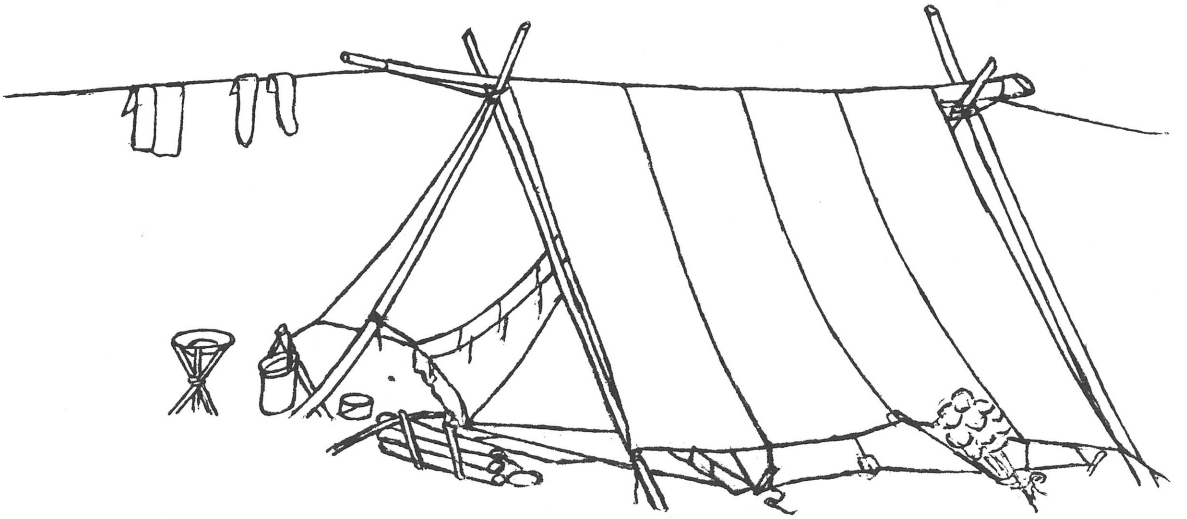
knot inside the peak of the roof.

A big moose well butchered and boned provided two horse loads of meat and it was heavy. Eat the liver the first night.

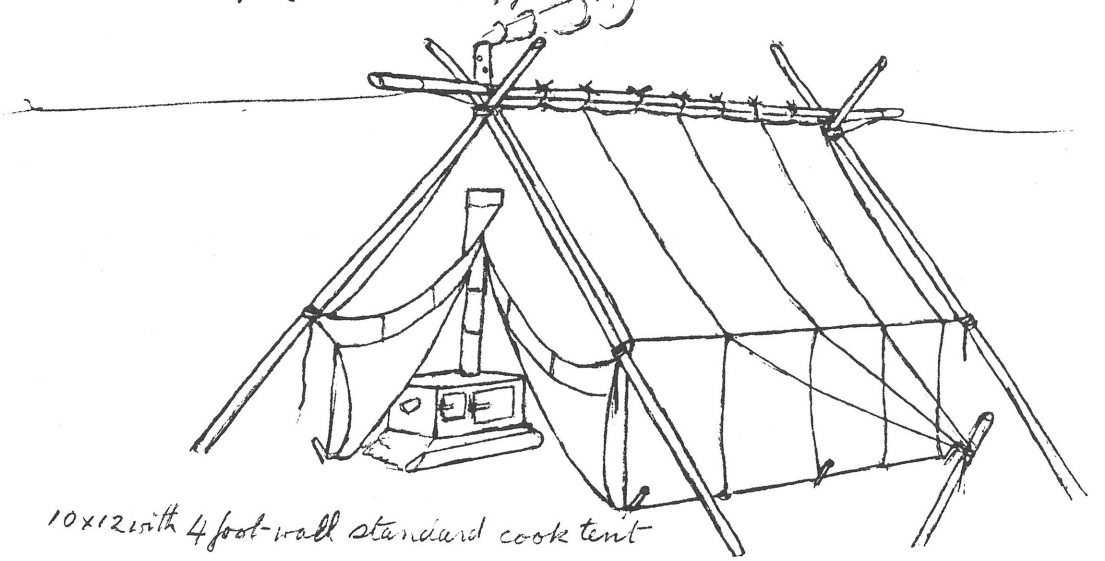
When we had meat we had to eat as much as we could to save the other items and reduce the load; steak for breakfast, lunch and supper

The heart will be alright on the floor of the tent tonight. Boil it tomorrow a.m. and then roast it with sage etc. like a duck. Delicious.

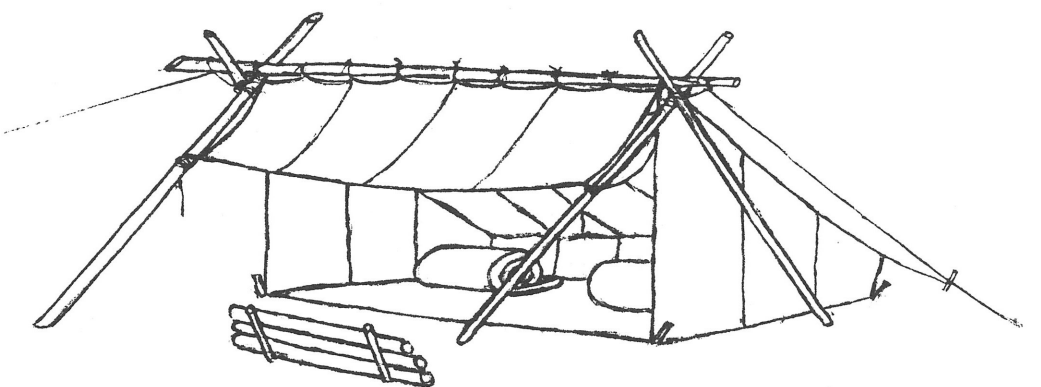
On some occasions when the first night was cool and dry the meat kept good for 16 to 21 days but even then inevitably a good deal was lost as we had no way of keeping it cool especially when we had to put it in the packs right away where it stayed through a hot day on the move.



The 9×9 wedge tent with 12 foot fly, my favourite outfit. Four corner pegs and two guy ropes is all that is needed



10×12 with 4 foot-wall standard cook tent



A sleeping tent designed to give warmth from the fire.

Baker Special tent used by me 1932 & 1933. Developed by F. A. Kerr for a seven person back packing party. One carried the tent, one the envelope-like down tarpaulin floor used to enclose one huge Hudson Bay blanket and all the party slept together including the Kerrs. This party was exploring the Skeena River valley, Coast Mountains, B.C. and spent weeks camped close to timber line away from their main camp on the river.

H.C.B. 1979

telegraph line and bound it together. It lasted like that the rest of the season.

With the old, twin firing, magnetomotors with no shock absorbers, the breaking of brass shear pins was a frequent and annoying occurrence as we were forced to keep in the slower, shallow water near the banks where roots and other obstructions projected, concealed in the thick, silty water. When a pin broke those in the boat rowed desperately to the bank to keep from being carried away downstream. Then the motor had to be unfastened and lifted into the boat, the propellor removed, the pin replaced and all put back, including filling up the gas tank on the top of the motor. When ready again the boat was pushed out into the river where the motorman cranked and cranked desperately to start again as current swept the boat downstream faster than we had come up. On occasion the motor just would not start. This meant into the bank now farther downstream and go over everything again. Then out into the current and have another try. As a consequence during the first days going up the Teslin more than half the time was spent in restarting after shearing pins or just gasing up and recovering distance lost to the current. Also we rapidly began to be short of pins and had to make half pins do. One consolation was that the old galvanized telegraph wire was the same gauge as the pins and we could carry this as a last resort but it was too tough to shear against aluminum parts of the motor.

In a few days, however, the Teslin started falling and we got on better moving. July 12th camp was above Mason Landing and J.Y. and I had to backpack about seven miles along a valley to the west to join with the triangulation carried part way across from Lake Laberge. We had to occupy two stations which would take at least two days. Clarence said he would make up our grub and did it up in two parcels. It was to be for four days. We were put across the river opposite camp and started westward. Soon we found an Indian trail marked here and there by a snapped twig as in the Chilcotin. About 1:00 p.m. we ate lunch but saved some as we didn't really know how far we had to go. Finally we reached what we thought was the right locality and set up our fly camp. When the food parcels were undone there were six small scones, two pounds of butter, three pounds of bacon and two pounds of honey and that was all. We ate the remains of our lunches for supper. No tea or coffee. Next morning we each had a scone and bacon for breakfast and started to climb the first hill about 1000 feet above our valley to the west of us. The bacon made us bring up our breakfast. Near the top we sat down on an open steep slope and took our packs off for a rest. J.Y.'s pack, with the transit in it rolled about 200 feet down the hill but the instrument was in its mahogany box, wrapped in his coat and sweater and turned out to be undamaged. We got to the top, set up and took our angles and afterwards built a stone cairn about three feet high. The next day we had much farther to go to our point and seemed desperately slow travelling, being so empty. We got the point done and returned to our fly camp getting back there about midnight. Next morning we were up early, had a scone and butter each and reached the river bank opposite camp by 12:30 hoping there would be someone in camp who could run the motors and fetch us. Only Clarence and Joe were in. We lay on the bank, ravenous, amidst clouds of mosquitoes until Everett got in and fetched us sometime after 4:00 o'clock.

It seemed to me a number of things could be done to improve the system of work but whenever I suggested any change, Everett came back with the answer, "Cockfield never did that". He had worked under Cockfield for four years. The map area had been started under Cockfield and was Everett's Ph.D. thesis project so I said nothing more.

On July 20th we moved upstream again to opposite O'Brien's Bar. This was a nice but small campsite and it was short of horse feed so that the horses wandered. Just above camp was a slough with a derelict riverboat in it, and a large gentle eddy while across the river was a wide gravel bar on which was a cabin and some sort of a placer digging machine. When my son, Charles and I came down in 1952 this machine was gone. Coming up to this camp we had navigated around the huge, horseshoe-shaped cutbank, of glacial silt terrace on the right limit. Clouds of dust were being blown up in to the forest on the terrace and killing the trees. Great masses of the bank kept falling into the water and provided a great deal of the silt that had been so thick in the Teslin water during flood. Also it is the abundant silt in its water below here that makes the Teslin River hiss when high. About two miles above the cutbank but on the left limit a group of old log cabins standing in a large clear area marked the locality of the Teslin Crossing roadhouse on the winter road between Whitehorse and Livingstone. In 1952 all signs of the buildings were hidden by trees from the river. A great area west of the river here had been burnt some years before 1931 and was covered by deadfall and very low brush so we called the creek "Open".

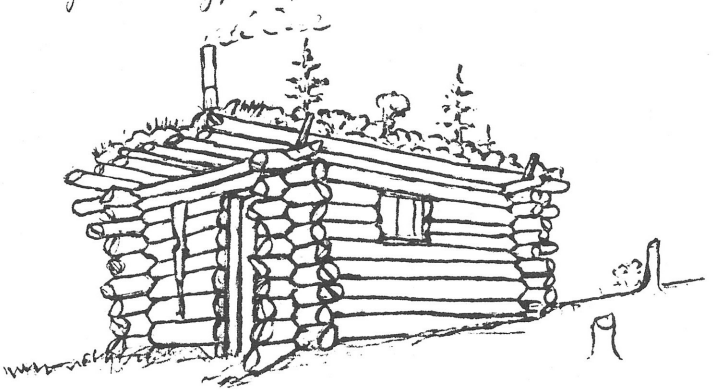
We had three days almost steady rain at this camp and one afternoon two of us thought we would try some fishing. I sat in the boat and dangled the gut leader over the side while I tied the line on a willow pole. When I pulled line to get ready to cast there was a large grayling on the hook. In half an hour we had enough for supper and breakfast for the whole camp.

In our next move on the 25th we moved to our farthest point up the Teslin, about five miles below the Roaring Bull Rapid. In July 1952 this was a tame riffle but I have been told it can be a bad place in some stages of water. From all these camps the party worked both sides of the river as far back as we could traverse.

J.Y. and I had to occupy a point near the south end of Boswell Mountain. We had not had any fresh meat since Whitehorse so when we went up there on July 27th besides taking our usual packs I carried the Survey rifle with seven cartridges in it and an unopened box of twenty in my rucksack. The rifle was a Winchester 3030 carbine and we had not tested it. We thought if we could shoot a moose on top of the ridge it would be relatively easy to bring the meat down hill, both for us and the horses. Neither of us had seen a bull moose or a caribou in our lives except in parks and pictures. We had reached the broad, open rolling upland surface of the mountain which had little timer on it and followed a well worn game trail. There were some tracks on the trail which we knew were not moose tracks and concluded they were caribou. Suddenly I saw the backs of two animals disappearing behind a knoll. Going around the knoll we both stopped dead and said "Grizzly". Across a shallow basin about a quarter of a mile away was the body of a great, light straw coloured animal standing amidst low willows. A moment later it raised its head from among the willows and we saw it was a large bull moose. Without considering how far we now were from

# Log Cabins can vary a lot

In southern B.C. they often had well dovetailed or fitted corners but in the Yukon these were hardly ever used. Probably the labour of fitting each log at each end was found too time consuming in the short season. Cabins built of standing dead, dry spruce were the best unless there was time to cut the trees and let them season. In the Yukon where normally the logs had to be gathered by manually rolling them together and raising them into place the cabin sites were carefully chosen in a grove of suitable trees. Some of the photographs show "normal" cabins so here only other types are shown.



An old trap line cabin in use.

R.F. Guder called this a "Pepper box" One man three days labour 6 x 6 x 6 feet inside. The door was a piece of 20 oz canvas or a caribou hide. The stove & pipe made from 4 gallon gas cans. All gas was in cans before the Second War.

1½" auger was a standard tool.

Tools, axes, swede saw, usual small items, can of nails and shovel. The walls were chinked with sphagnum moss of which a layer was laid on each log before the next log was placed on top of it. The roof was of lighter spruce logs, preferably skinned. On top of this was a layer of sheets of spruce bark laid like shingles to shed rain and keep the dirt from falling between the logs. On this in some cabins was a thick layer of moss covered by dirt and turf. Grass, weeds, shrubs and young trees soon began to grow on this roof. If well built it was water proof in summer but this was not as important as the warmth the thick dirt etc on the roof gave in the winter.

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1979

camp, we decided to shoot it. Taking off our packs behind the knoll, there being no alternative, we approached it in full view, but up wind. In the meanwhile the moose lay down among low willows broadside to us. We walked to what I thought was less than 150 yards, lay down. I fired four shots at it without the least effect. It just lay there like a huge cow looking placidly at us. We thought we must get closer. I gave J.Y. the rifle, told him not to shoot unless the moose stood up while I went back to my pack for more cartridges. I was stooping over my pack taking out the box of cartridges when "Bang", a bullet whistled over my head. I kept down. "Bang! Bang!". There was another and another. Well at least then he had no more cartridges so I got up and returned to him and said "What on earth were you doing. You very nearly hit me.". He said "Look at the caribou", and sure enough there were two caribou standing on a patch of snow just on this side of the knoll that our packs were behind. Before we could load the rifle they smelt us and ran off. We ate our lunches and talked of ferocious, wounded, charging bull moose. We now planned to go around to the higher part of the basin which was nearer the moose and across the wind from him. We walked around there in full sight of the moose who only turned his head a little and when we stopped we were looking down at his face and thought we were about 100 yards from him. We lay down again and I took two shots. All he did was shake the flies off his ears. We stood up, waved our arms and shouted. Not a move. I took a very full sight and fired two more shots and thought I had better load again. As I was putting the cartridges in J.Y. said "There he goes". The moose was trotting away. He stopped on a bare rise and looked disdainfully back for half a minute and then went down into the timber. We saw now what a huge animal he was and were thankful we hadn't shot him. We paced the distance to where he had been lying. It was 175 yards and there was a little blood on the bushes on one side but that was all. We returned to our packs, found and occupied the triangulation point and went back down to camp without incident.

On July 28th we went down the river to O'Brien's Bar and two days later moved camp with the packtrain over the winter road towards Livingstone. Two of the assistants took the boats and surplus stuff down to Mason Landing which we had passed on the way up. Here there were a group of cabins and a good cache. The boat equipment and some supplies were put on the cache and they walked over the wagon road to Livingstone meeting us where the road crossed the South Fork of the Big Salmon River. Here we camped.

After working around this camp we went to the Landing on August 3rd with the packtrain and four of us took the boats down to Hootalinqua. Here we found we were a day late having lost one on our calendar in the rain at O'Brien's Bar. We phoned to Whitehorse for supplies to be sent down and worked in the area around. The Loon, a small river boat of the White Pass arrived on its way up river and took our letters. Among others, the White Pass had two small river boats, the Loon, and the Hazel B which was much like her in that it did many services for us during the course of years. The Loon was generally on the main river (the Lewes) between Whitehorse and the Five Finger Rapid as she had to have a steamboat bring her up the rapid if she went down. The Hazel B worked out of Dawson on the Yukon and on the Stewart River. The Loon had a shallow hull about 60 feet long and 10 feet wide. At the bow were some 10 feet of open deck with a capstan. Aft of this the deckhouse covered the hull to within three feet of the stern. The deckhouse was entered at the ends by small doors and covered by painted, heavy canvas except for the windows, bow and stern. It was divided into sections much like a railway sleeping car, with a narrow aisle along the middle. The front section contained a cookstove and cupboards on the port side and a table with benches across the aisle. The other three or four sections were for sleeping and stores. This fore part could be kept quite warm by the stove in cold weather. Behind the sections a room contained the gas motor, a small washroom and a ladder leading up to the pilot house overhead. The Loon was slow but her shallow draft of about 10 inches enabled her to creep up in the slack water of the reaches above the Fingers. Both the Loon and the Hazel B which was a little faster but drew more water, were tunnel boats. They were used for sounding and marking channels in spring, collecting the buoys in the fall, helping the steamboats in low water and such odd jobs.

At 2:15 a.m. on the 6th the Casca arrived with our order and we started back up the Teslin at 9:45. This was a different river now from what it had been before and we reached the Mason Landing at 7:45 p.m. where we had taken two and a half days travelling before. By the evening on the 7th we were back at camp on the South Fork as well as making traverses. This day the planetablers saw a ewe and lamb on the slopes of Mt. Peters.

On the 9th we moved up the South Fork beyond Fish Creek, traversing as we went. On this day going along the river three of us came out of thick willows into an open space. There was an Indian camp all around us. Many dogs chained to bushes lying silent, the fire burning with a frying pan of meat beside it, still hot. Not a soul to be seen. We touched nothing. It was plain we were being watched and we walked on into the spruces.

The next day Joe and I brought the horses back to the camp we had left and moved the things left there into a cabin in Livingstone. There a number of prospectors had their headquarters and several families of Indian were camped. They all worked on the neighbouring creeks. There were about a dozen cabins in fairly good repair as well as a number of ruins grown over by trees. Old Peters was the permanent resident. He had a bit of a store, a horse and a light wagon that he used to bring supplies from the Landing.

When Joe and I got back we found Everett and John had brought in parts of the hindquarters of a caribou bull that Everett had shot with his revolver. The quarters were as large as baby beef and were the only fresh meat we had that season. From this camp too I visited some lode copper prospects near Loon Lake, but there was little to see.

On the 12th we moved about five miles farther up the South Fork and camped on the north side of the valley opposite the foot of Mt. Black, 7100 feet in the Big Salmon Range. This was a lovely camp with grassy patches among thick dwarf birch and scattered evergreens and the peaks towered around us. As we approached the camp site, three of us saw a large black animal sitting on a small knoll watching us. We all thought at first it must be a bear but its ears were too large. A moment later it got up and came trotting across the wind to smell us. It was a huge black wolf. The birch was up to between our belts and armpits but its back stood above the birch in most places. The moment it winded us, away it went. The following day we all climbed Mt. Black. In this

mountain area we saw several small bands of caribou as well as moose trails and tracks in the timber on the south side of the valley right opposite camp. John and Nick saw a wolverine.

We moved from here into the northern branch of the South Fork and then back to Livingstone on the 19th. Livingstone Creek was discovered by the Hon. George Black, P.C. and his partner in 1898. That year a party of about a dozen, including George Black, coming down the Yukon had met some men going outside who told them most of the good ground in the Klondike was already staked so as G.M. Dawson's report said, gold had been found on the Big Salmon, they turned up that stream. At the North Fork they divided into two parties, one headed up the North Fork and the other continued up the Big Salmon itself and into South Fork. Before they parted they agreed to let each other know of any discovery they made. As they continued, they divided further. Black, who was then about twenty-three and a qualified lawyer, was paired with a somewhat older man, an experienced prospector. Coming to Mendocina Creek they went up it without finding anything much and then travelled over the ridge south into the upper part of Livingstone Creek. Going down the creek they continued to pan at intervals and coming to the narrow lower part, Black stopped and his partner went on about 75 yards. In a minute or so Black saw he had about $10.00 in coarse gold in his pan and greatly excited took it down to show his partner. His partner looked at it and paid no attention, saying nothing. In a minute he had a pan almost as good and holding it up to his face emptied a mouth full of nuggets into it. They hurried to gather the rest of the party. The season was getting on and time was short. They whipsawed lumber for sluice boxes and shovelled in as hard as they could go. After about six weeks they had to stop and leave as freeze up was fast approaching and they had no wish to spend the winter there. Black went down to Dawson with $12,000. in gold dust and he said it was all gone before spring, but he saw that there was lots of work for lawyers and started a practice. The gold was of a rich colour and when they turned it in to the bank at Dawson it was taken for Jack Wade Creek gold. No other gold had been brought in like it. Also like Jack Wade gold it was high carat gold. This was told to me by Mr. Black himself when he was Speaker of the House of Commons and paid me a visit in my office at the Museum. It must have been in 1935 or thereabouts. When the Laberge map was ready for publication and Everett had his report written we needed a name for the highest peak in the sheet, and I suggested it be called Mt. Black for him as it was near Livingstone Creek of which he and his partner had been discoverers.

There was a stampede to Livingstone Creek, and the creeks on each side of it along the South Fork. Livingstone became a booming placer camp with roadhouses, saloons, dance halls, a red light district and all. More would have been heard of it had it not been a contemporary of the Klondike. As at first particularly, much of its gold was turned in at Dawson or taken directly outside, there is no complete record of the amount the camp yielded.

We moved back and camped at Livingstone. One of the Indians hearing we had been in the east of Dutch Henry's asked us if we had seen his dog as he had turned it out there to fend for itself through the summer as usual and it had not turned up. Obviously this was the animal Everett had shot for a wolf.

On the 21st the rest of the party moved over to Mendocina Creek. They were to work north to the main stream of the Big Salmon and follow the south side to its mouth at the Yukon where we were to meet about September 12th or soon after. In the meantime I pitched a fly opposite old Peters cabin across what had been the main street and arranged with him to give me my meals. Peters told me a great deal about Livingstone and the creeks around which was broadly correct from what Black and old Dan Snure, whom I met later at Carmacks, said. Peters said he turned his horse out every winter to fend for itself and found it each spring in good shape. North of Livingstone I visited Lake Creek where Tom and Mrs. Kerruish were working in a section of old weathered gravels. In her light blue man's boiler suit of overall she looked twice the size of Tom and loved handling the monitor. I went up Livingstone Creek with an old timer, Berry, who added to my background and showed me many features of interest. I spent a day on Summit and Cottoneva creeks and had lunch with Billy Clethero and his Indian wife and child on Little Violet Creek. They had not got much gold but hoped to do better from now on as they had just got their derrick and hoist up for moving boulders. Mrs. Clethero cranked the hoist. The original staker of this creek had been a widower and named it after his young daughter who was with him at the time. On Cottoneva there was a mass of equipment, pipe, monitors, a sawmill, steam hoist and boiler but no one there. The creek bed, however, showed a good deal of work had been done. This Livingstone camp was the first placer area I had seen.

On August 23rd Peters and I were up at 4:15 a.m. It was just light and the water in my cup was frozen. A lovely brisk morning. We were off with his old wagon at 6:00 a.m. I walked and arrived at the Mason Landing an hour ahead of him. There were some families of Indians there and I told one that young McGinty had shot a moose and was sending over some meat for them and his parents. I lashed the boats toegether, brought the stuff down out of the cache and when Peters arrived, packed my things in the boats. While I was doing this old McGinty, a one-eyed veteran with his teeth worn right down to his gums, went to the discarded phone that was still fastened on the cabin wall nearby and when he thought I was not watching, cranked the handle, making the phone ring. He took down the receiver and answered as though someone was speaking to him. The he came to me and said that his son had rung up and told him that he was sending him some moose meat. This performance was so perfectly acted it tickled me very much. I said "That will be good for you" and didn't let on I knew anything about it. It was here that I first noticed that the teeth of the older Indians were worn down nearly to their gums, but none were missing. About 4:00 p.m. I was ready, said goodbye to old Peters and the group that had been sitting on a log watching me and was off down the river. Peters seemed perfectly alright then but I heard next year that a few months later he had gone out of his mind and been taken outside where he died that winter.

I was determined to see what it was like to be entirely alone and camped at a good place about 5:00 p.m. The next day I bathed and washed all my clothes. I found myself ridiculously sensitive to little sounds. The squirrels made the most noise dropping cones. On the 25th I went on, down past Hootalinqua and on to Big Salmon, reaching there 7:45 p.m. I put one boat, motor, gas and equipment up on the bank on the right limit and crossed to the telegraph operator's cabin opposite with the other boat. On knocking at the cabin

door I was rather coldly greeted by Mrs. Hayes who was alone. I told her who I was, however, and that I had left the things opposite for the Survey party which would be here about the 12th and asked her if there was a place I could sleep. After a little more conversation she gradually warmed up and told me "Ayes" would be in soon and that I could put my things in Lokken's cabin, of which she had the key. It was about a hundred yards along the bank. Finally she said she would have a supper ready in about half an hour. When I went in she was quite relaxed and a stream of local gossip came forth in her expressive Cockney accent. All about the Indians, in the village across the Yukon just below the mouth of the Big Salmon. Old McGinty lived with his consumptive wife and 19 year old son, and stories of their Indian neighbours whose headquarters were in the village. Then shet got onto her telegraph line neighbours. "Yes, Mrs. Morrison was a very good trapper, and everyone liked her. Ed Morrison, though part Cree, was a good man. His brother lived with their Indian mother down the river. The McMillans at Carmacks were their best friends and Lokken of course, and Dick Gooding, at Stewart River, and so on. It came out too that an Indian we had met, Jack Shakoon with an outside, clinker-built boat, new outboard motor and 270 Winchester rifle was from Carcross and trapped up the Little Salmon River where he had got $2,500. worth of furs in three weeks. Furs had been a good price and "Ayes" too had done well. George Black was a good man for the country but he was a bad man to cross. As time went on I heard this again and again.

The Hayes' cabin was well kept and spotless, with house plants in the windows rooted in "mulch", that is peat moss and other rotten vegetation with silt. Mr. R.A. Hayes (Bill) arrived about 9:30 p.m. in the dark. A tree had fallen on the line down the river. There would be no boat for two days either up or down. Both Casca and Whitehorse were late and the Hayes invited me to have meals with them. They had heard about me from the Morrisons and others. Things I found travelled quickly. Hayes had been in the Grenadier Guards at the end of the war and had a picture of himself as a sergeant, with seven other guardsmen in a shooting eight in England with the many trophies they had won. The Hayes also had the usual high cache and six fine dogs outside at the back of their cabin. Each dog was on a chain attached to a running ring threaded on a long wire suspended from two poles about 50 feet apart. Their wires radiated so the dogs could be together or get away from each other as they wished. Each dog had a "dog stable" or kennel at the other end of its wire. Everything was well ordered including Hayes' boat. He told me much of their winter life at this lonely telegraph post and their dealings with the Indians. I particularly remember him saying, "Some people think the Indians are always lazy but they can be as energetic as anyone when they think the occasion calls for it, and they are exceeding hardy. One time when the weather was very cold, well under -40°F and very still, there was no meat in the village, so a hunt was organized and I went along as we had no meat either. After a couple of days we had not seen a fresh track, when a moose was found some two miles away in a difficult place to stalk. In these intensely cold and still spells the least sound travels fantastically and a lot depended on getting that moose. After a discussion the Indians chose two of their hunters for the stalk. These two men took off every stitch of clothing except for their mocassins and gloves so that their movements might be soundless. After about an hour there was a shot and they had the moose.".

The next day I wrote letters, made out the order for supplies to be sent from Whitehorse, and did accounts. When I had finished Hayes and I tried my motor in his well shaped boat and found we could go about 12 mph. We went up the Big Salmon, three miles to the first riffle and afterwards found we could only get up a short distance with my boat empty. I asked Hayes to look after the supplies coming from Whitehorse which he readily agreed to do.

At 11:30 a.m. on the 27th the Whitehorse, pushing a barge arrived from up river. Some freight was unloaded for Hayes and I got on board. There I met the Hon. George and Mrs. Black, the only people in the Yukon who knew my parents and that my father had been a Senator and Cabinet Minister, a thing that had dogged me so much in British Columbia. H.O. Lokken and Cam Smith, who ran the Loon, were also on board. Cam Smith was going down with a Ford truck on the barge to Yukon Crossing to pick up the mail from the Casca which was also pushing a barge load of several hundred tons of Treadwell Yukon Company Keno Hill silver-lead concentrates. All steamboats were off the summer tourist schedule now and it would take the Casca three days at least to reach Whitehorse which would be too late for the mail from Dawson which had to reach Whitehorse within ten days. The truck would get through from the Crossing in twelve hours now the winter road was dry.

I sat in the observation room and listened to the conversation which was fascinatingly fresh and new to me. Lokken had been hunting up the Big Salmon last fall and had a rather extraordinary experience with a grizzly. (This story was written up by Jack O'Connor in the Outdoor Life magazine in the 1960's, but he attributed it to an Indian.) Lokken had shot a moose and was just lighting his pipe before butchering it. When he bent over to do this he received a tremendous blow behind that lifted him bodily over the carcass of the moose. As he pulled himself together he saw a big grizzly running off. He thought the grizzly had left on smelling his pipe and that in the first place, grizzlies' sight being poor, it had mistaken him for another bear. At Mandanna Creek we took on "Happy", A.R. Lepage who lived at Yukon Crossing with his wife and young daughter. He had a contract to cut four foot spruce cord wood there for the White Pass steamboats. This day he let his dog run loose along the north bank which was largely steep sloping grassy hillsides, and to my surprise the dog kept easily abreast of the steamboat although we were going downstream. The meanders in that part of the river are some miles around and the dog cut across them and appeared trotting leisurely along each time we came back to the north bank. At Tantalus Butte we loaded 42½ tons of sacked coal on the barge for Dawson and arrived at Carmacks in the rain at 7:45 p.m. after a good supper.

I went in to Taylor and Drury's store by the landing and met Dan Snure, the store keeper. This was the firm we had obtained nearly all our supplies from in Whitehorse. Dan directed me to the roadhouse at the far end of town near the bridge over the Nordenskoild River. It was run by old George Brown and kept by Mrs. Waugh and her daughter. It turned out to be clean and neat and the meals were good but the washing facilities were poor and I was not yet adjusted to going out in the night to strange outhouses. The building was two stories high and built of spruce logs. In front across the road were some fenced fields lying fallow. They had been Brown's farm land where he had

grown good crops on rather light soil. As years had passed, the surface of the ground being exposed to the sun instead of shaded by timber, the depth to permafrost had gradually increased and as a result the ground became too dry to cultivate.

After supper I went for my mail and met the Howard McMillans who ran both the Telegraph and Post Office. They were both very nice. Lokken was there and he took me across the river in his boat to his cabin, where I spent the rest of the evening. We got on at once. He had a small but beautifully arranged cabin, linoleum floors, sitting room, library and large gun cabinet, kitchen, workshop, all neat and compact. There was a small basement with a large heater on one side that heated the whole house and a cold storage room on the other side. He turned out to be of Norwegian stock from Wisconsin where he had been trained as a cabinet maker. He came to the Yukon about 1904 and obtained work on the Telegraph Line of which he soon had become chief in this part. Some years ago he had retired from it and was now a gentleman of leisure.

He showed me his boat, the Rio Rita, with great pride as he had designed and built it himself of outside lumber. It was 24 feet long and 54 inches wide with vertical sides and slightly V-ed bottom. The bow slightly tapered, raised and blunt was covered by a deck of canvas for about five feet while the stern was square. It was driven by an eight hp motor the same as Bartlett's. It would carry a man and a ton of freight easily and as I had seen already skimmed along over the water instead of cutting into it. The motor was arranged so that it could be raised and kept running for going in shallows where it could draw as little as 14 inches. Behind his cabin was a rifle range 200 yards long with shooting platforms at 50 yard intervals. He turned out to be a rifle crank and this was his chief hobby. He had made all his own walnut stocks and his rifles had been made to order.

The next morning I met a number of residents including P.F. Guder, the prospector, who had made the original discovery of the Freegold Mountain strike last summer and whom I had particularly come to see. Among the other prospectors there were Bill Langham, Tom Mackay, George McDade, the Backs and the Macks. They all, I found, knew what I was going to do, as I had told Hayes my plans and he had passed it on along the line. They even knew all about me before I met them. I was "Big News". This was the way of the country and I went along with it. It proved very useful at times. Enquiry for a man with horses to take me out to the strike led me to Jimmy Robert, an Indian who was said to be thoroughly reliable. The strike was reported to be 60 miles away to the westward by trail. I arranged with him to take me out expecting to start the next day, but the day passed and no one knew where Jimmy was. The 30th came and still no Jimmy. I went out with Brown on his wagon to some meadows up the Nordenskiold, as he was going there anyway, to see if there was any news of Jimmy among the Indians there and to see the country. It turned out that Jimmy had arrived at Carmacks at 3:00 a.m. on the 29th and decided he had to rest his horses as they had had a hard trip coming in.

On September 1st I was up early and ready. Jimmy turned up with his horses already loaded with the supplies I had bought at the store, sharp at 10:00 a.m. as he had said he would the night before. He was quick and we were off in a few minutes, with a young Indian, Taylor Magundy as helper. Jimmy had five horses, including a rather nice, small black saddle stallion which went for any dogs he saw. One of us had to ride ahead to warn anyone with dogs on the trail as the stallion was very quick and a dog carrying a pack had no chance of escaping him.

Across the Nordenskiold the road winds northward through a deeply pitted outwash terrace for miles. After an hour we left it and took a trail northwestward to hit Crossing Creek some miles above its mouth. On coming to a small lake, I was ahead and seeing some ducks on the far side I shot at one from my horse with my 22 automatic and winged it. I paced the distance. It was 63 yards. This fabulously, lucky shot made a great reputation for me among the Indians, I found later. This was before lunch and we soon stopped. To my surprise the duck, hardly cool, was skinned and cleaned in a minute by Jimmy and in the pot boiling. It turned out very good. We camped along Crossing Creek at 8:45 p.m. having come 15 miles which I had tallied on horseback as I had learnt to do in 1925 in the Chilcotin.

The following day we reached the summit between Crossing and Seymour creeks and went a few miles down the latter camping at the base of Freegold Mountain. The whole distance was about 32 miles. Neither the Indians nor the prospectors would believe this. They all claimed they could walk along these wet bushy trails at about 4 miles an hour whereas they were good if they made 2 miles an hour. Anything suggesting they walked as slowly as that was humiliating to them. In subsequent years we found it a good rule when told a distance to reduce it to two thirds or less. On the way we had seen willow grouse and ptarmigan. I dismounted, stalked and shot two grouse. Jimmy and Taylor were roaring with laughter when I brought them to them. Jimmy said, "You jes like cat".

The next five days were spent visiting prospectors and their claims and making a sketch map of the topography and geology of the area. Several of the men I had met in Carmacks had arrived out there. I found Guder an exceedingly keen fellow and as years went by I heard many stories of his life. He was most ingenious in all the things he made including a blow torch constructed of tin cans, brass cartridge cases and other scrap metal. He was also skilled in using a boom gate with the spring run off to help him dig prospect trenches on the slopes of the mountain. He was a tireless, stubborn worker. Nearly every mineral discovery in the area had originally been detected by him. As a boy in his teens in Germany before the war, he had read an article on the Yukon and decided he would go there. He was about 5 feet 9 inches. His chest was like a drum. The muscles on his forearms like hams and he was athletic. In 1913 he refused to return to Germany when called upon to do so. When the war started in 1914, he had been arrested in the Yukon but was set free and his rifle confiscated. He told the police he could not live without it and soon after it was returned to him. Feeling he wasn't wanted, he wandered far and wide by himself, alone with his dogs into the Ross River country up the Pelly River and through the Mackenzie Mountains. Here he lived out of contact with anyone except Indians though he did have to report periodically to the police at the Ross River Post where he also got cartridges and supplies from Taylor and Drury's store every few months. For money he trapped. He had a tremendous reputation as a woodsman among the Indians. On one occasion in winter he was camped near some Indian families and they all ran out of supplies, particularly salt. Snow conditions

were bad and the Indians thought they could outlast him and he would have to break trail for them to Ross River Post. It turned out the other way and he had the benefit of a well packed trail made by the Indians. One winter he crossed the Mackenzie Mountains with his dogs to Fort Norman. Coming back, conditions were particularly tough and he ran out of food when he reached the timberless divide region. Both he and his dogs were exhausted trying to travel in the deep snow and he had decided he would have to start eating them. However, fortune was with him as he found a moose stuck in the snow. It was enough to get him and his dogs through. I asked him if he had seen many wolves at any one time. He said one day he was crossing the Macmillan River when looking down a long reach he saw what he thought were a lot of Indian dogs. In a minute he realized they were wolves coming up the river. He quickly hid his dogs and lay down in some willows. As they came on he started counting them and reached forty. More were still coming. Five big wolves were in the lead but while they were still some way off they got a taint of his wind and stopped, sniffing. He shot but the distance was too far and he missed. In a moment there wasn't a wolf in sight. Everything Guder did was well done. He had a well arranged, clean cabin, cache, and dog stables. He had a great pride in being a German but when the second war approached he refused to join the "German bund" that a Nazi organizer had been sent to the Yukon to form among the Germans and Austrians. Nevertheless in a later year during the second war he told me then that Germany had been beaten the first time but not again. After the first war he heard there was placer gold on Seymour Creek and no one working it. He came there and settled, liking the area. He had read a number of books on geology but took everything printed as the final rigid truth instead of being a step in the search for it. He was one of those prospectors whose keen eyes examine every stone and outcrop he sees. In the spring of 1930 he was fixing a fox trap on the top of the mountain, that later he called Freegold Mountain, and picking up a piece of rock with which to anchor his trap he saw it was speckled with gold. He showed me this rock. It was magnetite out of which pyrite cyrstals had been leached and in nearly every cavity was a flake of gold. He staked it and this had started a small stampede later in that year. Even Indians were in on it and claims were registed under names such as Charlie Washpan and Tommy Dishcloth for lack of writable Indian names. Guder still prospects the Dawson Range. He has made many interesting discoveries and could have made a good living by selling two or three claims for a thousand dollars or more each year, but he proved difficult to deal with. Too often he had that feeling common to many prospectors that the buyer might make more out of the claim than seemed likely at the time and at the last minute Guder wanted more for it, or just did not want to sell. In later years, however, he has sold many of his claims. At the same time he was very generous in showing some of the other prospectors mineral finds he had made and not staked. At least twice he returned to Germany for short periods to see his parents.

Bill Langham whose claims I saw next was one of those to whom Gruder had shown a mineral find and had staked it. He was not the worker Gruder was and a more educated man. Though a smooth talker he was an awful bull shooter in conversation but he could write most convincing well organized letters. It was really Langham's letters that publicized the strike. In the winter of 1933 his letters to the Hon. George Black at the House of Commons were sent to Dr. Camsell, our Deputy Minister, who attached a note saying "Can you do anything with these?", and sent them to me. I had come to the conclusion before this that Langham's claims were well worth exploring. Langham had prospected two or three veins which Guder had shown him, for appreciable lengths by trenching. The exposures were two to four feet wide and carried visible gold, arsenopyrite, pyrite and tourmaline in chert-like quartz. I had several assays for them, some of which gave good values. Langham's letters gave a lot more assay sheets and knowing his system of naming his veins and trenches I could place most of the assays. I organized the information in his letters, and attached a sketch map showing the localities and a memo about the claims and the strike in general pointing out that I thought the showings suggested there might be a nice little gold mine and took it back to Dr. Camsell whose office was at the end of the hall in the Museum. He apparently sent it up to the Hon. George Black who in turn sent it on to the Hollinger people and received a favourable response. Mr. Alphonse Parée, who had been brought up in Dawson and was the western mining scout for the company, came to see me soon after and we discussed the strike. He said Timmins wished to get a property in the west and he would visit the strike during the summer. A few days later Dr. Camsell came into my office and told me I had done a great thing for the Survey. The Hon. George Black was one of the few M.P.'s close to Prime Minister R.B. Bennett and I had made him a friend and supporter of the Survey for life.

But to get back to Freegold Mountain in September 1931. I visited all the other prospectors I heard were on their claims, including Alec Coward ("Cowart" was his real name but he called himself Coward as he said it was easier for others to pronounce and spell), and George Devore from Selkirk, who were placer mining on a pup of Stoddart Creek. It was raining hard when I reached a tent near where their claims should be. After asking if anyone was in and being invited to enter I was surprised to find a man reading Emmons "Mineral Deposits", a textbook we had had to study in Wisconsin. This was Alec Coward whom I came to know well as years went by. Though tough looking, he was clever and an ingenious, skilled craftsman as well as a philosopher and we became good friends. On the way back to camp the fog was well down on the summits but not as low as the timber. The previous two days had given me good views over the country from Freegold Mountain ridge and I was not afraid of getting lost. I kept under the fog along the upper parts of the gentle streamlined slopes of this country so unique in Canada as it had been beyond the limits of the later glaciations. The slopes were covered with dwarf huckleberry and berries were abundant. I saw a ptarmigan and shot at it. The whole slope of the mountain rose as though the surface was lifting off and above in the fog I could hear more ptarmigan rising. I have never seen such masses of ptarmigan since. When I finally reached camp in the gathering darkness Jimmy and Taylor were discussing how they would find me as they believed no stranger could find his way around in the fog and had given me up for lost. At this camp two young Indians who were doing representation work on claims called at my camp. One was Elijah Smith who became spokesman for the Yukon Indians some 40 years later. He had been to school in Carcross for a few years. In the evenings on this trip I heard a lot of useful things about the country and the Indian way of life in those days particularly from Jimmy. He seemed

to take an interest in teaching me. The Indians had a great respect for grizzlies in the spring and bull moose in the fall. I was glad to see Jimmy still working at Carmacks in 1966.

The next day we started back and reached Carmacks the following day, the 10th. Now I found I had three days to wait for a steamboat to take me back to Big Salmon. I visited Lokken the first afternoon and he invited me to supper and I spent the whole evening with him. I told him of shooting at the moose on Boswell Mountain and how stupid it had been.

After he had retired from the telegraph service, he had become a summer guide for an American multi-millionaire named Packard and his son. Old Packard had made his fortune building New York harbour works. His motto was "what no one else can do, Packard can do". The old man was close to his 80's and had been told by his doctor that he must get away into the fresh air. Each summer Lokken had organized a trip for Packard and his son, obtained a river boat like the Loon, and several canoes, supplies, equipment, a cook, Indian guides and packers. They went up the Teslin and Nisutlin rivers to the portage to Quiet Lake. Here they crossed to the lake taking the canoes supplies and equipment for the summer and sent the boat back down the rivers. Their base camp was made where Packard Point is now shown projecting into Quiet Lake on the map. Here they spent the summers and early falls, old Packard fishing while Lokken and young Packard made hunting and wild life photography trips into the lovely country to west and north of Quiet and Big Salmon lakes. Then in the fall they went down the Big Salmon lakes. Then in the fall they went down the Big Salmon in their canoes and took the steamboat at the mouth. They did this for several years in succession. Finally when old Packard was eighty-three and the son and Lokken were away on a trip he did not wake up one morning and the cook and Indian, left in camp to look after him, took him for dead, covered him with a sheet and settled gloomily to wait the return of the others. About 11:00 a.m. on the third morning, old Packard walked into the cook tent saying he was awfully hungry, giving the two men a shock. About three weeks later, however, after his son and Lokken had returned, he did die.

Lokken and young Packard were kindred spirits, in that both were rifle cranks. Before he met them, Lokken had already had the Mauser rifle company in Germany make him, to his own specifications, a 30/06 which he showed me. It was a beautifully light rifle. One day Lokken said to young Packard, "How much do you suppose it would cost to have a rifle made entirely to our own design?". The son said, "Oh! About $5,000.". No more was said about it but when the Packards returned the next summer the son had "Packard Mark I, 30/06" made entirely to his own design for $13,000. The barrel and telescope sight had been bored from the same piece of steel by the Springfield factory. He had imported into the U.S.A. two experts from Zeiss to make the telescope sight in which the cross hairs could be moved by an invention of his own and the rifle was fired by pressing a button with the right thumb as he thought it disturbed aiming less than pulling a trigger. The rifle was elaborately engraved with grizzlies, moose, caribou and mountain sheep. Lokken showed me a number of photographs of it. The 30/06 cartridge chosen for it because at that time it was considered the best in the world. The rifle, however, did not prove entirely a success, particularly the button "trigger". An interesting thing was that the Indian packers who, as gunbearers, carried the rifle all summer did not recognize the animals engraved on it until they were actually pointed out to them. Yet one day when the party was out of meat and they had been scouring the country in vain for game, Lokken and young Packard with their two best Indian hunders were sitting on a ridge wondering where to go next. The older Indian said "Big fat moose lie down over there. I see him". Pointing about two miles away. Lokken and the son could make out nothing with their spotting scopes. The Indian had seen the sunlight flash on the palms of the horns as the moose lay down, and he knew by the tint of the light the moose must be fat. These were things he had learnt to recognize from childhood and were familiar, but drawings on a rifle were strange to him.

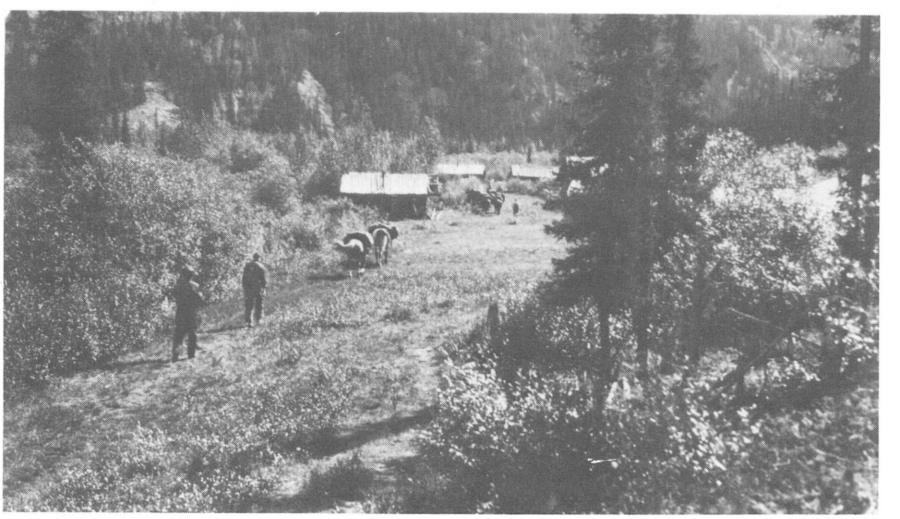
In subsequent years young Packard had a number of rifles made to his design and two were given to Lokken. The final one was a wonderfully handy gun, a 30/06 with a 20 inch barrel, no foresight to catch on anything, the telescope sight bored in the same piece of steel as the barrel and a very compact lever action invented by himself. It was a perfect, winter toboggan gun. Well, the net result of all this was that I got a lot of good advice and ideas from Lokken about getting a good rifle for the Yukon and how to shoot a moose.

The following day I prepared to leave and painted a watercolour of Tantalus Butte from the terrace behind Brown's farm. The morning after I was up early and taking my things, had breakfast about 7:00 a.m. with Dan Snure, as the roadhouse was too far from the landing if the steamboat arrived suddenly. We knew it had passed Happy LePage at Yukon Crossing, the last telephone down river, and faced the Rink Rapid and lining up the Five Fingers Rapid with a barge. Also there was the possibility it has been held up somewhere by fog in the clear night. I lunched with Dan too, and heard a lot about the history and early years of Livingstone Camp where had run a roadhouse from about 1899 to 1912. After business there had died away, he came to Carmacks where he had managed Taylor and Drury's store ever since. He had started for the Klondike in 1898 but never reached there until 1936 when he went down to Dawson to have his teeth fixed.

Skipping a few years, there is this story of Dan and the store. Sometime in the late thirties, two mining scouts had several days one September to wait for a steamboat. They amused themselves by trying to think of something Dan might be expected to have in his store and betting him small amounts that he did not have it. Dan produced the articles every time and won. The amounts bet became larger as time went on and their desire to recover their losses increased. After two or three days they came into the store full of confidence. They had thought of something they could not believe it possible for him to have and expecting to recover all their losses bet their remaining cash on it. "Embalming oil"! But Dan trotted to the warehouse at the back of the store and brought two gallons of embalming oil. The reason he had it was that a much revered Indian had died a few years before and the Indians thought they would have his body embalmed, but the body was long past embalming when the oil had arrived. This ability to supply nearly anything that could possibly be needed was characteristic of the traders along the rivers.

My steamboat arrived about 1:00 p.m. but we did not reach Big Salmon, about 70 miles up river, until 7:00 p.m. the next day. On the way we loaded wood for more than an hour and then the night being clear, still and

*The cabin at the Pelly Farm used by Geological Survey parties as a base and storage depot from 1932 until the 1950's. (88473)*



*"Main Street", Livingston (202085-Q). See Section 1, 1931.*

and frosty the fog began to rise on the river and we had to tie up at 9:30 p.m. After breakfast I went up to the pilot house where passengers were allowed to visit going upstream, but not downstream. It was a lovely, sunny, still morning. The tops of the spruces on both banks were clearly visible. The hills beyond were clothed in all the glory of their autumn colours, but the water and even the main deck were concealed in dense fog. About 11:00 p.m. a light breeze dispursed the fog and we started again. Everett, John and Clarence met me. Hayes had told them I was on the steamboat when we left Carmacks. Also he judged the time of our arrival at Big Salmon within an hour, though he had not heard of the steamboat after we left Carmacks. Camp was on the right limit, a quarter mile up the Big Salmon River.

The next day, September 15th, we moved northeast along a wet, soft "dog and moccasin" Indian trail to camp on the north side of Walsh Creek. Most of the way was across the broad gently undulating silt terrace between the river and creek. In stretches where there had been forest fires in the last year or so the black flies were bad. In crossing Walsh Creek, Ginger who had a heavy load, being about the best of our fourteen horses, failed to get up the bank and fell backwards, landing sideways in the water. Someone gave a shout of alarm and when I reached there a minute or so later Ginger was lying on his side, his head in about 18 inches of water drowning while most of the party, including Joe, the packer, stood paralysed on the bank. Not a second was to be lost. We could not afford to loose Ginger of all horses. A horse can't hold his heavy head up sideways for long. I jumped into the creek and sitting in the icy water held Ginger's head on my knees so he could blow the water out of his nostrils and breathe. I told Joe to cut the cinch rope next to the ring and take off the pack. This broke the spell and the others helped. Ginger was soon up and alright but one side of the pack was soaked.

Next day we traversed and afterwards moved up Walsh Creek eastward towards the mountains. The route followed passed through a long stretch of "drunken forest". There the stunted spruce trees growing in moss directly on permafrost leaned in every direction. We didn't get far that day and moved again the day following, all the party cutting trail as we went. Late in the afternoon we climbed into a large, wide, flaring basin near timberline and camped in about two inches of snow.

The following day we all went up to our triangulation point on the mountain, Mt. Lokken, above and joined the triangulation and the planetable map. It was bitterly cold, clearn and blowing hard on this broad, rounded summit. After the triangulation work was done I left the others to build the cairn and started down to camp alone. Going down into the head of the basin I heard a stone rolling on my right and saw a large bull moose about 100 yards away up the slope heading towards me. He had not seen me and was going to pass close below me. There were no trees to get behind and all I could do was freeze. When he was abreast of me, about 20 feet away, he stopped with his head stretched straight forward and uttered a deep, grunting bellow. Then he stood for about half a minute listening before he trotted on about 100 yards and repeated this performance and continued stopping to bellow at intervals until he disappeared over the rim of the basin. His great neck and shoulder muscles bulged with power, his coat glistened with prime condition, his lower sides were deep sepia but his back and particularly his rump were bleached to a very light straw colour. His great horns were all clear of velvet, sharp, polished and shining and his whole body radiated vitality. A magnificient sight, never to be forgotten.

We started back the next day in fog and snow but it cleared and we reached Big Salmon on September 21st. Hayes told us there would be no boat going upstream until the 24th. We traversed, sorted and packed ready for shipping. The nights were cold and it froze quite hard, but the days were sunny, brisk and lovely. The safety plugs on the cylinders of the motors were burst out by the frost the first night and lost so we had to make wooden ones and bind them on with wire. Joe told me that the two old horses Tommy and Zimmy could not carry much load and were not worth the cost of the freight up to Whitehorse and for wintering. They had been brought into the country in 1911 for the International Boundary Survey by Dr. D.D. Cairnes. A man named Baker was at Big Salmon and wanted to buy them, saying he would take good care of them, so I sold them to him. In the following spring I heard from Hayes that Baker had let them starve to death up the Teslin. I always regretted selling them.

When the steamboat, Whitehorse, arrived we took everything up to Whitehorse including the boats. There we established ourselves in the White Pass Hotel where Mrs. Viaux gave us the usual large room at the back to dry and store the equipment. The instruments and the motors were packed for shipping to Ottawa. Joe and Nick drove the horses down the road to winter at Charles McConnell's ranch at Robinson, took off the shoes that were still on and came back by the afternoon train.

J.Y. and Nick came to me the next day and said they were going to stay in the Yukon for the winter and trap up the Big Salmon. Apparently they had talked this over with Hayes when they were there and he had told them there was a good abandoned cabin at the mouth of the North Fork that they could use as a headquarters. I paid them off as of arrival at Vancouver and gave them their return tickets outside as they were entitled to them in those days. I gave them an old tent and the stove which would not last another summer. Also I sold them one of the boats for $10.00. They bought five dogs, food, rifles, traps, dog harness, toboggans and winter clothing. In the end they had a good outfit but it cost them all their wages. However, they put their return tickets in the Bank of Commerce in Whitehorse. They packed their stuff, dogs and all in their boat and we saw them drift away down the river. More of them next year.

The rest of us left on the morning train on October 1st, for the outside to go down the coast, and went on board the C.P.S.S. Princess Norah that evening at Skagway. We found this boat comparatively empty and though smaller and slower than the Princess Louise, it was newer, roomier, more comfortable and more seaworthy, having been built to service the places on the west coast of Vancouver Island, where it ran during the summers. I did my accounts and paid off the party the last day on the boat. We arrived in Vancouver on the morning of October 5th and I visited the Survey office. I told Cockfield what my plans were in changing the method of work and equipment. He didn't approve of anything. It was a great mistake to sell the boats and use canoes. The canoes would be useless and we were sure to have drownings. The boats had only cost $50.00 to build in Whitehorse in the first place, were safe and the canoes would cost more. I was greatly at fault in selling Tommy and Zimmy. They were fine old horses and

the leaders of the packtrain keeping the others around camp. In this he was right. Finally the very idea of changing the system of work and having a topographer from the Topographical Division would never work as we would always be ruled by the topographer and you could not do geology that way. I didn't say anything. I was quite decided and was sure in three or four years time the topographical mapping would be ahead of the geological work so that we would have finished maps to work with.

I caught the C.P.R. train in the evening to Monte Creek where Mother was living, and Nan and Jean, who were taking increasing parts in the management of the Ranch. After a day there I went over to Nelson and a day or so later left for Ottawa with Violet and Hewitt, who had grown immensely.

## Section II: 1932, Carmacks Area, the Main River and Mount Pitt

On returning to Ottawa in the fall of 1931 I saw Dr. Collins, the Director and Dr. G.A. Young, the Chief Geologist. I told them of the work and changes I thought should be made in the Yukon, pointing out that we were not making either a good topographical or a good geological map. I explained that things had been somewhat different for Cockfield as for several years he had had the assistance of Major N.T. Ellis who took charge of the triangulation and planetable work and managed the party in his absence. Cockfield had also had the support of Pattison, who was a thoroughly capable man and had been packer for the Survey in the Yukon from the early years of D.D. Cairnes. Neither of these men were now available. Pattison had been taken with a stroke in the season of 1930 brought on by his ceaseless care of the horses and had died in the winter. He was an energetic, capable and loyal servant of the Survey for at least 14 years and it was most befitting that Cairnes had named a mountain for him in the Klotassin area. Dr. Collins said little to this but Dr. Young seemed to agree with me and said that Mr. W.H. Boyd, Chief of the Topographical Division, would be only too glad to send a topographer to start regular field mapping in the Yukon. This resulted in an interview with Mr. Boyd who, as Cockfield had said, insisted that the topographer be in control of the party. I had thought about this and was prepared for it. I said that if this was so the topographer should assume responsibility for the cook, packer, supplies and horses, and under these conditions my assistants and I would have the status of guests on the topographical party but that we would expect to be given consideration if some feature of geological importance was found so that I could study it. I also pointed out that I regarded this as a temporary agreement as I was convinced that the topography would progress faster than the geology and in about three or four year's time we would have the topographical maps ready for us before we did the geological mapping. Mr. Boyd thought so too and this general scheme was agreed upon after it was presented to Dr. Collins.

Mr. W.H. Boyd had a very strong personality and possessed natural leadership. He was an excellent administrator and a diplomat who got on well with the other chiefs. He was also a clever inventor of new instruments and ways of doing topography. He became widely known for his mapping and study of Niagara Falls by an ingenious and original method using photography for which he was made a Fellow of the Royal Society of Canada. He was held in great respect by everyone if not a little in awe though he was not an unfriendly man. Several geologists complained that he got too much for the Topographical Division but after all it was his business to advance it and our misfortune that we had not a similar character as our leader. It was tragic that one whose interests were so dependent on his eyes should go blind soon after retirement as he did.

During this winter I read everything I could, not only of geology and explorations of the Yukon and surrounding regions but also of general interest including Charles Sheldon's "Wilderness of the Upper Yukon" and that wonderful book "Scouting on Two Continents" by Frederick Burnham. I also went through a number of books on wild life including Ernest Thompson Seton's great work "Lives of Game Animals". I got to know the National Museum staff several of whom had been in the Yukon. There certainly were great advantages for both the Survey and Museum in being housed in the same building with one library.

I saw the equipment agent and arranged to buy wholesale through him a 30/06 Winchester rifle, model 54 with a N.R.A. walnut stock and Lyman receiver peepsight. When I got it I drew small pictures of moose and caribou, pinned them on the walls in our apartment and practiced snapping at them with the rifle at times.

Many discussions were held with Dr. Forrest A. Kerr, who was working on the Stikine and Taku Rivers in northern British Columbia. He had developed a lot of ideas on what equipment to use having designed much of it himself. Among these were two river boats which had been specially built for him. They were like Lokken's Rio Rita but considerably larger and heavier, requiring bigger motors. He also used a lean-to tent with open front and double tarpaulin floor in which, with one huge H.B. Co. blanket, as many as seven people could sleep. Some of her friends were a little shocked when his wife, Mrs. Helen Kerr, said she had slept in a bed with six men on backpacking trips. Helen carried her load like everyone else and assistants said she was a considerable help and morale builder in the party. Forrest was badly gased in the war and on return to Canada was told he had six to nine months to live. He went to the Sierra Nevada and lived an outdoor life. After about a year he had recovered so much that he was able to return to normal life and take up his university studies. Dr. Young would not accept his manuscript memoirs on the Stikine and Taku areas and Forrest resigned from the Survey. Some months later he was killed in a fluke car accident. When Dr. Young retired Dr. G. Hanson who took his place gave the two manuscripts to Dr. H.C. Cooke who rewrote them and made them useful reports. Forrest's departure was a great blow to me as I could discuss the problems of the Yukon with him better than with other members of the staff and when he went there was just no one else working near me who had a general interest in the northwestern Cordillera. This loneliness at Ottawa certainly was not helpful to my work.

Mr. W.H. Miller, later Director of the Surveys and Mapping Branch, was appointed to go to the Yukon by Mr. Boyd. The program was to continue the mapping of the Yukon in regular two degree east to west quadrangles as mentioned in my instructions of last year, begun by Cockfield and A.H. Bell in the Whitehorse map area and continued in the Laberge map area. The Carmacks map was to be tackled in 1932 and both topography and geology were to be finished in two seasons, 4200 square miles. In addition I was also to visit any active mining camps and write the annual report on the Yukon Mining Industry.

Violet and I closed our apartment for the summer and I took her and Hewitt to Nelson, whence I crossed to Monte Creek and went down to Vancouver where the whole party assembled. My assistant was John R. Johnston again, while Bill Miller had Cyril H. Smith and Henry A.S. West as his assistants. Jim V. White, half Cree, from Edmonton was packer and Clarence C. Sherlock was our cook. Cy, Henry and Jim had all been with Bill before. The total estimate for both topographers and ourselves was roughly $7000.00 including new canoes and motors, everything except the salaries of Bill and myself.

Jim White was 42. He had been in France during the war and had distinguished himself as an outstanding athlete particularly in long distance track and baseball. After the war he returned to Edmonton and worked as a coal miner near there. He was married and had at least two children. His wife was also half Indian. One summer he had heard that a packer was needed on a Survey party and had applied for the job which was under Mr. Welton Spence, of the Topographical Division of the Geological Survey. He quickly learnt to pack and became a very good packer. He was one of the most perfectly built men I ever saw and was amazingly powerful for a man of his size being about 5 foot 9 inches. He had extraordinary endurance and after a long day's work, an hour's sleep and he was good for another 24 hours. Before he joined us this summer he had been with the Survey for several summers and continued packing at least until 1953 when he was with a topographical party in the East Kootenay area of British Columbia.

All of us including Bartlett's party which was to continue the work up the Teslin and Nisutlin Rivers, left Vancouver the night of May 30th on the Princess Louise. We reached Whitehorse 5:15 p.m., June 3rd.

Whitehorse at this time, and pretty well until 1942 when the building of the Alaska Highway started, was a place of about 400 to 600. There were the White Pass and Yukon Route railway station at the end of Main Street and the freight-sheds behind it along the wharf by the then Lewes River. Across the lightly gravelled Front Street in front of the station on the left or southwest corner with Main Street stood the White Pass Hotel of Mrs. Viaux, a two storey flat-topped building and opposite it on the right, the northwest corner, was Taylor and Drury Company's large general store. The White Pass Hotel had been the main hotel of the town and the White Pass had encouraged their passengers to stay at it until in the late 1920's one night when a steamboat came in after midnight and company wishing to send her back down river at the earliest opportunity directed the passengers to the Hotel to sleep, but Mrs. Viaux flatly refused to take them in saying it was too late. The company then supported the building of the Whitehorse Inn which stands on the northeast corner of Main and Second Streets. The Bank of Commerce, the only bank, stood on the northwest corner across Second opposite the Inn. Between T. and D. and the Inn were the butcher shop and the restaurant adjoining the Inn. Adjacent to T. and D. on the north along Front Street stood the Northern Commercial Company, also a large general store and farther north along Front Street was Pucketts Hardware and farther still the Regina Hotel. In the other direction south of Mrs. Viaux's was a beer parlor in part of the building and then McPherson's Drug Store. Continuing south along Front Street on the next southwest corner stood the Post Office of which Mr. Wilson was the Postmaster. Then farther south still was the hospital and over to the west a couple of blocks or more the R.C.M.P. barracks. This description from memory covers just about all with whom we had dealings as we equipped our parties as quickly as we could in the springs or as we hurriedly passed on our way outside in the fall.

In the depression years a Government party meant cash, a thing hard to come by but the spirit of service and co-operation that pervaded the town and indeed the whole Territory was far above any pecuniary greed. The assistance we received from everyone was much more than that. For instance, even after hours if we went into the Post Office there was someone there who would give us our mail. Our orders from the stores given in on arrival in the late afternoon were ready after supper if we wished them. One year when we returned to Whitehorse late on Sunday to catch the train for the outside at 9:00 Monday morning the bank manager readily opened the vault that evening and gave us our tickets that had been left in his keeping in the spring. The stores were wonderfully well stocked with all essentials for life in the Yukon and the quality of the goods was the best.

We bought all our supplies in the Yukon though at times the Departmental purchasing agents tried to persuade us to buy as much as we could outside and ship it in which would have been cheaper. The answer to this was that as all the members of the parties lived outside and spent their wages outside the only part of the field appropriations spent in the Territory was the expenditure on supplies and sundries. Also in emergencies we needed the support of the traders in the Territory so it was vital that we give them all the business we could.

So now as we landed at Whitehorse three outstanding field seasons opened. They were years of experience and training as well as of trial of new methods of work both for the topographers and geologists. The members of the parties were capable and we developed tremendous confidence in each other which enabled us to work at a high ptich of efficiency and gave us the great enjoyment of close comradeship as will be seen.

The weather was cold in Whitehorse and the snow was still on the mountains around. The express and baggage arrived with us but no freight. We spent two nights in the White Pass Hotel and then on the 5th using tents stored with Mrs. Viaux and Bartlett's equipment we all camped together on Whiskey Flats, just south of Whitehorse by the river. Our new canoes and motors arrived next but still no other equipment. The Peterborough canoes were a 19-foot freighter for Bill's topographers and an 18-foot for John and me and we had new Johnson Seahorse 12 motors, about 8 h.p. with the cylinders firing alternately as those of Bartlett's did. Henry and Jim went to Robinson to get the horses from Charles McConnell's ranch and found them in good shape as he had fed them well. They took the horses north along the winter road to Carmacks.

Bartlett had Shorty DePessimier cooking for him and I could see Bill was envious. One only had to be around Shorty's cooktent to see he was a gem. Originally Shorty had been a find of Bill's who had fired his cook a few years before at Hazelton for getting drunk. Bill told the local store keeper he needed a cook. The next morning when he got up at 6:00 to start getting breakfast, on going to the cooktent he found Shorty who said "Have a cup of coffee?". The fire was going, everything in the tent rearranged, all the dishes had been washed and breakfast was just about

ready. Shorty had been told by the storekeeper Bill needed a cook and had arrived at 3:00 a.m. Shorty was about 5 feet but had the chest, shoulders and arms of a powerful man. He was in his early forties. His broken nose gave him a very tough appearance but a few minutes with him revealed that he had had a good upbringing in his early life. He was a good clean, quick cook, always had a coffee ready and always on the job which he thoroughly understood. He was a character who never ceased talking but in an inoffensive way and one didn't have to pay any attention to what he was saying. He chewed tobacco incessantly but was clean about it. His language was broken English with a Flemish accent. As Bill had to get know him he had asked Shorty one day how he had come to Canada. Shorty said he had lived in a good house with his father and sister and servants in Belgium, his mother having died when he was quite young. His father was a great admirer of the King of the Belgians, in fact so much so that he had made a business of making little pictures of the King on small pieces of metal which he used to exchange with people for things he needed. One day, however, some men who also claimed friendship for the King got some of these pictures and became very annoyed and jealous. They discovered his father was the maker of them and the whole family had had to leave the country in a hurry. The first boat they could catch was one sailing to Canada. In 1933 when Bartlett did not go to the Yukon Bill tried to get Shorty who was in the Territory as cook but his letter went astray. Shorty was too good hearted for his own good and was a prey to spongers who got all his money. In 1948 he cooked for a topographical party in the Nisutlin area but became ill during the summer and died in Whitehorse hospital later that fall.

June 8th we received all the missing freight and started down the river after supper. Both canoes were heavily loaded. Each had four cases of gas along the centre line. Bartlett's party went by train to Robinson to measure a base line along the railway track and to connect it to the Whitehorse triangulation net that he was going to joing with the net he had carried up the Teslin valley in 1931. After that, they faced the long canoe trip down to Hootalinqua and up the Teslin to where they had stopped work last year. Bartlett's original manuscript shows a beautiful traverse of the Teslin on one mile to an inch with every cutbank and similar features drawn. Unfortunately the published map omits these details.

Some years later, leaving work at the Museum on his bicycle to run under the railway bridge over Elgin Street, Bartlett swerved to miss a child that jumped from the pavement in front of him. His bicycle wheel caught in the street car track and he was thrown and killed, his head hitting the steel pier of the bridge.

In our two canoes we stopped at Scow Point. As it was dead calm Bill went on with his canoe with Cy and Clarence. The ice had gone out about May 24th. John and I planned to sound Lake Laberge as we went along because no one had done this. For this purpose we had brought 1000 feet of 180-pound codline. So we camped for the night.

By noon the next day John and I were ready. We had marked off the codline and sorted and repacked the equipment. It still appeared calm and we started down the steamboat channel into the lake. As soon as we passed the last buoy it became squally and rough. In this shallow area the crests of three waves at a time lapped over the gunnels and we had to bail hard. We headed for the western shore and reached more sheltered, deeper water near Jim Boss's place. Sounding was out of the question with such a load. We tried to reach the strait west of Richthofen Island but the wind was too much and we ran for shelter into a bay where we crouched around a fire in an icy wind. About 9:00 p.m. the wind dropped and we went on reaching Lower Laberge 1:20 a.m. and went to bed.

In the morning we called on Morrison. He gave us the news and said Bob Jones, a newcomer at Hootalinqua, was a bad character. We were off at noon. Going down the Thirty Mile we met Taylor and Drury's tunnel gas boat, the Yukon Rose, pushing a barge and the Loon a little further down. All the Thirty Mile is rough water but crystal clear. At Hootalinqua we saw Jones and didn't like him. There was a large Indian camp where it had been last year and we had a friendly talk with Old McGinty. The Teslin was 5 feet lower than last July. We ran on until we were at the end of our first case of gas and camped by a narrow slough where our canoe would be safe from the steamboats.

We were away by 8:00 next morning and called in to see the Hayes. Hayes told us how J.Y. and Nick had got on trapping up the Big Salmon. They had shot one caribou and one moose, fished a dead beaver out of the river that an Indian had shot and not retrieved and caught two lynx. One lynx skin was given to the Indian who skinned both lynx for them. They had left the cabin at the forks of the Big Salmon in a filthy state. Hayes said he was trying to bring their dogs back into some sort of condition as they had been nothing but skin and bone when they left them with him. We reached Carmacks at 6:00, called on the McMillans for the mail and saw Lokken. He said J.Y. and Nick were the toughest men he had ever met in the Yukon. They had visited Carmacks around Christmas. It had been around -50°F most of the time. As their dogs were poorly he had given them a 50-pound sack of dried salmon and rice to feed them with on their way back to Big Salmon. Going up the river two or three days after they left he found their camp. He could see in the snow that they had never put up any sort of tent but slept in their eiderdowns unsheltered. His sack of dog feed had been left there hanging on a tree.

We were told the topographers were camped about two miles lower at the airstrip. As we came around the bend we were confronted by the Whitehorse coming up at the same time as we saw the camp. Cy, Henry, Jim and Bill were standing on the bank. They had heard both the steamboat and our motor coming. The moment we landed everything was whipped out of the canoe and all was high on the bank. Half a minute later the paddlewheel of the Whitehorse went by within a few feet of where the canoe had been.

The next day was June 12th. John and I cleaned the motor and prepared for work. At 4:00 p.m. we went for a short traverse behind camp. The topographers had gone up to three different hill tops in the neighbourhood and erected signals. On the fifteenth we all moved with the horses up the old Nansen Creek trail to the southwest and from there up onto the east end of Miller's Ridge leaving much of our things in our river camp. John and I went up by our own route but all met on the east end of the kame that marks the western limit of one of the last glacial advances on top of the ridge. This kame is like a railway embankment of gravelly soil and skirts the upper of the ridge winding along both north and south sides for miles gradually becoming lower to westward. As we sat on it eating our lunches and enjoying the magnificent expanse of the view in all directions, Cy said, "All this vast

open area and not an animal in sight". John said, "What do you call that down there", pointing where he and I had come up shortly before. There was a large grizzly and a yearling cub about 200 yards down the slope digging for some kind of root. How John and I had missed running into them on our way up was a mystery. We watched them slowly working up towards us till a shower came when they turned down into the timber.

Here John and I made our first attempts to sketch rough topographical maps in our notebooks to show the courses of our traverses, the geology, trails and buildings when we found any. The topographers went down with the packtrain to choose and pitch camp.

Bill had chosen this long, smooth plateau to measure his first baseline for the triangulation. This was the beginning of the first four mile topographical quadrangle in the Yukon, one of the first of the series that now covers Canada. When he died Cy and I suggested to the Canadian Board of Geographic Names that as a memorial to him and the commencement of this work the ridge should be named "Miller's Ridge" and it now is marked so on the maps. Canada owes a great debt to Bill. When he was Director of the Surveys and Mapping Branch he attended a meeting of the joint Canadian and U.S. Army staffs soon after Pearl Harbour. The Americans demanded that northwest Canada must be mapped at once and they would do it. Only Bill among the Canadians present could see what that would mean to Canada and asserted that we could and would do it. Had the Americans got their way we would have had to beg for maps of our own country from Washington.

In this topograhical mapping first a baseline about two or three miles long of which the two ends were intervisible, was measured. Then its azimuth was found by star observation with the transit. Following this the directions or angles, including vertical angles were read and recorded from each end of the baseline to selected prominent features or points such as hill and mountain tops where, when feasible, signals or cairns had already been placed.

The next step was to occupy with the transit and camera the most suitable points to which angles had already been read and where panoramas of the views were photographed. The points giving distant panorama views became triangulation stations. Some of those with only limited views but revealing valleys or areas invisible from the triangulation stations were also occupied but referred to as camera stations. At Carmacks there was a geodetic bench mark for which the position on the earth's crust in latitude and longitude had already been determined by the Geodetic Survey and the position of which was already plotted on Bill's manuscript. Also the geodetic's line of precise levels that had been carried from the White Pass to the 141st meridian passed through the map area. When these were joined into the triangulation the correct positions and elevations of every station could be computed.

Having these recordings the triangulation stations could be plotted with a protractor graduated in 30 minute divisions and ruler on the field manuscript, a large sheet of mounted paper carried as a roll in a tubular galvanized map case. The field manuscript already had the 15 minute lines of latitude and longitude of the Carmacks area drawn on it. This gave positions and distances between all points plotted on it so that with vertical angles and distances the differences in height could be calculated and the elevations determined. Thus a field map could be made as we went along.

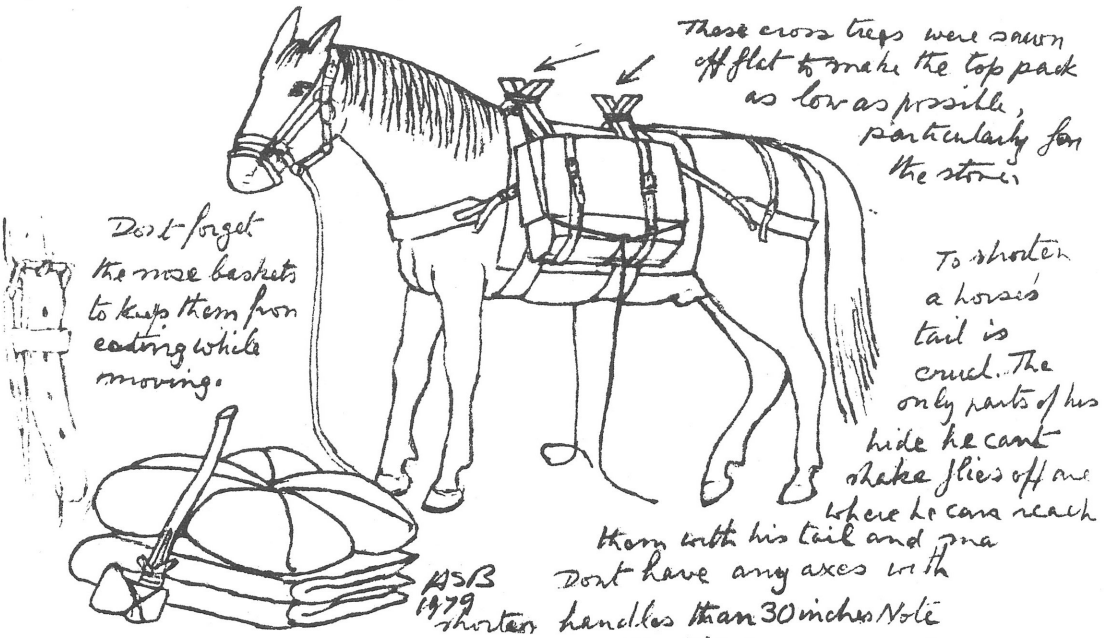
In the winter in the office first all the triangulation positions were calculated and replotted on an office manuscript. The photographs sent in when ready were developed and enlarged by the time this was done. Their horizontal traces were plotted around each station. From them the topographer then drew in rays to any points desired and recognizable from two or more stations. As with a planetable the intersections gave him the positions of the points and their distances. The vertical differences were obtained by measurement on the photographs and sliderule. With the field notes, traverses and the views in the photographs, the streams, contours, trails, road and buildings could then be plotted. The whole system allowed a maximum area to be covered in the summer and a good reconnaissance map to be made in the office in the winter, drawn at a scale of 2 miles to 1 inch. For publication this was reduced to 4 miles to 1 inch.

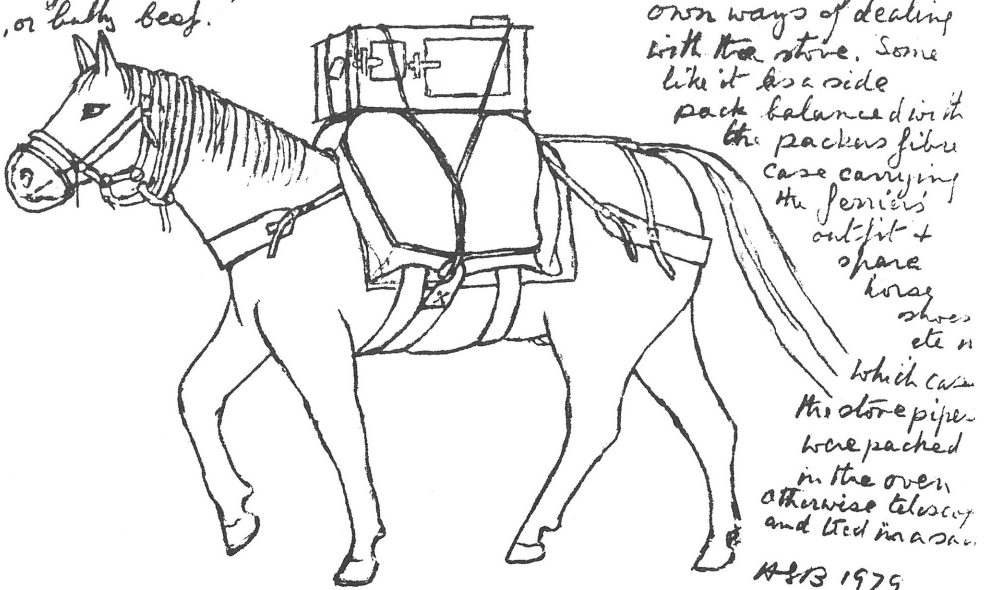
John and I started traversing alone (until 1935 geologists were expected to traverse alone in the Yukon) on Miller's Ridge while the topographers laid out their baseline and measured it at night when the temperatures were steady and kept the length of the steel tape relatively constant. So far north on an open plateau like this it was light enough in June. However, the frost in the ground proved a problem and the measurements repeated several times did not turn out as well as Bill hoped.

On the 17th I went around the north rim of the ridge and John around the south rim examining the rock outcrops and tracing the kame. I sat down to write notes on the top of the kame which here was just above the edge of the timber. Above it was the wide sloping expanse of the ridge. Something made me look up. There about 60 yards away coming along the slope towards me, sniffing from side to side was a grizzly. I froze. As I watched him I realized that his ambling walk was nearly as fast as I could run and that he had not seen me. Something made him look away and I rolled quietly down the kame out of sight grabbing by rucksack and hammer as I went. I stole around down wind behind the kame in the border of the trees as silently as I could and when I had gone about 100 yards I climbed up the kame and peered through a tuft of tall grass. The grizzly had stopped near where I had seen him and was digging for a ground squirrel. These little animals were plentiful on the ridge. Going back to camp I had to dodge around another grizzly and John had the same experience. Jim had also seen two grizzlies when he had gone to see how the horses were. The reason for this concentration of grizzlies in an area where they were normally few and far between apparently was that the Indians had killed a lot of caribou on the ridge in the spring and the grizzlies had been attracted by the remains of the carcasses of which we saw more than twelve.

The next day measurements and observations at the baseline finished, we moved back to the river camp. John and I visited Lokken. I sighted in my rifle on his range. Lokken remarked that a few Indians were excellent shots but the majority could not hit the target at all. Lokken came to supper that night. John and I worked around the Carmacks coal mines on both sides of the river. The Tantalus Butte mine was being worked for E. Schink of Dawson and Miss Schink a large husky teenager was cooking for the two miners there. The topographers connected their baseline by triangulation to the Carmacks geodetic bench mark and to the precise level line.

After this the topographers moved up river to join

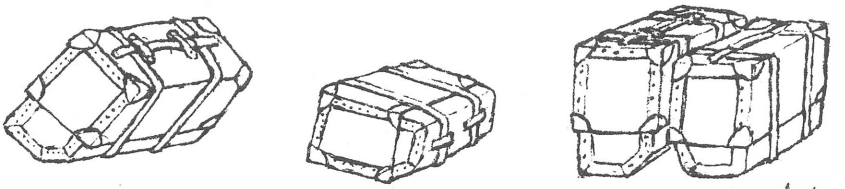



Here the stove horse is packed with the stove on top. This requires well balanced heavy side packs which makes the whole pack generally the heaviest in the pack train and so a good horse who carries his load well and doesn't try to sneak under fallen trees etc.

HSB
1979

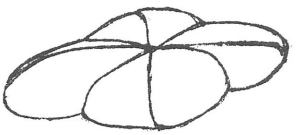
# Sundry Equipment



Fibre cases varied in the ways they were riveted.

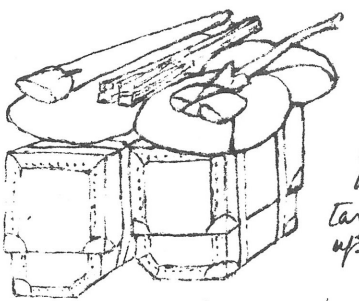
My Tent with fly in it unless it was wet. My basin and rope handled canvas bucket one inside my tent.

Mine was not a light horse



Do your bedroll up like a flat parcel.

My chair was almost essential to do the draughting on the field map which was on six cards that fitted in a manilla envelope of the correct size to go upright in a tarpaulin envelope upright in a fibre case



It had the medical case, a drawing board, spare hammers note books, drafting instruments, medical case some rock specimens etc. My eiderdown was done up in a tarpaulin pack cover like a parcel using clothes line that came in handy in camps. The bags eiderdowns are sold in make them into awkward round bags to pack on horses.

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their triangulation to Lees of 1930 at Eagles Nest in the Laberge map area and John and I, not going so far up, camped by ourselves at the east border of the Carmacks map area. We put up our tent at a nice place on the north bank of the river by the narrower of two channels, thinking the much larger one was the steamboat channel. Our empty canoe was on the waters edge tied to a tree. When we came back in the evening we found it up along on the bank, half filled with water and two ribs broken but luckily no hole in the canvas. Later at Yukon Crossing, Happy LePage told us what had happened. When the Casca came down he was on it and the channel where we were camped on was the steamboat channel, though narrow it was deep. He had been at the stern and saw the wash from the paddlewheel which was only a few feet from the canoe, lift it up, fill it with water and dump it down on the log upon the bank. This was a lesson to us.

On June 26th we were all back at the airport camp and the temperature was about 80°F in the shade. John invented and made a shower bath for us out of a piece of canvas sewn onto a disc of tin perforated with nail holes. This was a great success and we used it all season but it required one person to pour the water into the shower while the other stood underneath it. The valley flats here were dry and practically free of mosquitoes.

By July 4th the topographers were ready to move on. We all packed and Jim, Henry, John and Clarence went with the pack train along the trail towards Freegold Mountain. On these occasions Bill and Cy or Henry traversed the neighbouring creek valleys along the route by pace, compass and barometer and using very small planetables on telescopic legs, drew contour maps of the country around. At other times they occupied a camera station and once in a while a triangulation station on the move.

John and I were equipped with brunton compasses, pacing tallys, barometers, field glasses, hammers and hand lenses. The first thing we did on a traverse was to go up tc some open hill top where we could see around. Generally such places included a rock outcrop but the prime essential to start with was to make a sketch map of the topography in our notebooks of all the country we could see. Without this we could do nothing. The barometers gave us our elevations and the timber line marked the 4000-foot contour tolerably well. The topographers were working on the two mile to one inch scale with 500-foot contour interval and we did the same. The compasses gave us directions and their level bubbles vertical angles when desired. The local magnetic variation was about 35°E. Outcrops were few and far between and generally above timber but we seldom had a fresh one. We carried our rucksacks on small, light packboards. We found these a great blessing. They kept rocks from digging into us and gave our backs ventilation. We found in 1931 we did not need high boots. I bought Army "ammunition boots" at $4.00 a pair as they could be obtained on a broad, short last suitable for my feet. I altered the heels and hobnailed them moderately. We all nailed a piece of sole leather upright onto the front of the soles of our boots as otherwise the low brush cut the toes away in no time. Our feet were nearly always wet and the sole leather was quickly beaten in to fit. Showers were normally the order of the day and we were often wet from the waist down from going through the brush. John and I made ourselves capes to cover our upper parts and rucksacks out of paraffin sacks. Coats were much too hot to wear going up hill but the moment we got on top we needed something. I had a parka of Scotch sail silk made at home to my own design. It came down on to my thighs, had no hood and was lined with flannel. It was very light. Buttoned up to the neck it was wind proof and very warm.

This day on the move up Crossing Creek I went up on the south side of the valley and along the ridge. When I came to a saddle where there was a little stream I made a small fire, took my lunch out of my billy pail and went for water. On getting back to my fire and rucksack I saw a whiskey jack flying away with the meat out of one of my two sandwiches. After this I always covered my lunch. The billy pail, like many other things, was a suggestion of Forrest Kerr's. John and I found a certain nervous tension traversing all day, day after day alone and to relax for a few minutes around a fire with a cup of hot tea was a very refreshing joy. We found we took 20 to 25 minutes to have our lunches under these circumstances. When Cy and Henry were traversing they habitually covered 18 miles. We soon found they had made themselves billy pails and were doing the same. Bill said to me, "Look what you have done. They used to eat their lunches walking. Now they take at least 20 minutes. You have lost me nearly 100 hours work this season.". However, I knew he had got himself a can from Clarence and made a billy pail too. In the warm weather the fire gave some refuge from the mosquitoes and in the cool weather it was warmth, company and comfort.

When I was about opposite where I thought camp should be I sat and examined the broad valley floor with my glasses. After a minute or two I spotted the cook tent and some of the horses. Our rule was not to go down off the hills until we heard chopping, horse bells or saw smoke or a tent. If one went down he had to be certain that the valley was the one the pack train had travelled and there would be no doubt about finding the horse tracks to follow in to camp. In half an hour I was in camp. The mosquitoes were bad. John had our tent up and a fire going to drive some of them away. The horses were all huddled around smudges Jim had built for them as Henry Alexis had done in 1925. At this camp they hardly seemed to feed at all but kept coming back to the smudges where they often scorched their legs.

In the evenings after supper John and I marked specimens and compared our notes and sketches. Every few days when Bill had his field manuscript spread on the cook tent table and had finished his plotting we took our sketches and compared them with his topography. In this way we corrected the positions of parts of our sketches and were able to show Bill many small features the topographers had not been able to see. In fact as time went on in several places on the topographical maps holes were filled in by our sketches. We then went back to our own field manuscript which consisted of six sheets of heavy mounted drawing paper with latitude and longitude lines on them. We plotted everything on the manuscript in pencil and crayon, as we were continually changing and improving it.

Bill allowed John and me one horse fibre case between us to pack all our valuables, the manuscript sheets which fitted down the side with a drawing board, a small wooden box containing india and other inks, drawing instruments, medical kit, spare notebooks, extra hammers and so on. Besides this we had our bedrolls and our tent. Sometimes I carried the postcard size camera and on moving days I carried my rifle as I was afraid of getting it broken if put on a pack horse. Our fibre case was heavy and Jim balanced it with his carrying the ferriers kit, spare

horse shoes, nails for these and others for building the kitchen table frame.

The top of the table consisted of a sheet of duck with slats tacked on the under side so that it rolled up. There was also a narrow piece of the same for the cook's side table and the stove was of solid sheet iron and not collapsible.

I had a cartridge in the breach of my rifle when alone but extracted it before coming into camp. However, I always had five cartridges in the magazine. It was the rule of the country that all rifles were loaded. I never heard of an accident due to this.

John and I shared a lean-to tent that Forrest Kerr had had. We found it harder to pitch correctly and it did not shed the rain as well as the other tents with steeper roofs. However, it had some very good features, giving us every advantage from the fire in front and being very easy for the two of us to go in and out of without disturbing each other. The mosquito bar hung from halfway down the roof so as to be well back from the fire but this did not give us much space behind it. Bill had a tent to himself. Cy and Henry shared a tent and Jim and Clarence shared a tent.

From this camp we moved over the ridge to the northwest, onto the east fork of Stoddard Creek where camp was at an elevation of 3600 feet. If the mosquitoes were bad at the last camp, now they were appalling. It was hard to eat or breathe without taking them in. We learnt to judge them as follows. If when one put one's arm out and drew it back quickly and a hole could be seen in the cloud around you they were getting thick. If you had to keep a hand over your nose and mouth they were bad. The only fly-dope we had was a mixture of citronella and olive oil. Not very effective. The horses sought shelter in the wind on the ridges and smudges were always going in camp. The topographers occupied Freegold Mountain and John and I went around the claims and visited the prospectors.

One day we stayed in camp expecting to bring our manuscript up to date while the topographers occupied Granite Mountain. However, Afe and Leta Brown, George and May Fairclough, of Pelly Farm, Dan VanBibber and Bill Langham came in. The two girls were sisters of Dan's. We all had lunch together. Afe Brown got started on his trip with Langham, Frank Rae and George Reynolds of 1919 to 1921. In this they started north of Dawson and wandered all through the country east, southeast and south to Liard Hotsprings and back.

Somewhere on the way George Reynolds left them and returned to Mayo as Smith of the Liard Hotsprings made the fourth member of the party in the South Nahanni River country (See Patterson, R. "The Dangerous River", p. 28). They had their dogs and a minimum of equipment but called into trading posts from time to time for necessities of life. We enjoyed listening to Afe with his Kentucky drawl and picturesque way of describing things. The best part of it was that he was a born story teller and could describe the country vividly in a few words. They certainly found the mountain areas more hospitable than the lower plateau country which he called "Just being out in the world". The object of these three years they had told themselves was to prospect but at the end I said to Afe, "What did you really do?". He said, "To tell the truth it was one long hunt for meat for ourselves and the dogs".

A day or so later John traversed eastward along the top of the ridge from Freegold Mountain. Here to the northward below him were long open slopes dropping slowly to the timber. There was a herd of about a thousand caribou and a lone black wolf on the slope below him. The wolf kept trying to get one. He could cut the herd in two but every time it looked as though he was going to separate one out alone and get it, several large caribou charged him together and drove him off. As John went along the ridge this happened over and over again. The caribou always milled around in the same direction. Finally the wolf went away and the caribou started to move down into the timber towards the mountain opposite some miles away. This was John's route back to camp. As he went through the timber there was a shot and a caribou went down close to him. Then another and another. He saw a man shooting from a little bare knoll and thought the safest place for him was up beside the man. It was a Swede, Pete Lindy. When he had shot 13 John asked him what he was going to do with all the meat. "Nothing", he said "I just love to see them fall". That evening we heard a number more shots as the caribou were passing near the camp of some of the prospectors, and estimated that at least 25 had been killed altogether but the other prospectors made use of every scrap of meat and the hides.

On July 18th the topographers as well as ourselves had done all we could around the prospecting area and we moved two days in succession bringing us nearly to Merrice Lake. The second day as I came down into the valley looking for the horse tracks I noted a lot of moose tracks going southward across the valley. I reached camp just as the others were starting supper. It had been a short move. Bill had hunted ahead of the pack train with a long octagon-barrelled 30/30 belonging to the Survey. After camp was up Jim had hunted in the afternoon on the north side but the brush in the old burn here was dense and though they had both found a lot of tracks they saw nothing.

Right after supper I put on some old grey flannel trousers and mocassins as the most silent clothes to walk in. The horses were grazing close to camp on the north side of the creek. Jim had not put the horse bell on as we needed meat. A high steep terrace rose right up on the southeast side of the creek. The wind was from the southeast and I decided to hunt in that direction. I climbed slowly up the terrace and headed across the flat on top being as quiet as I could. After about half a mile as I crossed a small meadow I heard a stick snap to my left front. Running through a patch of brush ahead I saw a bull moose trotting away. I gave a low whistle just as I often had done with deer in the Similkameen. It stopped and looked back. I shot at its neck and down it went. Reloading I went slowly up to it with my rifle. It was still kicking and I shot it in the brain. I gave the call agreed upon.

The others had been playing bridge in the cook tent and when they heard the first shot all sat motionless. At the second shot Bill said "He's got one". Of course Henry said he held the only good hand he had had all evening. They came with axes, knives, rope and all. Bill and Jim were experienced butchers. This was new to John and me. All we could do was bone the joints as they gave them to us. Jim took off the hide and saide to me, "Oh! Doctor! Why did you have to shoot most of his brain away? He was dead already with his neck broken. Didn't you know I would need the brain to tan his hide? Only horses don't have enough brains to tan their hides". With the moving it took Jim quite a long time to get the hide scraped, the rotten brains which he kept in a tobacco can

rubbed in, and soaked and washed when it was considered tanned, but he did a fair job and I still have a piece.

I paced off the first shot. It was 70 yards and one of the shortest shots I have ever made in my life. The moose was a four year old bull and its horns were still in the velvet and not fully grown. I had left camp at 7:00 and all the meat, two packhorse loads, with the hide, was hung in the meat tent by 9:30. I was well pleased with my rifle. Lokken on examining it had said it was about as good an outfit as one could buy without having it specially made. This hunt had turned out as successful as that of last year had been stupid.

The next day we moved back to the camp site above the Five Fingers where we had left the canoes and other equipment. The geologists helped move while the topographers occupied a triangulation station. The following day Cy and Jim went to Carmacks by canoe for mail and supplies.

On July 23rd we all moved down river to about a mile and a half above Yukon Crossing where Happy Lepage and his family were living in an old large log cabin that had suffered a good deal of frost heaving so characteristic in this country. Cy, Jim and Clarence with the pack train, Bill and Henry in their canoe and John and I in ours. The river was very high even for this time of year. Our canoe was too heavily loaded with 450 pounds of gas and oil, more than 200 pounds of equipment and the two of us. When we went through the steamboat channel on the right limit of the Fingers the bow went right under in the rolls and we shipped a good deal of water but managed to land at the head of the island below the rapid and empty it. However, a lot of our things were wet and heavier now. On coming to the Rink Rapid a few miles farther down we approached it cautiously, landed on the left limit and climbed the bank. The rocks that commonly show in the middle of the Rink were covered by rough water. The steamboat channel is close to the left limit and we had been warned against it as it contains bad eddies. While we were on the bank we saw Bill and Henry go straight down the middle of the Rink and disappear from sight in the rough water. We didn't know what to think but we saw a narrow smooth channel on the right limit. We crossed and went down it with no trouble. There was no sign of the others and we returned to the left limit and threaded our way down the channels among the islands next to the bank. We found Bill and Henry there. With their big canoe they had come down without shipping any water. Bill had chosen a lovely camp site. We put up the tents but 6:00 p.m. came and still no sign of the packtrain. We fired shots and shouted. Finally they turned up about 8:00 p.m. having reached the camp site first and turned back looking for us. The next day was taken as Sunday. John and I dried our things and some of us visited the Lepages at Yukon Crossing Roadhouse. Here there was a phone on the telegraph line.

The following day Bill and I went down the river to opposite Merrice Creek where Happy Lepage had told us a Geodetic Survey party was camped. Here Mr. T.C. Dennis was putting in a geodetic benchmark on a good site, easy for Bill to pick up in his triangulation. Dennis showed us the bench mark and we had supper with his party. Cy, Henry, John and Jim began clearing a new baseline which Bill had picked out yesterday and which was to be measured and joined into the triangulation.

Dennis told us of the International Boundary survey work in the St. Elias Mountains and the discovery of the summit of Mount Logan. During the field work what seemed to be the highest point was fixed by transit observations. However, in the winter when the Mt. Logan block was being contoured from the photographs a point in the block that no transit readings had been taken on came out higher. Finally when all the contouring was done this was the highest point and established by 23 photographic readings which checked well and gave the elevation of 19,850 feet which was used until 1974 when it was found to be about 100 metres too high.

The next week was spent by John and I traversing and putting up signals on points around that Bill had chosen for expanding his triangulation. On one of these days John and I went up to Tachan River mouth below the Fingers. I traversed and John went off to set a signal. He did not return to the canoe until after 8:00 p.m. On another traverse together we came upon a lame cow moose and poor skinny little calf. The cow hobbled away. It had probably been shot in the shoulder.

The baseline and triangulation here took the topographers more than a week so we were able to get everything caught up and paid another visit to the Lepages. We asked Lepage of the stumps we had seen and discussed together. These stumps were old, conical and seemed to have been made by flaking off long chips all around until they were thin enough to push over. We thought they must have been cut down by Indians with adzes. He knew them well and said an old Indian woman had told him that they had been cut down by driving a sharpened piece of caribou horn into the side of the tree by hammering with a stone and then prying off a flake and so working around the trunk. This explanation fits the unbruised character of the stumps better than if they were hit by an adze. He said the Indian told him they used caribou horn as it was finer grained and tougher than moose horn. I believe this is the correct explanation for the method of felling most of these trees though archaeologists consulted had not heard of it. However, they have found relatively few stone adzes in the Yukon where these stumps were so plentiful and to exist the cutting down of trees was so essential to the Indians. Who would carry a heavy stone adze about when a piece of caribou horn was easier to shape and lighter and where suitable stones for hammering it in are obtainable almost everywhere? (see Investigations in Southwest Yukon: Frederick Johnson, Hugh M. Raup and Richard S. MacNeish; Papers of the Robert S. Peabody Foundation for Archaeology, Vol. 6, 1964).

It was now the end of July and time to be off on my Mineral Industry trip and as messages could be transmitted best in the evenings I asked Lepage to ask the next steamboat, expected on August 2nd to pick me up at the Crossing. John told me that on the night after I left some sound woke him up early in the morning. From our tent he had a clear view over the river. He looked sleepily out and thought he saw a horse on a raft. Then he realized that what he was looking at was a cow moose by itself climbing over the log jam at the head of the small island that was opposite our tent. It was 3:00 o'clock. He aroused Bill who shot it. In two minutes everyone was there helping butcher the moose without being called.

On August 2nd I boarded the Whitehorse at Yukon Crossing for Dawson and John was left to carry on the geology as the topographers worked down the river to Selkirk. Lepage had given my message asking the

Captain, who happened to be Coglan to stop for me. We stopped at Selkirk and my suitcase which had been sent ahead down from Carmacks was brought to me by Joe Menzies, the manager of the Taylor and Drury store there at the time. Mr. Bill Drury of the company got on with his son and daughter on their way to Stewart River where a lot of freight was put off in the night to go up to Mayo. We reached Dawson at 11:00 p.m. on the 3rd. I took a room at the Royal Alexandra Hotel and the next morning called on Mr. G.A. Jeckell, the Comptroller and met Miss Victoria Faulker, his secretary. I spent nearly the whole day with him. He introduced me to Mr. Kelly, the mining recorder and other members of the staff. Then he took me to call on Mr. Tom Patton, President of the Yukon Consolidated Gold Corporation which owned most of the placer ground in the Klondike. We also met Mr. George T.R. Troop, the Secretary Treasurer of the Y.C.G.C. They arranged a trip around the Y.C.G.C. dredges and thawing plants while Mr. Jeckell arranged for both of us on Sunday 7th to visit the Lone Star Mine which was being prospected for lode gold on Victoria Gulch of Upper Bonanza Creek.

Mr. Jeckell had been the school teacher in Dawson and had recently been appointed Comptroller. His sons were grown up and his wife had gone to live outside. He was a very lonely man. We got on very well and I spent several evenings at his house and had many happy trips with him around the district in later years.

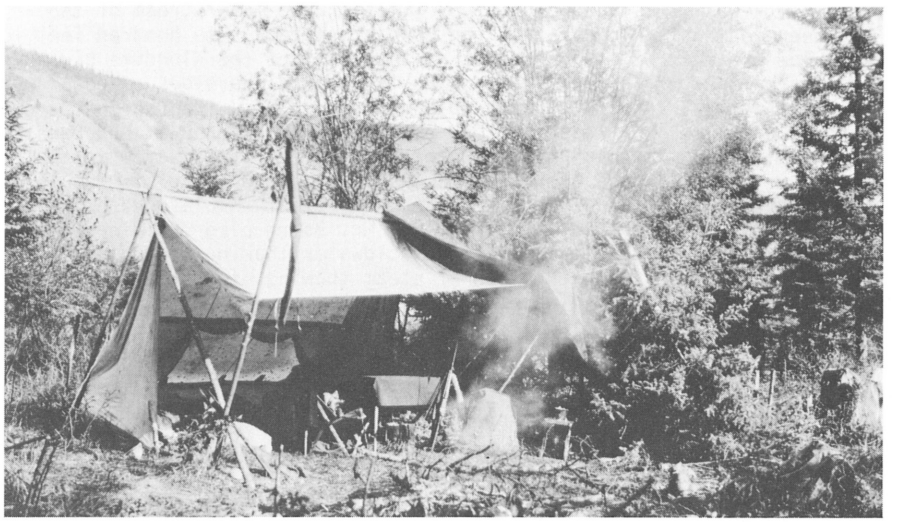
The next morning I saw the Whitehorse off after breakfast, the dock being almost across the street from the hotel. Later Mr. Jeckell drove me to Bear Creek, the headquarters of Y.C.G.C. operations. There I met Mr. Andrew Baird, Manger and Mr. Goldthrop Hay, the representative of the English shareholders. The Y.C.G.C. was in the midst of the law case with Mr. A.N.C. Treadgold, the former President and Manger who had run the company into the ground. Patton and Troop were there also. Troop took me for a walk and talked of the corporations problems at 50 miles per hour. I couldn't take in what he said. In the afternoon I visited dredge No. 4, one of the big three, in the Klondike valley. The dredge master was a powerful man named Juneau, partly Indian. I found him quite a character. Then I visited the goldroom with other visitors and we were shown the system used by Mr. Benny Goodman to clean the gold dust. Dust is a poor name as most of it was like slightly flattened grains of wheat. Finally we saw some gold brick poured. Once the gold was made into a brick it was a pretty hard thing to steal take outside. A great deal of lead bird shot, bullets and other heavy material was recovered by the dredges including lost jewellery and even a set of gold teeth. Also other heavy minerals, including cassiterite, pyrite, garnet and mercury from early workings. I was to stay the night at Bear Creek. After supper Baird seemed particularly cold. I said "goodnight" and retired to the bunkhouse where I wrote my notes. I was up before 7:00 a.m. and found Baird had been up since 5:00. I had breakfast alone and called on Baird to take my leave. He was most affable and friendly and talked for more than an hour answering all my questions at length. The hydraulic water for Jackson Gulch and Lovett Hill came from the Little Twelvemile or Chandindu River by a ditch more than 20 miles long and then crossed the Klondike valley by a wood stave inverted syphon to a ditch that led it to the workings. The hydroelectric power for the dredges, camps, machine shop and Dawson came from a power plant using the water of the North Fork of the Klondike River. It was brought by a canal around a steep valley side on the right limit of the main stream of the Klondike and ran down a penstock some hundred feet to the power plant at the level of the Klondike River. The only times when there were shortages of power were during freeze up and break up when ice ran in the canal. At these periods power was supplied by a wood burning steam plant. Once the surface of the water in the power canal froze the level was dropped six inches and the air space formed sufficient insulation so that there was no more trouble. Mr. Baird also explained the development of the coldwater thawing method that had taken theplace of steam thawing of the permafrost and many other things.

On leaving Bear Creek I went to Jackson's Gulch hydraulic operation and met the foreman Grant Henderson, a son of Robert Henderson who first discovered gold in the Klondike drainage. Then I walked over to Lovett Hill in lower Bonanza Creek. From there I walked into Dawson and had supper.

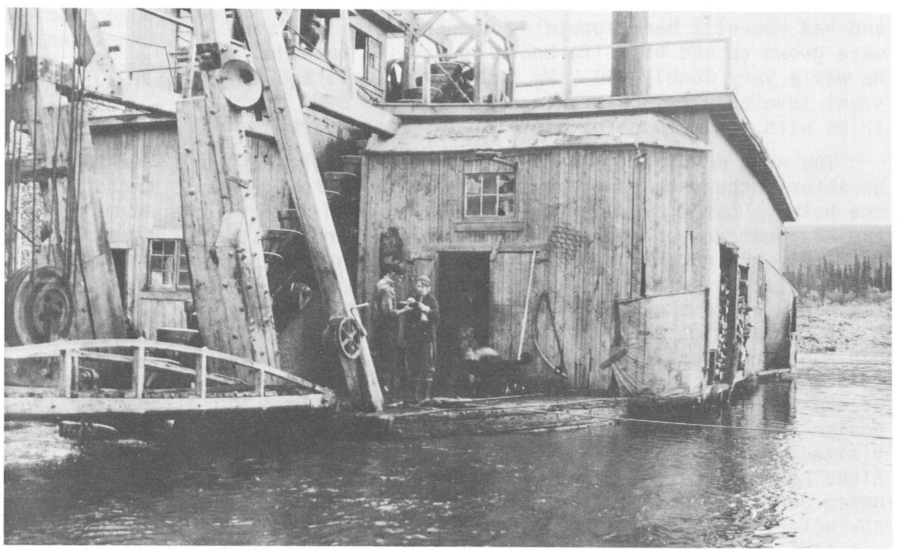
The following day was spent about Dawson and I visited Mr. Jeckell again. On the 7th as planned he drove us up Bonanza Creek to see the Lone Star mine. One day Mr. Jeckell took me to see dredge No. 1 on upper Dominion Creek. To get there we drove up Hunter Creek and had lunch at the Summit Roadhouse run by Joe and Mrs. Fournier. This was right on top of the divide between Hunker and Dominion creeks and had a magnificent view in all directions but west. Mrs. Fournier was a good cook and an amusing hostess and we had a most enjoyable luncheon with beer. Joe had a good field of oats across the road right on the summit. Buildings and all have long since gone. I spent the 9th and 10th collecting information in Dawson on the U.C.G.C. and operations in other parts of the territory including the Sixtymile district. Also I borrowed Mr. E.H. Dawson's report on the U.C.G.C. and made a concise copy in an extra notebook. He was a consulting engineer who was in Dawson making a complete study of the Y.C.G.C. The following day I went up the Klondike and up Hunker Creek to Independence Creek where I met Mr. William Ganderson an English '98er who had a good claim at the mouth of Independence and everything fixed up to run it by himself with a minimum of work. He told me he had unearthed the whole skeleton of a mastodon and some students from Fairbanks had taken it away. This is the story of most of the fossil finds in the Klondike. No one in Canada collected much. However, they had missed taking a molar which he gave to me and I shipped to the Museum. It was a mastodon, not a mammoth alright. After this I always visited Ganderson every year as long as he was there.

One of these days coming out of the Arcade Cafe run by Harry Gleaves where I had my meals, beside the Royal Alec three men were sitting in the sun in chairs on the board sidewalk and I nodded to one of them I knew. As I went away I heard one of the others say, "Who's that?" "Dr. Bostock who has taken Dr. Cockfield's place" answered my friend. "What, that kid?" exclaimed the other. One evening with Mr. Jeckell I met Inspector Dempster of the R.C.M.P. who is famous for his discovery of the bodies of Inspector Fitzgerald and his party.

On Saturday 13th I left Dawson for Mayo on the Casca going up to Stewart where I landed and took a room in the roadhouse for the night as the Keno which was the steamboat plying the Stewart River, was not expected till the morning. When I went into the saloon to register a hostile silence fell over the men sitting at the tables which made me feel quite uncom-



*Camp about 18 miles below Selkirk (202084-M)*



*Mrs. Harry Gleaves on old, wood-burning dredge! Sixtymile River, August 1932 (202085-A)*

*Triumph!! Upper end of Lake Laberge September 29, 1932 (see narrative at end of Section II) (202084-K)*

fortable. I asked how much the room was as I thought I would pay for it then and be quite ready in case the Keno turned around and left quickly. The silence persisted and I felt all eyes on me. I pulled out my money which I carried in a drill sample bag and put it on the counter. A voice said, "No cheechako carries his money in a poke". The spell was broken and conversations resumed.

The trip up the Stewart in the Keno started in the afternoon and was delightedful though the boat was smaller than those on the main river, drawing 2½ to 3 feet of water, about a foot less than the other boats. The Keno was also narrower and shorter. Captain Hughie Morrison was in charge with a pilot who took watches alternatively with him. The Stewart is the prettiest of the large rivers used by the steamboats especially for the first 60 miles where the north side of the valley rises from the river 1000 to 2000 feet in steep largely open hill sides clothed in grass slopes broken here and there by scattered outcrops and glades of aspen and spruce. We crept along against the current pushing a barge of freight larger than the boat at about 3 miles per hour. After supper I sat in the sun on the deck below the pilot house watching the bears on the hill sides. There was at least one on every promontory and I counted 17.

There were only two other passengers on board, a Miss Muller of Mayo and Mr. Gordon McIntyre. We sat at the captain's table for meals and enjoyed his numerous stories and philosophy in which he got a bit tangled at times to our great amusement. On one occasion he gave us a lecture on marriage and said, "If a wife really loved her husband she would have a baby every year". Miss Muller asked, "How many children have you Captain Morrison?" "One" he said and left the table while we all roared with laughter.

We reached Mayo at 10:30 p.m. on August 16th. I went over the get my bags from the baggage agent. He asked me where I had come from. I answered that I had come up on the Keno. He said with disbelief on his face "That's funny. You're not on the passenger list. There was only Miss Muller, Gordon McIntyre and Dr. Bostock.". I said as innocently as I could, "What is Dr. Bostock doing, I didn't meet him? What's he like?" Quite unsuspecting he answered "Oh! He's taking Dr. Cockfield's place. I guess he's a big, stout, middle-aged man". "Well", I said, handing him my baggage checks, "I admit that doesn't sound exactly like the picture I have of myself". He gave me my bags with a laugh as he saw the tags on them. This was my first meeting with Yorke Wilson whom I came to know quite well in subsequent years as freight and ticket agent for the White Pass and who was always most helpful.

The next day I called on Mr. R.L. Gillespie, the Mining Recorder, and later went to the Bank of Montreal which was in a log cabin and to my surprise and pleasure was hailed by Mr. Hall who had been teller in Penticton for a short time while I was there.

The day after I took a car to Keno village where Cockfield had told me to look up Messrs. A.K. Schellinger and W. Sime. I took a room at the hotel run at that time by Jimmy Sugiyama, a Japanese prospector and soon after found Schellinger or Schelly as everyone called him. He took me under his wing at once and as years went on we had many interesting trips around the district together. I had supper at Mrs. Ferguson's restaurant and then met Schelly and he took me to spend the evening with Billy and Mrs. Sime. Billy Sime was the Territorial Government assayer, the only one in the Yukon. He showed me through his lab and we all had a very happy evening together. Sime was in his sixties but moved about with the suppleness of a girl. He had an excellent reputation as an assayer. In 1942 I gave him four tungsten samples to assay. He said he had never done a tungsten assay and thought I had better have them done in Ottawa. However, I wanted to get an idea of their value quickly and he said he would try. He crushed them and cut them and gave me half to send outside. His results checked well with those obtained afterwards in Ottawa.

Schelly had a nice house. His wife and family had retired to California where he visited them once in a while. He had been a young assayer for the Yukon Gold Company in Dawson, the predecessor of the Y.C.G.C. which was owned by the Guggenheim interest in New York. When the rich Keno vein was staked by Louis Beauvette in 1918 he was sent up to report on it and bought the claims for the company which operated here as the Keno Hill Ltd. and of which Schelly became manager. He had been in the territory a few years and soon got the mine going. The first year when the production reached nearly $1,000,000. the Guggenheims thought this was too important for a young assayer to be running and sent in an outsider from New York who didn't understand the country at all, never ordered his supplies a year ahead as was necessary in those days and having made a failure of it closed it down. Schelly wrote a critical appraisal of the matter to New York and a year or so later the claims were taken over by Livingston Wernecke for the Treadwell Alaska Corporation and the Treadwell Yukon Company came into being. Wernecke proceeded to make money out of them and Schelly was vindicated. There after Schelly was employed as the Guggenheim geologist, scout and advisor for the camp for the rest of his active life. Finally he went to live with his wife in California and worked in a munitions factory during the war. He died at 80 in 1967.

On going back to my room in the hotel I was followed by a big, very powerful drunken Mounted Policeman who stopped me at the door and stood leering at me for about a minute in silence before he left me. This was an unpleasant experience in great contrast to any other contact with the police for whom everyone had the highest regard. Next morning I visited Vic Grant, the mining recorder and postman, a man of 92 who lived in a cabin by himself. The people of Keno were all very close in the sense that everyone knew about everyone else intimately. It was also the red light centre for the camp having two young women who boasted that they would make enough money in two years to retire.

Schelly took me around the claims on Keno and Galena Hills where I met many prospectors and miners I came to know well as years went on. On the 19th we went up to lunch at Wernecke, the mill and headquarters camp of the T.Y. Company. There I found Alec H. Berry who had been a metallurgy student at the Sullivan concentrator at Kimberley, B.C. when I was at the mine in 1923. He was now mill superintendent. After lunch we went around the mill, up to the Ladue mine and then came down to the Sadie. Later I had tea with Mr. and Mrs. Wernecke. He was in bed. One of the first things he said was, "What became of that young fellow, Stockwell, who did the geology of Galena Hill? He was the best geologist we've had in here". C.H. Stockwell had made the first map of Galena Hill for the Geological Survey and we had been together as students at the University of Wisconsin.

Wernecke was a striking looking man with very thick black eyebrows and a full head of black hair. When he

came to the camp in 1921 after Keno Hill Limited had closed down he paid prospectors good prices for some of the claims, $100,000. or so but he made no mistakes in this and recovered the price and more in mining them. He revived the camp and was regarded with the greatest respect by everyone. He had a strong and forceful but kindly personality for which he was sometimes referred to as Father. His house had a lovely view over the camp and across the valley of the McQuesten River. A large telescope stood on the verandah with which he liked to watch moose in Hansen Lakes some miles away. He also had a well appointed summer cottage at Mayo Lake 100 yards down the river from the lake where it was sheltered from the wind. He had the road between the two places kept open in summer and back and forth to work at Wernecke camp each day. The lake was too cold to swim in but there was fishing and the scenery was lovely. When the power dam was built about 1951 the cottages were removed and the site flooded. Each year too Wernecke flew the T.Y.C. officials in here with his float planes and this was the starting point for his exploring and prospecting expeditions. At this time Everett Wassen was his pilot and Emil Forest his mechanic. He employed a miner named Larsen who had been injured in one of the mines as caretaker. When visitors came to look over the district for other companies he showed them all the high cost figures of the freight and operations successfully discouraging them and keeping the area for his company alone. However, he managed things efficiently and brought in many new ideas which enabled him to keep on mining when silver was 25¢ per ounce. Not everyone admired Werenecke as I found out from Steve Albertino, a prospector to whom Wernecke had refused to pay the high price he demanded for his claim. Steve said "Dat Wernecke. He got de country by de troat".

On the 20th Schelly drove me up to supper on Keno Hill at his old mine where some maintenance and prospecting was being done. The next day I returned to Mayo and the following morning drove in a buckboard with Mr. Gillespie to Minto Bridge and thence to Elmer Middlecoff's placer workings 10 miles up Minto and Highet creeks. We stayed the night with the Middlecoffs. The operation was a family affair, Mrs. Middlecoff and their daughter kept house while the old man and his son mined. They were able to use an ingenious way of getting rid of the gravels by using a hydraulic monitor with a tremendous head of water. With this they could wash the larger rocks, some nearly 100 pounds, up a steeply inclined box while the fine material and gold fell through spaces in the bottom of the box and was carried by the water there back down into the sluice box that was laid at right angles to the bottom of the inclined box. A few years later the son was found dead in the working with his back broken. Apparently the monitor had swung around and hit him. Gillespie and I returned the next day, the 23rd, had supper at the Minto Bridge Roadhouse which was a particularly nice one, run by Mr. and Mrs. Steeves and reached Mayo about 10:30 p.m. I collected my things and boarded the Keno. She sailed at 3:00 a.m. in the morning and we reached Stewart at 9:00 that night.

At Mayo I had sent a wire by radio to Whitehorse and thence by the telegraph to John at Selkirk where the party were getting mail and supplies now to fetch me from Stewart as there would be no boat up the main river for 10 days. When I landed at Stewart I heard he was at Coffee Creek where the Meloys had a phone and wired to him to come on down in the morning. He arrived at noon, that was August 25th.

When John had arrived at Coffee Creek Mrs. Jack Meloy, Hazel, was there alone and after looking him over she asked him and gave him supper. With no false modesty she informed him that he could sleep in the cabin and that women pissed on the left side and men on the right. She had a great reputation and we had heard of her and Jack Meloy at Carmacks. They were greatly respected. Among other things we had heard that Mrs. Meloy had fought and killed a bear with an axe.

We loaded the canoe with all the cases of gas we could get, including one four gallon can from Dick Gooding, the telegraph operator, and after lunch left at 2:15 p.m. We kept going until 8:30 p.m. when we were a mile or so below Thistle Creek. The next day while we were stopped to gas up we heard a sheep "baa" and a moment later five South Down sheep came out of the brush to drink at the river. Going on a couple of hundred yards brought us to Kirkman Creek which is perhaps the pick spot on this part of the main river. Here the east side of the gently sloping and rolling fan of the creek had been cleared and fenced. It was covered by lovely grass. Thirty yards back from the river was a very nice large cabin. The place was on the north side of the river valley and obtained every bit of sun it could as well as being sheltered by the hills on three sides. We found an old man named Laderoute there who said he was 92 and had sons in Ottawa. Here he had his vegetable and flower gardens, a cow and saddle horse besides the sheep. He cut wood for the White Pass steamboats to get cash as many did along the river. After a visit he gave us half a pail of milk which was a great treat and we went on, reaching two miles above Britannia Creek by dark soon after 8:00 in the evening having stopped to see the Meloys on our way. In the morning we were up at 5:00 but did not get off until 8:00 as the motor needed cleaning. At 11:00 while we had to stop again to do some more work on the motor which delayed us until 2:15 p.m. A wood raft passed. It was built of logs each 32 feet long being three logs long and one wide all held together by wooden pins at the corners. It was steered by sweeps cut out of logs and pivoted at the middle of each end of the raft. These rafts were not an uncommon sight in the later part of the summer. Generally Indians cut the logs up the Pelly and floated them down to Dawson for the winter wood supply. On this raft was a large pile of household goods covered by a tarpaulin, an Indian working the bow sweep as pilot and a whiteman working that at the stern. A large woman in a grand hat and luxurious fur coat sat in a rocking chair near the bow. We heard later this was "Mrs. Schaffer" recently remarried to Mr. Cyril Detraz, on her way from the roadhouse at Pelly Crossing with her bridegroom to his cabin at Britannia Creek. Mrs. Schaffer was a well known character of the country and it was some years before people were reconciled to using her new name when speaking of her and to stop calling Detraz "Mrs. Schaffer's husband".

That night we camped opposite the lower end of the basalt, 17 miles from Selkirk which we reached at 11:00 the next morning, August 28th, with not much gas to spare. There were then at Selkirk two stores, Taylor and Drury's and Schofield's and Zimmerlee's, an Anglican missionary school run by Miss Martin who later became Mrs. Alec Coward, the McMartins, an old couple who ran the post office, the telegraph office and operator and a Mounted Policeman, besides several log cabins used by prospectors, wood cutters and trappers. The remains of a large log roadhouse stood with no doors or windows but good edgegrain douglas

fir floors. At the southeast end of the settlement were the Indians' cabins and one frame building said to be all that was left of the camp used by the Yukon Field Force.

After getting mail, gas and attending to a number of sundries we set out up river to find camp. As we passed the mouth of the Pelly, Cy and Henry appeared in their canoe to guide us in. Camp was being put up in the forks of the rivers on the original site of Robert Campbell's Fort Selkirk in 1848. But Campbell found it subject to floods during break up every spring and moved it in 1852 to the present site of Selkirk (Dawson, G.M. "Report of an exploration of the Yukon District, N.W.T. and adjacent Northern Portion of British Columbia, 1887", Geol. Surv. Can., including map III, 1898 edition). The outline of the fort was still discernible by a rectangle of low mounds in the brush which probably marked where the stockade had stood. This site was approached along a reversing slough. When the Pelly was high in June it flowed to the Lewes or Yukon and later as that river rose and the Pelly fell it flowed to the Pelly. As we had passed the mouth of the Pelly we had seen a flock of geese come down under the basalt bluff. As soon as Bill came in with the pack train, with Cy running the motor and our rifles we got in his canoe and went quietly up with the current into the Pelly coming out of the slough above the bar where the geese were and then drifted down. Bill and I each fired a shot as we drifted by and we got two geese.

When I was alone in the evening Bill came over to our tent to hear about my trip. Then he told me that on receiving my telegram to go down the river and fetch me, John had trembled with nervousness but in spite of that he had gone about getting ready at once. Bill said, "Never in your life will you have another assistant like John". I knew he had taken a liking for John and his keen sense of humour as indeed we all had. The next three days we spent in fixing up after the trip and in traverses with John on both sides of the Pelly.

On September 1st we moved camp to about 11 miles southwest of Selkirk on Wolverine Creek. Right after breakfast Jim, Henry and Cy swam the horses across the main (Lewes) river and then we moved the camp across in the canoes and packed the horses as soon as they were dry enough. On the trail to Wolverine Creek we saw two coveys of sharptail grouse or prairie chicken as they are called in British Columbia. The first I had seen in the Yukon.

The following day the topographers occupied Mount Pitt for a triangulation station. It gave a commanding view in all directions. We all went up there to see the lay of the country. On the way back John went down the west side and I went beyond and back around the east side.

After I had turned back towards camp and started following a game trail down a creek I heard a wolf howl in the distance. It sounded terribly lonely and seemed far, far away. A little later it howled again nearer and after a few minutes I realized it was following me. The note was much more distinct and basser now. Soon I knew he was not far behind me. The sun had set and I wanted to see him. I went through an open meadow that seemed to offer a good opportunity. The light was falling and the moon had come up. The ground was becoming covered with frost which glistened on the moonlit hillside across the creek. Entering the timber at the far end I hid behind a spruce where I had a peephole looking back up the meadow. The howling stopped but I could not see a sign of the wolf. I waited perhaps three minutes. Not a sound, but the moment I turned to go on again up rose the voice again just where I had been looking. He followed me all the way to Wolverine Creek where I had to wade across in the dark to get into camp. This wolf stayed across the creek on a knoll overlooking the camp and meadow where the horses were and howled at intervals day and night calling up others. The weather was crystal clear and cold except in the sun. We traversed around while the topographers occupied camera stations.

The tents were in the edge of the spruce timber with the meadow of patches of grass, clumps of willows and scattered spruces in front. On the last night in this camp it was particularly cold and the full moon shone on the frost. As we were moving back to Selkirk first thing in the morning the horses were all tied up to trees on the meadow about 100 yards from the tents. John and I had our tent wide open as always and the fire was dying down in front as we went to bed. About 11:30 after all was quiet we were aroused by fresh howling. More wolves had now joined the group and they had crossed the creek into a patch of willows 20 yards in front of the tents. A regular chorus started. One had joined them now who had a tremendous voice. We turned cold in our eiderdowns when he howled and I could feel all the hair on my back and neck tingle each time, yet we craved to hear him again as his howl died away. The sound was one of magnificent defiance. I said to John, "Isn't that wonderful?". "Yes", he answered, "but it makes me shiver". I got up and put some more sticks on the embers. While I was moving there was not a sound but I could not see a thing despite the closeness and bright moonlight. The moment I was back in my eiderdown the chorus resumed. Then after Caruso had given us a real treat for a few minutes there was absolute silence and apparently the wolves all left. Probably they had thought we were a hunting party and they would clean up the offal but the older ones smelling no meat around had led them away. There had not been a sign of disturbance among the horses.

We were back at Selkirk by lunch time. Jim, with the help of Cy, John and Henry swam the horses straight across the main river opposite Selkirk. This was a long swim for them, interrupted by gravel bars and at each bar they tried to swim back. The canoes could not get around the bars quickly enough so Jim twice had to swim clothes and boots on a channel holding on to a horse. The water was cold now. The final channel for the horses to swim was the main one and the canoes were able to maneouvre there alright. All Selkirk looked on. When they were across Jim took the horses to the Pelly farm about four miles up that river by following a trail there was in those days at the foot of the lava cliffs. We camped on the left limit of the main river about a mile above Selkirk. Every clear night now was foggy on the rivers.

On September 7th we moved camp 18 miles down the main river below the lava and Jim was left at the Farm with the horses. Next day we traversed and the following day was wet. We had to stay in camp instead of moving but went on the day after despite the wet morning. We found a nice camp on an island with a narrow channel and another wooded and brushy island between us and the channel on the right limit. This was close to the west border of the map. We always had to think of keeping away from the steamboat channel.

That evening Bill and I hunted without success. The next day John traversed to the north of the river and I to the south. Here I had to climb up the steep slope of one of the long truncated spurs that project from the Dawson Range. When I reached the top about 1500 feet above the river, the going was good but the outcrops few. I had my rifle with me as I hoped that on returning when I would have a magnificent view of the broad willowy flat at my feet below me I might see moose.

As I went along the ridge I came upon a wall-like outcrop about 6 feet high above the slope at lower end and 3 feet at the upper end. Against its higher end was a dense clump of dwarf birch about 4 feet high. I walked past this a few feet away and climbing onto the lower part of the wall, put down my rifle and took off to get a fresh sample. At the whack of my hammer the dwarf birch at my feet exploded. A bull moose shot out snorting and grunting and turned towards me when about 15 feet away. He was in his prime, fat and glossy with his horns all polished. A grand sight. He faced me pawing the ground with his front hooves and hooking at the brush beside him with his horns. He had let me walk within 10 feet of him. I moved slowly and quietly so as not to excite him more than I could help to my rifle and took the safety catch off. I was ready for him then and edged back to the higher part of the wall where I had the advantage of position, while he continued to tear up the ground. I had no wish to shoot him as we would never get the meat down and accessibility to camp was always a prime factor before shooting anything. I must have then stood on the outcrop a full two minutes while he continued his rampage. Then he turned disdainfully around and retired about 10 yards and facing me again went through another half minute of hooking the brush and pawing before he finally walked away.

When I got back to the river at dusk I could not see any moose. Flights of cranes had been going over during these days. Two days later we were all in camp by about 5:30 p.m. and Clarence called us to supper saying, "At last everyone was in for supper together". Cy was the last coming into the cook tent and said there were three moose coming down the hillside to the north. We all jumped up and Bill and I ran for our rifles. They were a bull and two cows. In a moment they were down at the bank of the far channel and starting to swim for the lower end of the island between them and the camp. Bill said, "If we don't get one on the island they will get away". By the time we had crossed the channel at camp they had already appeared on the lower end of the island to swim the main channel below the island we were on. Bill shot several times to turn them back and then said his 30/30 wasn't reaching them and I had better try. I fired and saw the gravel fly up in front of them. Bill's shots had confused them. Now they were back into the brush on the island. Bill and I started quietly down the island in the brush towards them. We were down wind. We heard grunting ahead of us and thought it was the bull. Then coming to an opening in the brush we saw a bull moose running about excitedly in a small meadow. Bill shot, hitting him. We were in an open stand of spruces and he started straight for us as though charging. I shot and Bill again and then I had a second shot. It was just a question which side of the spruce tree between Bill and I he was going to come when down he went at my feet and his blood went on my boots. We looked at him. He was a young bull with his first horns. Was this the bull we saw or one we had mistaken for a cow? The grunting still went on and we thought we had better investigate.

We approached the grunting cautiously and I climbed down the bank onto the gravel bar. There was a young cow moose trying to get up the bank but one of its front legs was broken. Bill despatched it. One of us had hit it with our long shots. As soon as we shouted the others came down in a canoe. We cleaned and propped open the carcasses. That was all we could do as it was now dark. On returning to camp for supper, Clarence told us the third moose, an older cow, had run between the tents.

The night unfortunately was warm and damp and when John, Clarence and I went to butcher the carcasses while the topographers occupied their last station, the meat had not cooled as well as we had hoped. We worked most of the day at cutting them up, boning the meat and hanging it up in camp. It was a lot of meat. We had had no intention at the start of shooting two moose but now we had plenty for ourselves and to repay those in Selkirk who had givent us joints.

The topographers had finished and the following day we moved back to Selkirk and went up to Pelly two miles, camping at the Old Pelly Crossing where the roadhouse had formerly stood at the cable crossing of the Pelly on the road to Dawson. The Pelly had already cut away some of the bank and taken some of the buildings. Subsequently, 10 or more years later, the cable was taken down and the Pelly cut away the site as well as the stable and road on the far side. This was a good camp site for canoe work.

On September 17th we moved a light camp with Jim and the horses up the Dawson road and north to the lake at the foot of Volcano Mountain for two nights. The topographers occupied the mountain as a triangulation station. The lake is a textbook example of a valley damned by a lava flow, only that the lave here being cavernous in its upper parts, the creek water escapes from the lake through it and comes out about a mile below.

We now packed up and left the horses and some equipment at the Pelly Farm in the care of Mr. George Fairclough, the owner, for the winter. We moved to Selkirk and camped for the night. Numerous Indian dogs were running loose about the settlement. Bill slept in the cook tent with the bacon for breakfast under his head but even there the dogs got it. In the night it snowed and in the morning the wind was driving sleet down river. It seemed bitterly cold. We left Bill at Selkirk to catch the next steamboat and the rest of us headed for Whitehorse in the canoes. Cy, Henry, Jim and Clarence, with the stove, cook tent and food as well as much gas and oil as could be carried in the big canoe and John and I in the small canoe with our stuff. We set off at 9:00 a.m. on September 22nd.

The trip was one of those ordeals which one would not wish to face again but would not have missed. The reason for it was that we had not enough funds to ship the canoes and equipment up, pay our fares on the steamboat and board and lodging in Whitehorse while we waited for the coast boat and at the same time we had enough food for the trip.

The first day the water was particularly fast and we only made 28 miles by dark. We camped in the snow about three miles below Minto. This day was bitterly cold and the short distance we had come was most discouraging. Every day on this trip we got up in the dark, broke camp and had breakfast by lantern light

and then started up the river as soon as we could see the light reflected on the surface of the water. We kept going until we could see the reflection of the sky on the water surface no more or had reached the objective for the day, such as Carmacks.

The second day we did better reaching our former campsite above Yukon Crossing. The next morning we were ready for a prompt start about 6:30. The topographers got away alright but when John and I started our motor it kept dying away and stopping. We could not find out what was wrong. Finally we drifted down to the Crossing to see if Lepage could help us. After some tinkering he said, "Lokken has the same kind of engine as this. I have seen him put a spoonful of straight oil in the upper cylinder". We tried this and got away about 10:00 o'clock. The topographers were waiting for us below the Fingers. After lunch and looking the channels over we went up that on the extreme left limit but in this channel which is smooth and the best for small boats to ascend the whirlpools have to be taken just right. Above the Fingers, Cy discovered his gas tank had cracked and was leaking. The tanks were at the back of the top of the motors. He landed Jim and Clarence to walk to Carmacks and he and Henry went up as fast as they could for fear they ran out of gas. At Carmacks Cy got some gasket cement and filled the crack. Bill's steamboat had passed us last night and we had to make Whitehorse on our own now or miss the boat outside at Skagway.

John and I reached Carmacks at 7:45. I told Lokken what Lepage had said. He laughed and answered that he had never done such a thing.

We loaded up with allthe gas and oil we could possibly carry and got away in good time in the morning. Very soon Cy's tank started to leak again and about six miles above the coal mine his engine caught fire. Cy, like a flash, smothered it with his jacket but it was too hot to run for a while and all the insulation was burnt off the spark plug wires. When it cooled down he filled it up again and behold, it didn't leak any more the whole trip. We reached three miles below Little Salmon by dark. We made a good start in the morning but John and I had chronic engine trouble of the same kind and had to use Lepage's cure for it each time. We made the foot of the long slough below Big Salmon the next night and three miles up the Thirty Mile the following evening. We got off particularly well the next morning and reached Lower Laberge at 3:30 p.m. in spite of our engine's disease. A storm was howling down the lake and Morrison told us it had been like this for a week and Bill's steamboat had been tied up for 18 hours at Goddard's Point, a sheltered beach behind a bluff about 2 miles up the lake. These paddle wheel steamboats have a great deal of wind resistance with their high super structure. Also they are easily swamped if they turn around in much of a sea as the waves come into the openings where the piston arms project to the stern wheel. At Carmacks, Big Salmon and Lower Laberge Bill had left wisecrack messages for us which caused a good deal of amusement and helped our morale.

It was now the evening of September 28th. We really hadn't done badly but the wind and seas on the lake were impossible for us to face. That evening we got everything ready to the last detail and went to bed in our clothes lying on the board floor of a large cabin without windows or doors a quarter of a mile down the river from the lake. About midnight, Jim roused me and said the wind had fallen. There was no wind and waves were still roaring out there but they were not as they had been. At 2:30 we went out again. The wind had dropped completely. I decided we should try it. So we got into the canoes. Each had a flashlight for the occasion. The night was black and cold. The motors wouldn't start. Then one got started and the canoe ran onto a bar and stopped. Then the other started and hit another bar. We could not see the shore or the bars. The channel into thelake is close along the east shore. This happened several times but finally we reached Goddard's Point and stopped to gas up. The wind was rising and the lake had long oily swells on it. Cy said, "What do you think?" when I came along side. I asked him if his tank was full and everything ready. He said, "Yes". I answered "Now or never", and we headed diagonally across the lake straight south. Only the skyline of the hills on the east of the lake could be seen as we left that shore but about halfway across both skylines were visible. The wind rose and the central and west parts of the lake were getting quite rought but our motors kept running. Dawn began to come as we neared the western shore and the sky was clearing. The worst seas we experienced were met as we rounded a point about three miles north of Richthofen Island. Here there was no shelter from the wind that swept down the lake and we were running into it. The canoe was pounding as it went over the seas and the spray was flying but we were not taking in any water to speak of. John, sitting in front, was getting all the pounding on his posterior. He looked back at me and his face was white as a sheet. However, the canoe was standing it alright and I could see the other canoe coming along alright about 100 yards away. Soon the sun was rising and that made it seem better.

We gased up in the shelter of the island and though it was rough and exposed to the wind beyond the south end of the island we travelled alright. Turning eastward at Jim Boss's we hit the third buoy of the steamboat channel and went up to Scow Point where we had breakfast at 8:30 eating our last moose steaks. When we started up the final twenty miles of river to Whitehorse we were plagued with engine trouble on both canoes but reached the White Pass dock about 4:00 p.m. Bill had been told we had left Lower Laberge and heard our motors coming up the river. We packed everything, put the canoes in the north end of the White Pass freight shed which was largely empty in those days and took the rest of the stuff including the motors over to Mrs. Viaux's spare room. After two nights in Whitehorse we boarded the morning train for Skagway on October 1st.

This had been a season of education and experience for John and I, indeed I think for all of us. Everyone in the party had contributed in some degree to improvements in the system of work and camping. We all had tremendous confidence in each other.

When we reached Vancouver on the morning of October 5th, John, Cy and Henry returned to U.B.C. They were, of course, late for the beginning of the university year so Bill and I wrote letters saying they had been needed to complete the season's work to take with them when they went to register. Jim went back to Edmonton and Clarence to Cloverdale, B.C. Bill went by C.N.R. back to Ottawa that morning. After spending the day with Cockfield and Nettell in the Vancouver office, I caught the C.P.R. night train to Monte Creek as Violet and Hewitt were now staying there. After a few days we returned to Ottawa.

## Section III: 1933, Carmacks Area, the Dawson Range and Pelly River

After the usual journey from Ottawa with Violet and Hewitt to Nelson, I called at Monte Creek and then met the party which gathered in Vancouver and we sailed from there at 9:00 in the evening of May 25th, looking forward to an early start for the field season. After all, one year D.D. Cairnes and his party had gone down Lake Laberge in canoes on May 17th. We were at Skagway late on the 28th, landed the next morning, and were in Whitehorse that afternoon. All our equipment and baggage was with us except the new cook stove. We got our things at once and started sorting them out after supper. John was my assistant again but Bill's party had been cut down and he had only Cy as his assistant. Clarence was cook and Jim packer again. This year Bartlett was not in the Yukon. Bill took Bartlett's 20 foot canoe and John and I had Bill's 19 foot of last year. This gave us much greater carrying capacity all around without reducing the speed of the canoes as they rode the water better. After supper on May 30th we were off down the river hoping to get through Lake Laberge that night but we had heard there was still a lot of ice in the lake.

After passing the mouth of the Takhini River it began to rain with a cold north wind from the lake. The river was so rough at times that we were in danger of swamping. When we reached Scow Point we met the Loon and Cam Smith who said the river had been so rough there the night before he had come near to moving upstream some miles. The ice had been driven into the mouth of the river against the current and was impassable. The Keno, pushing a barge to make a channel with the Casca behind, had got through that day and they were the first boats down the lake that year. At 9:00 p.m. the Whitehorse came down and tied up at Scow Point. We returned up river about two miles and camped on the island formed by the slough which cut off a big meander but was then unnavigable for the steamboats but a few years later the slough became the main channel.

June 1st the wind changed to south and carried the ice north. The next day the Loon came up from Jackfish Bay beyond Jim Boss's place and told us we could get as far as the north end of Richthofen Island. After lunch we packed up and going as Cam Smith suggested through the narrow slough on the left limit that runs out into the lake near Jim Boss's reached the ice blocking the strait at the north end of the island. It appeared about 200 yards wide and we turned back into the bay just inside the north end of the strait for supper expecting to get by the ice afterwards. But the wind got up and had now changed again. It blew all the ice in the main lake south so that the ice now formed a sheet some miles wide leaving only the distant north end of the lake clear and very rough.

The following afternoon three wooden "Whitehorse" boats of Indians could be seen smashing their way through the ice close to the shore. We packed up expecting to use their channel. It was a sight to see them all with poles, men, women and children breaking the ice along the sides of the boats. Before we could get through, however, their channel closed in on us and with only our paddles we had a hard time to keep the canoes from being crushed but finally got back safely. A whiteman with the Indians told us they had come up the lake the day we had left Whitehorse and the ice had stopped them about a quarter of a mile north of the strait. He said the Indians had got out of their boats and just lain down on the beach and gone to sleep as they were, with nothing over them. In the morning when he got up they were all still asleep with three inches of snow covering them, quite oblivious of the cold.

June 4th warm, sunny and no wind. The ice though still about 15 inches thick was rotten and in about half an hour we were through it and running down the lake, reaching Lower Laberge about 1:30 p.m.

After calling on the Morrisons we went on down to below Hootalinqua and camped. The following day the topographers continued on their way to Selkirk. John and I stopped at Little Salmon and spent several days traversing here and there along the river, collecting samples of Tantalus Butte mine coal and fossils from G.M. Dawson's locality just above the Five Fingers. We reached the topographers camp above Selkirk on June 13th. They had measured another base line behind Selkirk and tied it into the triangulation.

The next few days were spent in traversing and getting ready for the "long trip" of six weeks south from Selkirk and then east to Carmacks. All of us had refined our equipment considerably from last year's and had cut it down to a minimum. I had a new pair of light weight Zeiss binoculars which I wore on the middle of my belt where, because the belt holders were low on the case, the top tilted forward as I walked without hindering me. This is an important point. I could pull them out at a moment's notice. I used them like this all my seasons in the Yukon. John was also provided with a good pair. John and I had a new lean-to tent as well as new capes to shed the rain. Our new stove had not arrived so Clarence had to use last year's with a hole in it. We started on June 19th and reached our camp of last fall on Wolverine Creek. The party consisted of six men and nine horses packed with everything, camp equipment, food instruments and several gross of camera plates, both orthchromatic and Ilford infrared. Everybody was on foot. Our food we hoped would last six weeks trusting that we would be able to get game for meat.

Last winter Bill had found that the haze in the Yukon was a major problem with the orthochromatic photographic plates and orange filters. The distance was too faint and often not visible at all. Good photographs were absolutely essential for making a good topographical map. Infrared photographic film had just been invented and he had tried a panorama of Eastman's infrared plates on Mt. Pitt last fall but they had proved a failure. This spring in Ottawa he had tested some British Ilford infrared plates which seemed good and he had brought with him enough Ilford plates as well as orthochromatic plates to finish the Carmacks map. He was to send the first Ilford plates exposed promptly back to Ottawa and would be advised by wire if they proved satisfactory. If no wire came it was to be assumed they were a failure. So for this trip, as the first batch of Ilford plates had only just been sent off, he had both infrared and orthchromatic plates with him making a considerable load. He took complete panoramas of both types at each station.

In two days from Wolverine Creek we worked our way over the ridge into Hayes Creek where Bill fortunately got a moose.

Where Hayes Creek flows northerly, northwest of

Prospector Mountain, several old ruined cabins were still standing and there were old placer workings in the creek bed. The notable thing about the cabins was that two or three of them had large stone fireplaces and chimneys still standing. These structures were made of local stones and mud. According to Archie MacLennan, who was manager of Taylor and Drury's store at Selkirk that year, the cabins were built by a party of which he had been a member about 1899. In those days some people still thought that cabins could be heated better with fireplaces than stoves.

We moved up a west fork of Hayes Creek and as John and I followed the packhorse tracks which were some hours ahead of us along a well worn game trail we were amazed to find that in muddy places the horse tracks were almost obliterated by wolf tracks.

The next day we set out to meet the topographers on top of Apex Mountain which being the highest point in Dawson Range made a wonderful triangulation station though it was a few miles west of the border of our map. John and I took our own route. I had my rifle with me as we were eating a lot of meat to save our other supplies and we hoped we might get a sheep or another moose. We stopped at some outcrops. I put my rifle and rucksack down and went about 20 yards down the slope. Suddenly I was startled by a large tawny wolf which came at me and then turned and ran away up the slope. I ran back for my rifle and it gave me a beautiful shot as it stood about 75 yards away broad side looking at us. I pulled on the trigger forgetting I had no cartridge in the breach because I had John with me. I pumped one in, aimed hurriedly and the bullet hit the ground between the wolf's legs. It was gone in a flash and a second shot at it running did no better.

Climbing on up we were soon on the upland surface of the Yukon Plateau. It rolled away in vast, gentle, open slopes which dropped steeply into deeply incised creek valleys. The slopes culminated in spectacular, castle-like outcrops of granite. Apex Mountain and the ridges extending from it stood like a large island about 2000 feet above the upland surface. The only timber was in the valleys below 4000 feet above sea level. A small glacial cirque is cut in the north side of Apex with a little tarn in it. Otherwise we recognized no sign of glaciation in this part of the map area.

When we reached the summit of the mountain Bill pointed out the stations he expected to occupy to south and east in the map area. The view was magnificent. Thunderstorms were gathering around and every now and then little tongues of lightning extended from the transit and sparks came from us. This is the only time I have experienced St. Elmo's Fire. There were sheep tracks but we didn't see any sheep. We left Bill, Cy and Jim on the peak and went along a ridge extending south and then east into the map area. When we were well inside the area we turned down to the first willows to boil our billy. While having lunch in the sunchine a terrific downpour was sweeping along the valley a mile away which we planned to descend.

Heading down the valley along a good game trail after the storm I pointed out to John who was behind me that five wolves were going along ahead of us, two very large ones, I could barely span their tracks in the mud with my hand, and three smaller ones. We continued along the trail with the stream roaring a few yards on our right. The willow brush was about up to our waists. I noticed a caribou trail crossing the valley and looked first to the left and then across the stream to the right. I had shot before John knew what I was doing. A large tawny, grey wolf was standing on the other side of the stream half facing me about 5 yards away his fangs bared in a snarl and the hair on his neck and back standing straight up. The bullet entred his shoulder and blew out his far side. We examined him. He was a male and weighed about 87 pounds, the average of what we both judged independently. His track was one of the smaller three but he was not a young wolf, his teeth were slightly worn and to our surprise he had a cavity in one of his molars. The sound of the stream had drowned our footsteps. The other wolf tracks continued on down the trail as we went and coming into Hayes Creek the trail went along a flat with scattered clumps of willow and then turned towards the steep valley side as the creek course cut across the way. We were just passing a large willow when a great black wolf leapt out of it and dashed away dodging from clump to clump. Had I had a cartridge in the breach I might have had a chance of hitting him but as it was he was far too quick and wily for me. He must have been shot at before. This was considerably the larges of the three wolves we had seen that day. The Yukon wolves are large. One weighed in Whitehorse was 185 pounds. (Whitehorse Star, March 22, 1956.)

From this camp we moved down Hayes Creek and eastward to a pup of Big Creek. In the valley going through to Big Creek everyone saw wolves except myself. Wolves even sat on their haunches about 100 yards away and watched the packtrain go by.

The next day we moved southwest up Big Creek. John cut across Prospector Mountain and saw 21 ewes and lambs while I crossed to the southeast side of Big Creek. On the following day, July 3rd, we moved again farther up Big Creek to near the divide to the Klaza drainage. Bill was carrying his rifle at the head of the packtrain with Jim. Shortly before camping in the valley flat they approached the pond with an elevated bank of peat around it. Suddenly the head of a bull moose appeared above the bank and went down again. A moment later a head again appeared in almost the same place and Bill put a bullet into it at 200 yards. When they reached the pond a bull moose ran off but there was one lying dead in the water with a bullet through its brain. The meat was badly needed as our supplies were being depleted at a great rate so when we had meat we had to eat as much as we could at every meal.

The move from here over the summit into the fork of Magpie Creek was a memorable one. I traversed south along the edge of the map area and then turned east. None of us knew within a radius of about three miles where camp was going to be. All I knew was that the packtrain with Bill and John was somewhere to the east of me. Cy was traversing alone with a small planetable. It was a lovely clear day. With my glasses I could see some white sheep moving about on a mountain to the west beyond the edge of the map area. There were very few outcrops and anything unusual was worth looking at. Four spectacular caribou heads, white and bleached by the weather were lying near together in the low brush. One head had 47 points on it, 28 on the horn and 19 on the other. The other heads were nearly as good.

Before me to south and east was a wide expanse of rolling, streamlined upland surface sloping towards the Klaza River which is deeply entrenched; beyond the river the surface continued. To the northeast it swept

in long slowly steepening profiles up to the bases of the island-like summits of the Dawson Range. It was all open, the trees being down in the lower valleys and the upland clothed in low willow, dwarf brich grasses and plants. The headwaters of the creeks had not yet felt the influence of the Tertiary uplift and meandered in wide flaring valleys on gentle gradients before they dropped down to the Klaza River. Not an animal was to be seen except the sheep. The silence could almost be felt.

To the southwest I saw what, at first glance, I took for a line of clouds shining in the late afternoon sun, but a look with my glasses showed it to be the great peaks of the St. Elias Mountains more than 140 miles away. In the foreground the hills and mountains faded away into the haze but these great peaks were floating high above the haze in the clear atmosphere like vast icebergs glittering white and blue in the sun. They were an inspiring sight. Mounts Robson and Waddington in this setting would protrude but 2000 feet or so above the icefields at the bases of these giants and hardly have been noticeable above the haze.

About 4:30 I reached a prominent point not knowing where to head for next, and sat down to search the country with my glasses and listen. I spotted something in the sun on a similar bump about three miles away to the east and after scrutinizing it for a few moments I realized it was Cy's planetable and that Cy was sitting beside it, evidently confronted by the same situation. I continued to search with my glasses, keeping an eye on Cy. Suddenly I saw him get up, pick up his planetable and head down the slope away from me. It could only mean that he had seen or heard some indication of the packtrain or camp and I set out in the same general direction that he had gone and finally reached camp late.

It should be remembered that we had no map but one by J.J. McArthur purporting to show the Selkirk branch of the old Dalton trail. This map was useless. McArthur got magnetic north which had a deviation of approximately $34^{0}$ E and true north mixed up and apparently guessed at his distance while his form line sketching of the hills and mountains meant almost nothing so that althought he shows the Dalton Trail, its route can only be guessed at.

The next day we moved east up Magpie Creek and when Jim asked how far to go Bill said "To the last five trees so there will be poles for my tent". Jim just about did that and we called it Five Trees Camp. This was a well placed camp with Klaza Mountain to the north and an isolated mountain, Tritop Peak, to the south, both were triangulation stations. The weather had been good but now it became unsettled and the next day we had rain. John and I had our tent up on the north slope where there were a few trees and built a stone reflector behind the fireplace in front of our tent. We were both cutting wood and I said to John, "If you chop like that you will cut your foot". The next stroke with my axe, it glanced off the wet log and I cut myself through my moccasin rubber. However, luckily it wasn't bad and the worst thing was having a hole in my rubber. Moccasin rubbers were excellent footwear to change to when in canoes and in camp as the ground was nearly always soggy. The following morning Jim pointed out that the night before a large grizzly track had been made along the creek to within 15 yards of the cook tent but that he had apparently smelt our fire and gone off. Had he gone a little further he would have come to where the meat was hung up. My cut didn't seem infected so I was back traversing after three days of rain. I went across the pass east of Klaza Mountain and had to stand out in the open through a terrific downpour for about half an hour.

In the spring of 1932 I had called on Dr. M.O. Malte, Chief Botanist of the National Museum. I told him I was going to the Yukon and would be glad to collect plants though I knew no botany. I said I could not take the usual large flower press with me. He had a small press made for me and instructed me in its use, saying I should not collect anything more than 6 inches high. Later I made myself a press hardly bigger than a notebook to carry in my rucksack. When convenient I did a little collecting of small plants that seemed unusual to me. The alpine plants particularly intrigued me. On the day going past Klaza Mountain I carried the press and among the plants seen on the traverse was a lovely little flower of which I collected eight specimens. As usual I took flower, leaves, roots and all for each specimen. When I turned in the collection to the Museum, Dr. Malte had died and I heard nothing of it until a few years later when his successor, Dr. A.F. Porsild wrote to me and told me that nearly all the plants I had brought in were rare. He said that he believed the one I had eight specimens of north of Klaza River had never been found before. This he later named for me, Claytonia Bostockii (Porsild, A.E.: p. 160, Bull. 121, National Museum of Canada, 1951). With Dr. Porsild's encouragement I continued to collect some plants, 30 to 50, nearly every year in the Yukon and among them were quite a lot of plants not previously found in the region and some very rare ones.

From Five Trees camp we moved southwest down Klaza River about four miles past Magpie Creek where we saw magpies, to a creek entering the river from the south. The only sign of human beings were some axe cuts and a bundle of traps hanging in a tree. After one night, camp was moved again up to the head of Maloney Creek but Jim left his false teeth behind on a stump at the camp on the Klaza. In the early morning he ran back for them a distance of seven miles each way with a climb of about 2000 feet returning. He was in for breakfast and then went out for a long day with Bill and Cy. He was 43 years old. This is the origin of the name "False Teeth Creek".

On July 16th we moved again and camp was pitched on the upper part of Schist Creek. This traverse seemed a particularly weary one for me. I went down Maloney Creek where I found three or four well built cabins partly in ruins but there was little placer working and the cabins had not been used much. I never heard when these cabins were built. From there I reached the border of the map sheet and turned east up a tributary creek. The mosquitoes were vicious and when I looked back I could see them like a trailing column of smoke. I could just keep ahead of them by walking steadily. As I climbed the summit over the Schist Creek it began to rain and on reaching the top there seemed no sign of camp. However, it turned out to be in some timber on the hillside. It now rained hard almost continuously for three days. We had to put poles all over the floor of the cook tent and under the tarpaulin floors of our sleeping tents as the water was running through them. The meat was now gone and matches were getting low and rationed, five per man per day. This was alright for John and me as we didn't smoke but the others were always running short of lights for their cigarettes. After a day's work when it had cleared we moved to the east fork of

Schist Creek. Traversing that day I came upon "Murray's cabin", a landmark that had been described to us in Selkirk. That is how we knew we were on Schist Creek. It was a little below the fork of Schist Creek and contained a 1912 magazine as well as a mass of thawing pipes and other mining equipment. There were some choppings of last year. In all this country there seemed to be awfully little life. Bill and Cy had seen an old grizzly and cubs near Maloney Creek and Cy or Jim saw two caribou. As a rule there were no tracks, just nothing.

July 21st, rain again in the night and at breakfast and we stayed in during the morning. At about 10:00 the rain stopped but there was fog everywhere. Bill took his rifle and went up the creek. Soon after something stampeded the horses and they came into camp. Jim went out to see what the matter was. The fog had begun to lift. In a minute he ran back saying "Look at the caribou" and asked me to shoot some but John and I were busy with our manuscript and specimens and I let him take my rifle. He got two. As the fog continued to rise the hills on both sides of the creek could be seen crawling with caribou, band after band on every side. Half an hour later Bill came in and he got two as well. As will be seen we should have shot two more at least, as our provisions were going down and now we had lots of space to carry the meat on the horses. Also the weather was clearing and the meat would have cooled, dried well and kept.

After a lunch of caribout liver, Bill, Cy and Jim with some horses went to bring the meat in. There is not very much meat on a caribout other than the hindquarters but we thought we had enough. John and I climbed the summit to the west, taking our glasses to see how many caribou there were. They were thickly scattered over the broad open rolling ridges and grazing along, steadily moving northwestward. They were continually moving. Each one seemed to be afraid the one ahead was getting better grass or browse on the low willows than it was. There was virtually no caribou "moss" or rather lichen in this part of the country. When they came to the end of a ridge they milled around and around until at least 50 to 100 had gathered in a dense band and then charged down through the timber across the valley and up onto the other side.

Many of these bands were mixed bulls, cows and calves but here and there was a band of nearly all bulls or nearly all cows and calves. The bigger bulls had pretty well lost all their winter hair and were fat and rotund. They were impressive sights with their grand, and in some cases highly ornamental antlers in velvet. Most of the cows were thin except those that had no calves. Also the cows still had most of last winter's coat except for a large round patch on each flank where it had apparently been warn off by lying down. The cows as a rule looked darker than the bulls. With skimpy little horns or sometimes none, and thin, their hair shaggy, the cows were not beautiful animals and reminded us rather of goats. As they went along with their calves behind them there was a good deal of squealing and grunting like pigs. They were curious and bold when in a number together but very shy and nervous alone.

John and I sat on top till nearly five o'clock trying to estimate their numbers. We counted bands up to about 200 and then compared them with other that seemed smaller or larger. This was not easy due to their movement. With our x8 glasses we could distinguish dense bands moving as far away as about four miles on each side of us and came to the conclusion we might be able to see between ten and fifteen thousand at one time but they kept coming from the ridge to the southeast and we had no idea how many had already passed away to the northwest or how far they extended on each side.

The next day was beautifully sunny and clear. I traversed over towards the elbow of the Klaza River. Going northward along the side of the broad rounded ridge from camp there were a few caribou scattered nearly everywhere on the lower slopes above the timber grazing and dense masses of them lying on the wide summit. I cut diagonally across the slope a couple of hundred yards above the trees. There were cows and calves grazing below me on the right. As I approached they banded together and ran up the slope ahead of me to get above. One calf was about 25 yards behind the others. As it dashed past me a few yards away there was a roar like a train overhead. Looking up I saw a golden eagle diving at it. I waved my hat and the eagle veered away. Then I noticed there were eagles circling over the caribou here and there along the top.

As I went on I came to the carcass of a freshly killed cow. Its whole body cavity was opened diagonally and the ribs had been cut as though with a saw. Most of its intestinal organs had been eaten. I took this for the work of wolves but the thick vegetation gave no tracks, that I could distinguish and I felt they were watching me from among the trees.

I passed on over the next ridge, the caribou getting up and running away whenever they winded me. Crossing the head of the creek that enters the Klaza River at the elbow I went down the valley on the north side. There were some fresh moose tracks here. Finally I had lunch at the creek where I could boil my billy for tea and ate sandwiches of caribou liver cooked the night before and others of bread and applesauce made from dried apples as we were out of jam. Stray caribou and now and then little bunches of half a dozen or so kept running through the trees around me. About an hour after lunch I was terribly sick bringing up everything I had eaten. On return to camp some of the others said they had had the same trouble. One should only eat perfectly fresh caribou liver freshly cooked.

After crossing the valley and going along the other side nearly to the lower end I turned back and crossed the valley. It was late in the afternoon when I came out of the timber onto the end of the wide open, down-like top of the ridge on the south side of the creek. Caribou were grazing all over it. As I went along, first on one side of me and then on the other side they gathered into bands and came charging at me to within a few yards only to veer away to one side as I waved my hat and shouted. I became heartily tired of continually doing this mile after mile and my attention slackened. The dew claws which are much larger on the caribou than other members of the deer family make a distinct clicking noise and it becomes a swishing sound when a lot of them are running together.

All went well for a while; some were gathering for a charge on my right front and some others had begun to cluster on my left front. Suddenly I heard the swishing sound behind me and turned. I had just time to stop, wave my arms and yell. I can see the leading animals to this day, that were two or three paces from me. My hair tingled. They split and I could have reached out to touch them as they crowded past on each side. I believe if I had not faced them they would have knowcked me down and trampled over me. After this I kept watch all around.

As I continued I could see a wide avenue in the caribou on my right rear where my scent was blown. Coming to the end of the ridge I went down and across the northwest fork of the east branch of Schist Creek and started over the shoulder of the hill to camp. I stopped for a minute or two to write notes and looked back. The slope I had come over was now uniformly covered again with feeding caribou. Every minute or so the light breeze came in a gust from behind me and carried my scent across the valley. In the area where my scent reached the caribou they exploded in all directions leaving it a bare patch. The pattern their radiating routes followed reminded me of the experiment to illustrate the lines of force made with iron filings on a sheet of cardboard with a magnet under it. Then after a short dash they settled down, the hole where they had smelt me closed in and they presented a uniform cover again until another gust came. The whole area now had a distinct barnyard smell. The next morning there seemed to be more caribou coming from the southeast.

The next day we moved eastward from this camp as the topographers had been able to occupy their stations. When the packtrain came out of the timber into the open in their dlimb over the ridge to Lonely Creek, the horses were stampeded by the caribou charging them and it took Jim more than an hour rounding them up. It was another lovely day and there were caribou lying all over the top of this ridge with eagles circling here and there.

I had a long traverse into the elbow of the Klaza River and back down Lonely Creek. Returning towards camp I did not know where it was pitched and it was late. Suddenly I saw a great sheet of flame at least 100 feet high shoot up about two miles away and continue there like a huge torch. This was the sign for camp if someone was late. Cy and John knowing camp was in a hard place to find had built a teepee-like pile of dead brush and poles around a large spruce and lit it. It was still a considerable column of flame when I got in.

We had now left the main herd of caribou and after crossing the ridge into Lonely Creek valley I saw one bull caribou there and some two days later near Mount Nansen.

From what we were told the caribou in the 1930s were scattered in bands of 10 to 200 in winter over the region of which the Dawson Range formed the backbone. On the northeast we found their trails as far as a general line through Mica Creek on the Pelly, lower Lake Creek on the Stewart and to Dominion Creek in the Klondike. Their trails were most common, widest and most deeply worn along a zone extending from Rowlinson Creek, northwest to Selwyn River and thence across the Yukon between the mouths of the White and Stewart rivers, pointing towards the headwaters of Sixtymile River. All the well-worn trails ran northwest-southeasterly.

In 1937 Jim Boss told us that during the winter before large numbers of caribou had appeared on the west shore of Lake Laberge and this was the first time they had been there for many, many years.

In the spring they gathered together into herds and moved northwestward into Alaska. Apparently they had their calves either just before their general movement or after it had begun. We saw the bodies of very young calves evidently drowned in crossing the Yukon. Perhaps this was a natural escape from the wolves which were denning at that time. In July the caribou returned as we had seen them, grazed along the Dawson Range and then went back towards Alaska finally returning again to scatter over the general region in October for the winter.

We were told the caribou were greatly plagued by parasites, particularly warble flies and an insect referred to as a screw worm which came out of holes in their throats in the spring. Some old timers said that before about 1900 these caribou had not frequented this general region but that older Indians had told them the caribou had been there in the 1870s. So much for the migratory caribou. The others, the "Osborne caribou" inhabit the terrain to the east and will be referred to later.

The following day we moved to the creek west of Nansen Creek and spent two nights there. I traversed over Mount Nansen ridge taking my rifle as we needed meat and I also had some hope of getting a sheep there. A band of about 400 caribou bulls were moving over the ridge but it was useless to follow them and they were too far from camp. This was the last we saw of the caribou that year.

On July 26th camp was moved to the east head of Nansen Creek. John and I traversed together and examined the old placer workings as we went up the creek. In this we came upon old Fred Mack on Weber Creek. He had the wild look in his eyes that men who have lived alone too much have. He asked us to have lunch. We knew he had to pack his food out from Carmacks so we ate our own lunches but let him provide the tea. The teapot was already boiling on the stove and he put a handful of tea into it. When he poured the tea it was well stewed and the pot appeared full of old leaves. A spoon would nearly stand up in the tea he gave us. It took John and I a day or two to recover from it. The next three days were spent traversing and visiting prospectors including the other Mack brothers and George McDade.

July 30th we moved to a lake east of the pass to Nisling River. Mosquitoes were very bad and going up hill I had to stop and light smudges to get some relief. The food was practically gone and the following morning we had a grayling each and a slice of bread for breakfast, and moved into Carmacks. I traversed south and then east along the border of the map area and finally turned north to the Nansen Creek trail and on into Carmacks, arriving at 7:30 p.m. The others had got in at 5:00 p.m. and had camp set up. The next two days were spent sorting and packing. The topographers and John were to cross the main river and work northward along the east boundary of the map to the Pelly while I went down to Dawson on the Mineral Industry trip. This year I planned to visit only Dawson and the Sixtymile River placer area. No wire had come for Bill telling him the infrared photoplates were a success; as a result, he now stopped using them and took nothing but the orthochromatic plates the rest of the season and so the topography of the east part of the Carmacks map had to be drawn without any decent photographs.

On August 3rd at 11:30 a.m. I boarded the Casca at Carmacks and arrived in Dawson the following day. The next morning Mr. Jeckell drove me in his car to the Holbrook Dredging Company camp on the Sixtymile River a couple of miles below the mouth of Miller Creek. We stayed in a spare cabin at the camp. Mr. Ed Holbrook, manager of the company was operating the old dredge that had belonged to the Guggenheims and had originally mined the rich bed of Miller Creek

and been shut down for some years. However, he had leased it and after some reconditioning was now digging what he believed was the continuation of the Miller Creek pay in the Sixtymile valley. It was a unique dredge for the Yukon at that time as for power it burnt 7 cords of wood per 24 hours which gave 125 pounds of steam for its 140 horse power steam engine.

Somehow or other Holbrook got on the subject of wolves and told us this story. One winter he had a contract to carry the mail in the Walker's Fork area, just across in Alaska from Miller Creek. Here, as in the case of the Sixtymile road, trails ran along the open summits of the ridges and were marked about every 200 yards by posts 10 to 12 feet high with a crossbar nailed on them. One day as he was travelling with his dogteam and sleigh, he heard a wolf howl behind him but thought nothing of it. A little later there was another howl and then more and he realized that wolves were gathering and following him. Soon there was a number behind him that were closing in on the sleigh. He had no weapon so he broke a crossbar from a post for a club. It was not long before the lead wolves were travelling on each side of the sleigh about 15 yards away from the dogs which kept stopping to face and snarl at them. He made sallies at the wolves to drive them back brandishing his club. At first they retreated but after a time they just stood their ground and snarled at him. The only way he could keep the dogs moving at all was to push the sleigh against the rear dog making it jump forward against the next dog and so on. In this way the dogs would run for 100 yards or more and then stop to face the wolves on either side. He realized the time was going to come shortly when the wolves would attack the dogs and there wasn't going to be any difference between himself and the dogs in the fight. However, they were approaching a junction with a main trail and suddenly the dogs and the wolves smelt some other dog teams that had passed along the trail a short time before. He jumped onto the back of the sleigh and the dogs flew along the well packed trail and the wolves were left behind. He always carried a rifle in winter after that.

We visited Mr. H.A.R. Stewart and his family including his son, Gordon and his bride. They were mining a deep bench channel on the left limit of Miller Creek using a shaft 60 feet or more deep and drifting along the channel. A bucket was hoisted with cables and a steam engine out of the shaft whence it ran along a horizontal cable to drop its load automatically at a gin pole where a large dump of pay gravel was built close to the head of the sluice boxes ready when the time came for washing it. Here besides gold they were recovering a considerable amount of cinnabar from which they retorted their own mercury.

From the Stewarts on Miller Creek I walked over the ridge into Glacier Creek. Gordon Stewart had given me some tips on the miners along this creek. He told me to have lunch with Bungate, the "kid" of the creek, 67 years old as he was a good cook. They were all ages up to Spratley 87 who was an atheist. When I reached Bungate's cabin he was just taking his bread out of the oven. He was dressed in spotless overalls and everything about his cabin was clean. When I had told him who I was he asked me to lunch. His bread was delicious. We had a long talk. He lived on the creek practically the whole year around except for some visits to Dawson. He looked very healthy. In winter he spent much of his time reading but he said no matter how cold it was he always went out and brought a sleigh load of wood to his cabin whether he needed it or not. This kept him well. As with many of these old timers he came around to the subject of women and had no use for men who married Indian women. After lunch when time came to leave he took me along his placer working. His claims stretched 1500 feet along the creek. Here he directed the water against the south bank where it cut away about a foot each year along the whole length of a low terrace. Each morning in summer he walked along the creek and threw out any large stones that the water would not carry away. In the fall he put his boxes beside the creek and shovelled into them the gravel left by the water on bedrock. In the boxes the gravel was washed away and the heavy minerals and gold remained. In this way he worked the full 1500 feet and recovered between $800. and $2600. in gold each year. This was much more than it cost him to live.

From here I walked down to the dredge camp calling on the other miners down the creek. They seemed to follow much the same lives as Bungate but did not have things as well organized.

Some years later I said to Mr. Jeckell "Of all the old time prospectors and miners H.A.R. Stewart is the pick". He agreed. Mr. Stewart had come to the Yukon before the Klondike rush and with hard, shrewd work had earned enough to raise a family, build a nice home for them near Seattle and have them well educated. He kept on mining and prospecting almost to the end of his days. I was so pleased when his son Gordon Stewart called on me in my office at Ottawa about 1960.

I called on an old timer, John Paul Miller who was mining on a bench on the left limit of the Sixtymile near where Miller Creek enters the Sixtymile valley. He had obtained a lot of old bones including the front half of the lower jaw of a male horse which must have been of considerable age. He showed it in his hand and I drew a sketch of it but he would not let me touch it nor would he sell it.

On August 8th Mr. Jeckell and I returned to Dawson, the drive taking three and a half hours for the 60 miles of road. This road follows the summits of the ridges and the views are magnificent. The following two days I hired a car and visited the Y.C.G.C. office at Bear Creek and then the dredges on Upper and Lower Dominion Creek. On Lower Dominion I had lunch at Taddie's roadhouse at Granville and enjoyed Miss Gertrude Melhause's sumptuous cooking. This was a spacious roadhouse, bar, large sitting room with billiard and pool tables, dining room and all. Taddie had cows and at the meals there were bowls of fresh cream and all sorts of delicacies which Miss Melhause had cooked. It was a regular place for weekend parties for the residents of the Klondike. I drove on up Sulphur Creek and over the summit and down into Quartz Creek to visit the operations I had not seen before and back to Dawson.

The Casca took me up river on August 12th and I landed the next evening at Selkirk. The following morning, the 14th, I launched my canoe, loaded it with the supplies Bill had ordered and mail as well as ample gas and oil. A small crowd had gathered on the top of the bank to watch me loading the supplies. Among them was the Anglican Bishop and a young curate who was to be stationed at Selkirk. They all knew this was my first trip up the Pelly. When I said "goodbye", the Bishop said "I wish I was coming with you", but the curate said, "Goodbye", as though this was the last he would see of me alive and was already thinking of the funeral service he was going to have to read when he

*Old Pelly Crossing Roadhouse; 1933. Left to right: W.H. Miller, Cyril H. Smith, Clarence C. Sherlock (cook), James V. White (packer), J.R. Johnston, H.S. Bostock (113148)*

*Roadhouse in 1933 (202083 I,L)*

buried me. It was certain that he was unsuited for such a posting and so time proved. I went up to the old Pelly Crossing. I was off the next morning, stopped at the Pelly Farm and finally reached Pelly Crossing where the bridge is now, in seven hours, camping on the south side.

In the morning I walked south along the road towards Minto looking for the survey party. The only people I saw were Dan Van Bibber, who was in his teens, and his younger brothers cutting hay with a scythe on a meadow by the road for their dog stables at the Van Bibber home at Mica Creek. They knew nothing of the party and there were no horse tracks along the road.

The next morning taking the loaded canoe I went up to the foot of the Granite Canyon but seeing no sign turned back as they could be no farther east. Going down the river I found the party just putting up camp about a mile above Mica Creek.

The next few days John and I traversed. The party then moved south along the road and after a day returned to Pelly Crossing where we camped on the north side in front of the log roadhouse. Mrs. Schaffer had run the establishment at the Old Pelly Crossing below the Pelly Farm and when that route was abandoned she moved to the new Crossing below Mica Creek.

On August 24th I took Cy and Jim down to the Pelly Farm where they had left their canoe and then picked up more supplies and mail from Selkirk. They returned up the Pelly that day and I put up camp at the Old Crossing preparatory for the arrival of Violet and my sister, Nan who were to come down on the Casca the next afternoon. However, when I went to Selkirk to meet the steamboat it was late and I slept on the counter in Taylor and Drury's store till it arrived at 5:00 a.m. Bill Bamford, the purser had given the girls coffee and something to eat. We waited for the mail and then went up to the Old Crossing where we all had breakfast and I took the tents down, packed the canoe and we were off, starting up the river at 9:40 a.m. We reached camp at Pelly Crossing at 7:35 p.m. having had a rest after lunch on the way. The cranes were flying south now every day and some landed on a bar in the river about half a mile below the crossing for the night.

The following few days were taken easy by everyone. John and I did some traverses and brought the manuscript up to date. On August 31st we moved camp, going north up the winter road and turning west at the Willow Creek bridge to a fork of Grayling Creek. The weather now became unsettled and the topographers could not complete their triangulation station the first day. The second night it turned cold, down to 20°F and snowed, about four inches, but cleared in the morning. However, the girls were prepared for it but it was too snowy for walking and too cold for sketching.

On September 3rd, we moved back to the Pelly Crossing and the following day I took Violet and Nan down the Pelly to Selkirk, while the topographers with John moved east to the Granite Canyon. At Selkirk we hoped for a steamboat up the main river the next day but none came until the Whitehorse arrived about 8:30 p.m. on September 7th, and the girls boarded it for the leisurely fall trip up river.

On this trip Kid Marion, a famous river character of the Yukon was pilot with Captain Malcolm Campbell, Master. The saying was prevalent that there were two great liars in the Yukon and that Kid Marion was both of them. He certainly loved to pull people's legs and kept the ladies on board entertained with tricks and yarns which they enjoyed immensely. He had entered the Yukon at the age of 19 as a dog driver for the R.C.M.P. in 1898 and came from the Mackenzie River country being part Indian.

One of the best stories I remember of Kid Marion which illustrates his quick wit he told me himself. On one trip up river there was a group of American school teachers on board. Before they met him they had been warned not to believe any of his stories and they refused to believe anything he said at all, though he said he kept strictly to the truth. However, they had a couple of days to wait in Whitehorse for the coast boat. During this time Kid Marion joined them on an excursion to Miles Canyon. While standing on the foot bridge over the chasm, one of them said "Ain't nature grand cutting out this great canyon". "Nothing of the kind" said Kid Marion, "It cost the Canadian Government $3,000,000. to blast this out to let the boats go down the river for the gold rush in 1898". Of all the things he had told them they believed this as they could not imagine that anyone could think of such a story on the spur of the moment.

I left Selkirk to go back up the Pelly at 7:30 on the morning of the 8th, hoping to catch up to the others. About 800 pounds of supplies and gas and oil were in the canoe. At Bradens Canyon my motor died away and then failed completely. The next day was spent trying to find out what was wrong with it and to make it go but no success. Johnny Tomtom and some other Indians came along in their gas river boat and he asked if they could help me but I still thought I could fix the motor. The following morning I tried walking up to the Crossing but not knowing the trail got on so slowly I gave up and returned to where I left the canoe, having decided to line it up to the Crossing.

Lining was something I had only heard a few stories about. However, I set out on the morning of the 11th with the canoe on a fixed sling. With this I pulled one end of the long tow line and the other end was divided close to the canoe with a short piece of line tied to the bow and a longer piece fastened near the stern. The fixed sling worked well where the shore was even but with it the canoe was unmanouverable along the irregular shore which is the rule when the Pelly is low. I then tried an adjustable sling, using all the cord I could find, I tied one end to the bow and fastened the other end near the stern. Then passing the part of the line running to the bow over my shoulder away from the river, across my chest and under my other arm I could lengthen or shorten either end making the canoe float out from the bank or come in with the current as I wished. The only trouble was that I should have had a couple of hundred feet more line. However, with this arrangement I got on much better. The trouble was that in many places the shelving shore of coarse gravel formed a succession of deep holes with spits extending downstream on the outer side. The holes were too deep for me to wade and the spits so long that I could not manouver the canoe outside them with the short line I had. It was necessary to pull the canoe into each hole or bay and then float it down below the end of the spit which generally required wading in the icy water. The shelving shore changed to a steep and in places overhanging bank at every bend so that it was necessary to pole and paddle the canoe across the river to the shelving shore on the other side. In some places I was carried a distance downstream before I succeeded in reaching the far side.

However, I gradually learnt to make better progress

and by 2:00 p.m. I had reached Gull Rocks about halfway to the Crossing. The Indians were camped just below the rocks cutting dry logs in a burn for a wood raft to take to Dawson. From here I got on well until I reached the bend below the Crossing where the high cutbank stands on the south side. During the last two days there had been a high cloud bank to the southwest which now had begun to move slowly northeast and the sky which had been sunny now clouded over and a cold, steady rain started about 4:00 p.m. There was an island and a long bar in the middle of the river in this bend and it was impossible to line along either bank. The shore was too steep and narrow under the cutbank and sweepers hung over the water on the other bank. I managed to get to the foot of the bar and reach its upper end which like all bars deepened gradually upstream. From the head of the bar it was essential to reach the shelving shore on the north side above the sweepers. On both sides of the island the current was much too swfit for me to paddle or pole the heavy canoe against. Holding the bow of the canoe I waded upstream along the deepening point at the head of the bar until I could no longer hold my own against the current. I pushed the canoe up in front of me as hard as I could and crawled in over the cut-off stern. My legs were so cold I could hardly manage it but got in and paddled desperately across the channel just reaching the shore in time to seize a willow branch at the top of the first sweepers. This was the last and most perilous crossing of the day and now there was the two and a half miles of fairly even shore up to the Crossing.

It was almost dark now and I was soaking wet all over with the rain and wading. The sense of solitude with the lapping of the water around the canoe and the patter of the rain was added to now by the voice of wilderness. The Van Bibbers had a wolf bitch that they wished to breed as it was said that dogs with wolf blood in them paced instead of trotting in the snow and so pulled a load more evenly. Every minute or so her howl rose in the distance at Mica Creek about two miles away in a long wailing, mournful and infinitely lonely cry. Wolves answered her from all directions. I had had no idea there were so many wolves in this part of the area.

The shore was fairly uniform and I trudged along well until about 100 yards below our campsite at the Crossing where a long dark shadow appeared stretching out into the river. At first in the darkness I could not imagine what it was but in a few steps had reached it, a large wood raft some Indians had moored there. It took me about 20 minutes to get the canoe around it and its long stern and bow sweeps that stuck out from each end about 20 feet. The lower end of the raft projected out into the river and the water was swift and too deep to wade except at the head. When I got on to it in the darkness, the lines kept catching on the sweeps. Finally I got past it. Pulled the canoe up on the shore as far as I could, pitched my 7 x 7 wedge tent, threw in my eiderdown, ate a can of cold pork and beans and pulling off my wet things went to sleep.

It was 11:00 the next morning when I woke and it was still raining. I went to see that the canoe and things in it were alright and bail out the rainwater. Then I walked along the bank to where the surplus equipment of the party had been put on the old cache. There was an empty gas case, a wooden box. On it was written in timber crayon "Where the hell are you. September 11th came down for you 1:00 p.m. Two more stations. No grub. Camp above Pelly Canyon. Cy". It was too late to try to find the party that day and I still felt exhausted. A cold drizzle continued off and on all day.

Early the next morning I made up a pack of food and my eiderdown and started to follow the horse tracks in the drizzle which turned to snow up on the high terrace. above the river flat. The hills around were completely hidden by cloud. The trail was no longer discernible in the snow when I reached the place where it left the top of the terraces at the end of the reach beyond the heart bend. I struck across the higher forested ground towards the upper part of the Granite Canyon. Full of confidence I kept on across through the brush. After I had been going about half an hour the snow stopped and the clouds began to rise. To my surprise I suddenly saw the lower part of Ptarmigan Mountain on my left. I took out my compass and realized that in the brush I had turned around 180°. Taking what I thought was the right compass bearing I followed a new line with the mountain on my right as it should have been. After about half a mile I climbed a low terrace and there on the bare ground under a big spruce was the trail with the horse tracks. The sun came out now and the snow began to melt.

About 4:00 o'clock I crossed the creek draining Diamain Lake and climbed up onto the high terrace on the far side where I could see over a great expanse of valley above the canyon. I sat down to look and listen. Not a wisp of smoke, not a horse bell, not a sound, nothing. After searching for a few minutes I gave the usual call and was delighted to hear an answer from Bill about half a mile away below me in the trees on the river flat. I was soon with him. His natural question was "What the hell have you been doing?". As the party had nothing to eat he was out shooting rabbits which were plentiful everywhere that year. Camp was below the big cutbank which stands on the north side of the pronounced bend in the river about five miles from the border of the map.

The next morning Cy and John went down in the topographers' canoe and brought the grub up. They had examined my motor and found the condenser and coil had given out. I hunted up the Pelly a mile or two. Hearing a noise near the river I found a wild-eyed looking man who said his name was Hodder putting up a cabin. I didn't like his looks at all. He was "bushed". More of him in 1935.

September 15th John and I traversed together on the south side of the river. The scenery and colours were superb and it was a glorious crisp fall day. The mountains to the northewast were covered on top with fresh snow but the lower levels were bare. Below the white snow was about 500 feet of slopes covered by dwarf birch, all lovely coppery reds and oranges with splashes here and there of golden yellow where willows followed watercourses down into the deep blue and purple of the alpine fir and spruce below. The whole effect was one of superb landscaping, not the jumbled mass of colour of the eastern hardwood forest.

The topographers got one of their stations done and in the evening we moved a light camp in the canoe to the mouth of Macmillan River. Jim cooked breakfast. The final triangulation station was in the Macmillan Range that had a fine all around view but it was several miles outside the map area. As Bill and Cy reached the top a beautiful black fox trotted off in the snow. John and I went up there too and five or more bull moose showing clearly in the snow could be

seen on the different spurs of the mountain. On our way down we thought we would have a close look at one of the moose. It was standing in the open among the fallen timber of an old burn. When we reached the spot we could not see it and were just starting on down when looking around us we saw it about 15 yards away sneaking silently behind us. Its nose was stretched straight forward and its ears were back giving it a ridiculous, self-conscious expression. John had a .45 automatic with him and fired four shots over it to see if it would run but it did not pay the slightest attention.

When we had all returned to the canoe we went back to Clarence at the main camp. The following day Bill, Cy and I went down the river in the canoe through Granite Canyon while the others with horses returned to Pelly Crossing by the trail. In going down the canyon Cy was running the motor and Bill drew his attention to something on the river bank. In a moment we were carried sideways by the current against a great boulder and it looked as though the canoe would be broken against it but Cy with his quick mind spun the motor around and drew the canoe backwards off the rock. On the 18th we moved to Caribou Creek below Bradens Canyon where John and I put in the day traversing and the topographers occupied their last station of the season. The topographic fieldwork of the Carmacks map was now finished. From here we moved to the Pelly Farm where the horses were turned over to George Fairclough, the owner to winter at $60.00 each. The equipment was stored in the old log cabin of the original homestead at the west end of the cleared land. It had to be hung from the rafters or put up on racks at least four feet above the floor as the cabin was subject to flooding some springs when the ice jammed at Victoria Rock below Selkirk.

On September 23rd we all went over to Selkirk. Here Bill and I lodged in Taylor and Drury's store. The others went straight off on their long journey to Whitehorse in the one canoe. With fine weather, the experience of last year and nothing going wrong with the motor they had a good journey, except for one incident between Upper Laberge and Whitehorse. It had been clear and calm coming up the lake in the night but bitterly cold. They met Cam Smith with the Loon going up to Whitehorse too. He invited them on board saying he would tow the canoe and they could keep warm and cook by the stove in the deckhouse. The invitation was accepted with alacrity.

The canoe was tied with a tow rope about two feet long so that it would ride the first roll of the stern waves of the Loon. After they had been going up river for some time Cy thought he had better look at the canoe to see it was towing safely. The load in the canoe was always covered by tarpaulins lashed down by light rope but part of the front tarpaulin had blown back. Cy thought he would tuck it in and putting one hand on the bow he leaned over it. The tow rope broke. The canoe swung sideways, capsized in the rolls and Cy went in the river. The Loon went gaily on, Cy's shouts drowned by the motor. Cy managed to crawl up on the bottom of the canoe. Fortunately this happened on a long straight reach of the river and before the Loon disappeared around the next bend one of the party who was in the pilot house looking back remarked that he had not seen the man on the raft drifting away down the river when they passed him. Cam said, "We didn't pass anyone". They looked down and the canoe was gone. They were soon back alongside Cy and the canoe which was slowly sinking as the air escaped from it. The problem was then to turn it over and empty the water from it. To help do this Cy got back swimming in the icy water before he went inside to warm up. Nothing was lost out of the canoe except the gas lantern. Luckily my motor which had been carried as a spare loose in the bow was caught across one of the thwarts.

The day after the canoe party had left I traversed southeast of Selkirk and the day after Bill and I boarded the Whitehorse for the delightful, leisurely, carefree trip up the main river. Going upstream in the fall the steamboats nearly always pushed barges and their speed along many reaches of the river was barely three miles per hour. There was a stop for about an hour or more every 24 hours or so to load wood which they burned at the rate of about 1 cord per hour. If the weather was clear and frosty they were often tied up in places for much of the night and following morning on account of fog. The food was good and we had virtually four full, leisurely meals a day including late supper in the evening. There were no radios to disturb. It was solid comfort even if the cabins were a bit cold. Many hours were spent in the pilot house listening to the yarns of the captain or pilot. No one was allowed in the pilot house going downstream as with the boat travelling much faster steering required the full attention of the pilot.

We all caught the C.P.R. boat at Skagway as usual about October 1st and I returned homeward to Ottawa picking up Violet and Hewitt at Monte Creek on the way.

## Section IV: 1934, Carmacks and northeastern Laberge areas

This year, 1934, my instructions were to finish the Carmacks map and fill in the northeastern corner of the Laberge maps which had been left in 1931, besides doing the usual mineral industry work. Bill's instructions were to start the Ogilvie map, and then join me in finishing the Laberge map. For this we arranged some exchanges during the season between us of the packtrain and canoes.

Violet and I closed our house on Echo Drive and taking Hewitt went to Nelson where I left them to spend the first part of the summer before following me to Monte Creek to stay for the remainder. From there I went on to Vancouver where the parties gathered on the evening of May 31st at the C.P.R. wharf in Vancouver and left that night on the Princess Norah.

Jack E. Armstrong was my assistant and Bill Miller had Cy H. Smith, and Henry A.S. West again who was with him in 1932. Jim White was packer and his son, Jimmy White, 19, was assistant packer and was to cook for Jack and me when we were separated from the topographers. Fred Bacon was cook. So it was a strong happy party of eight altogether.

We arrived in Whitehorse on the afternoon of June 4th and left in the two canoes Bartlett had had after supper the next day, reaching Scow Point a little after midnight. We went out into Lake Laberge by the slough on the left limit, passed Lower Laberge just after 5:00 in the morning and camped two miles down the Thirtymile. The 8th was spent at Little Salmon as it was pouring with rain. The following day we ran on down to a very choice camp site on the right limit near McCabe Creek. We arrived at the Pelly Farm the day after still in wet weather and spent a day getting the horses shod and organized.

The topographers had completed the Carmacks area last year and Bill had plotted it in the winter. As a result I now had a base map to use in filling in the holes left in the geology.

As it turned out last winter that Bill's infrared pictures were far better than the orthochromatic and he had brought only Ilford infrared plates. In fact the whole Topographic Division of the Geological Survey had now gone to infrared. When the plates for the summer, amounting some hundreds of gross had been ordered from Ilford in England no answer was received. Instead one of the Ilford staff arrived in Ottawa. He wanted to know what the plates were wanted for as he said Ilford had no idea that infrared photography had any practical value. They regarded infrared as a play thing for amateurs. However, the plates were produced in time for the field work. With the passing of the next few seasons and suggestions from the various topographers plates which retained the haze penetration of the infrared and at the same time showed the distance were developed. The fault of the original infrared was that the near and distant features showed with the same clearness and were hard to distinguish from each other.

The day we arrived at the farm Bill came over to my tent just before supper and said "I've just been watching a genius. Fred only got his stove going an hour ago and now he has cakes, tarts, pies, vegetables, meat and gravy ready together all cooked on that wretched little stove for the eight of us.". Fred was indeed a wonderful cook. One of an East Anglian family of 24 children, his father having married twice. Fred was one of seven sons of his father's second wife. They had all been trained to be cooks from their youth and as far as Fred knew his ancestors had always been cooks. We lived like kings on Fred's cooking and when the expenses were gone over in the fall in Ottawa it was found he had cut the cost of feeding us from $0.97 per man per day to $0.64 per man per day.

Our first move was with the topographers to the northwest along the old Scroggie Crossing winter horse stage road to Dawson to where the first roadhouse, the Lansing Roadhouse, had once been, at the first creek crossing about 10 miles from the Pelly. Jack and I filled in the northwest corner of the Carmacks map area and the topographers spread their triangulation towards the Ogilvie map area.

This move along the Scroggie road that led ultimately to Dawson was an introduction to the old winter horse stage roads between Old Pelly Crossing and the Klondike, nearly every mile of which we saw in the summers 1935 to 1937. They included two main routes with many branches. The first of road, constructed in 1902, was the Rosebud road that crossed the Stewart River above Rosebud Creek. The Scroggie Road, crossing above the creek of that name, was the second and was built about 1912 after mining had begun on Scroggie, Black Hills and neighbouring creeks. The Rosebud road followed a relatively direct route to Granville on Dominion Creek, up hill and down dale over six summits, two of which were higher than 2800 feet a.s.l. between the Pelly and Stewart rivers as well as being located for much of its way on northerly, shady slopes where the depth to permafrost was shallow and the ground poor. The Scroggie road which superseded the Rosebud road as soon as it was built had only one marked climb between the two rivers, that over the Jane Creek summit, 2700 feet a.s.l. It was well located on sunny slopes and where the drainage was good. Both roads had well equipped roadhouse establishments at intervals of 10 to 15 miles or so. The notable features along them will be mentioned as they are met with.

One day Cy was traversing the old road with his small planetable. Where he was set up there were some noises on among the trees, so after the work at the point was finished he picked up his tripod with the planetable on it and pushed through the bush. Coming out into a small open space around a large pine tree he was confronted by a black bear who charged him while her cubs climbed the tree. There was nothing Cy could do but face the bear with the points of his tripod legs which he held like a rifle and bayonet standing motionless. The bear stopped about three feet short of the three shining iron points. There they faced each other, the bear snarling at him for about a minute. Then she slowly backed to the tree which the cubs were now up. Cy slowly backed away keeping his tripod pointed at the bear.

On June 18th Jim, Jack, Jimmy and I with some of the horses returned to the Farm. Jim and I fetched mail and sundry supplies from Selkirk and he returned to the topographers with the horses carrying the things they needed. The following day the remaining three of us went up the Pelly in one canoe and camped below Grayling Creek on the flat just upstream from the high cut bank above Braden's Canyon. My parties used this campsite for many years moving from and to the Pelly Farm. A large flat had been cleared at some time.

Traversing here Jack and I saw a single caribou track in many places and on returning to camp there it was right opposite across the river presenting an easy shot. We needed it. I was just reaching my tent to get my rifle when Jimmy saw it and called out "Look! There's a caribou" and away it went. This was his lesson to keep quiet when meat was needed.

On the 22nd we moved up to the foot of Granite Canyon and camped on the left limit on a campsite used by so many of those who traversed the Pelly as well as our parties in later years. High water this year was no more than low water last year. This made the river a little slower to travel up as one had to be more careful of rock and bars. After traversing over Ptarmigan Mountain we moved to two or three miles above the camp we had had last fall above the canyon. Going up the canyon on the left limit opposite the Needlerock we saw two saddleback rams. These were the first sheep I had seen at close range in the Yukon. It turned out that these two, a large ram and a smaller one had wandered over a large area. In August we saw their tracks on the road to Leger Lake and they were seen on the lava cliffs below the Pelly Farm.

We filled in the blank areas above the canyon and moved back down river to the long reach above the heart bend. Here we traversed on both sides of the river including one day up Mica Creek to the coal mine. We had seen coal float in the glacial till on Ptarmigan Mountain and here there are a lot of fragments of coal but no seam or bedrock was found in the old prospecting tunnel. The source of this coal is still uncertain.

From this camp we moved down again to our Braden's Canyon camp which was a nice cool campsite in the evenings. The weather was very hot and at 8:00 p.m. the sun was still scorching down on most of the campsites but here there was always a cool breeze flowing down over camp from the gap in the hills to the north in the evenings.

July 1st Jack and I traversed on the south side of the river. It was smoky and we knew there were fires

near but when we reached a high point we saw the danger of a fire cutting us off from the river and we hurriedly returned. The 3rd was wet, dampened the fires and cleared the air. It was taken as Sunday and much needed.

On the fifth we went down to Selkirk, bought some supplies, got mail and went up the main river to camp on the southwest side at Hellsgate, opposite the lower Ingersoll Islands. This day the generally fine weather departed at noon with heavy hail and rain that poured down until 9:00 in the evening. Finishing our traverses here we moved to camp about half a mile up Big Creek running the canoe up with lots of water.

The origin of the name of this stream which was missed by Ogilvie in his traverse down the river because its mouth is concealed by an island from the main channel, was given to us by Mr. McMartin, the postmaster at Selkirk. McMartin obtained his discharge from the Yukon Field Force in the area and took up a place at the mouth of Big Creek to farm and settle. One day he asked an Indian what the creek was called. The Indian said "Oh! Big! Creek" meaning it was a river but McMartin thought the Indian meant that "Big" was the name of the stream and registered his land as being at the mouth of Big Creek which the stream has known by ever since. McMartin only found out what the Indian had been inferred sometime afterwards.

On July 10th it rained again and then snowed all night right down to the river level. The following day was foggy and on the lower 500 feet the snow melted but remained about six inches deep above that for several days. When we left Big Creek the water had dropped so much that we had to line the canoe down empty and carry all the camp equipment to it about a quarter of a mile.

We ran down the river and met the topographers with the horses at the Pelly Farm and exchanged the canoe for them on July 11th. The next day, Jim now being with us, we crossed the horses to Selkirk and camped half a mile above the settlement. The topographers went down the Yukon using both canoes to work in the southwest corner of the Ogilvie map area from the rivers until the third week of August.

Now my party included Jack, Jim and Jimmy with the horses. We worked across the headwaters of Dark Creek and over into Big Creek below the wind gap to Hayes Creek. Jack and I traversed both sides of Big Creek while Jim and Jimmy moved camp down the valley.

We had no meat but saw a number of moose and two or three small bunches of caribou without having any chance to get any. When the wind blew from the southwest on a hot day we could smell the caribou herds on the other side of the Dawson Range some 10 to 15 miles away. The same day when traversing I came upon the remains of a moose calf recently killed by wolves. The tracks showed they had pursued a cow and calf across the creek where the water was about 18 inches deep. The cow had got up the bank out of the creek but the calf had been pulled down in trying to follow her. Jim saw a moose lick as the pack train was moving down the valley and as we camped only a few miles from it and needed meat badly he decided to go back after supper and get a moose.

Jim and I set out together after supper. He went two or three miles farther on the lick while I stopped where the trail overlooked a wide expanse of the largely open valley floor. The whole creek course was visible for a mile or more each way except where scattered groves of spruce hid it. The silence and stillness were intense. The valley seemed lifeless. After a short time, a big black wolf went across the flat to the west of me to feed on the calf carcass and then trotted over to sniff along Jim's track. Later to the east somewhere the footfalls of a moose walking slowly along a gravel bar were clearly audible but it remained invisible hidden by the tall spruces along the creek bank. I watched for sometime hoping to see it in the open and then went back to camp. About 11:00 p.m. Jim came back with the liver of a moose he had shot in the lick but on the way back he had passed several moose feeding much closer to camp. They let him go by within a short distance without taking any notice. In the morning Jim and Jimmy fetched the meat.

We moved on the 24th from Big Creek to Seymour Creek traversing as we went and then visited the claims that were being prospected around Freegold Mountain. It was good to see so many capable prospectors most of whom I had met in the last two years. A number of the original veins had been traced in length and several new veins had been discovered.

From here we moved north and on August 1st, when we were camped for "Sunday" on the creek west of Hoochekoo Creek, Joe Hosfall who had a ranch on the north side of the Yukon below Selkirk came into camp with two brothers names Dupont. Hosfall was guiding them to Freegold and had got off the route. They had already been three days and were running out of grub. We gave them some food and set them off in the right direction the next morning. Hosfall had a reputation for getting lost and loosing his dog packs on trips, two of which John Johnston found in 1932.

We worked back to Selkirk now. Traversing alone up Dark Creek a storm with a great deal of lightning came on. It began following me up the creek striking nearer and nearer. Suddenly a tree was struck about 100 yards away and before I could see a good place to go it had struck again about 100 yards ahead of me and continued up the creek but it was quite frightening. Then half an hour later back it came again along the same course. This time I lay down in the open when it got near and again there were strikes close on each side of me.

We reached Selkirk on August 5 and three days were spent in getting supplies, repacking and reshoeing the horses. On the 8th the Klondike arrived at 8:00 p.m. and took us across with the horses on the Lewes River to Blanchette's wood camp at Deadman's Slough about opposite the mouth of Wolverine Creek. We moved from here to the south end of Von Wilczek's Lakes and working eastward covered the country to Towhata Lake. Willows were already growing up again in the ground burnt over while we were on the Pelly at the end of June and some moose were cropping them.

Legar Lake was full of fish and the water was quite warm and crawling with insects. The fish we caught were full of parasites. Southeast of this lake Jack did his first really long traverse alone. He tallied 21 miles, i.e. 10 miles out and 10 back. He was in by 5:00 p.m. The weather was scorching hot again as it had been in June and we were glad to return to the river at Minto.

On August the 14th the pack train with Jim, Jack and Jimmy set out across country for Big Salmon 80 miles away in a straight line. They started this journey on the 14th and travelled along the winter road

as far as Yukon Crossing. From there they went up Tachun River, on past Frenchman's Lake to Little Salmon and then through the hills to Big Salmon which they reached on the 21st. I have never heard of horses being taken before on this route. I boarded with Mrs. Joe Hosfall, pitching my wedge tent on the river bank. I washed, repaired my clothes, and worked on the map. On the 16th more rain. I packed and boarded the Casca for Dawson.

The next four days were spent in collecting all the information I could for the Mining Industry Report but the first day being the 17th, Discovery Day, gave a poor start. Everyone was celebrating. However, I was invited in by Judge and Mrs. Macaulay. The Judge told me of some of the cases he had tried, notably that of the manager of the bank in Mayo a few years before.

When the Treadwell Yukon Company became established on Keno and Galena Hills the manager, Mr. Livingston Wernecke paid large prices, amounting in some cases to as much as $100,000. and more to prospectors for single silver-lead claims. Most of these men continued to live in the mining camp and prospect. It was their life. Their money was put in their bank accounts at Mayo and they seldom called in to check their balances. The manager of the bank was popular in the community. In the late twenties he speculated in stocks buying on margin. When the stock market crash came, in order not to be sold short, he drew funds from some of the prospectors' accounts to bolster his stocks thinking he could repay them before it was discovered. In the summer when the bank inspectors visited Mayo all seemed in order but it happened that one of the prospectors came into the bank. An inspector asked him how much he had in his account. The prospector had his account book with him showing a balance of more than $100,000. but the inspector found the amount was much smaller. A large cheque had been drawn on the account of which the prospector knew nothing. Examination of other accounts showed a similar situation and the trouble was traced to the manager. The bank accused him of taking the money. The lawyer for the defence, knowing the manager was well liked in Mayo was able to have the trial held there whereas it would normally would have been held in Dawson. After great difficulty an eight man jury was sworn in. The case was cut and dried. The evidence was overwhelming. However, the Judge knowing that the jury was not versed in legal matters summed the case up at length and pointed out that the bank was responsible for the money and that in any case the money taken would be paid back by the bank to the account holders. The jury retired and was back in twenty minutes with a verdict of "Not guilty". The case was decided and the accused declared innocent.

The next day the Judge met the foreman of the jury on the street and asked him how they had ever come to such a verdict. "Well Judge" said the foreman, "we were going to have the verdict "Guilty" until you told us that the bank was responsible for the money and would make the amounts taken good to the account owners. After that we weren't going to send anyone to jail for just stealing from a bank".

The people of the Yukon in those days could be loosely divided into four groups. There were the Klondikers who lived in that district, and Dawson and also up the Sixtymile. They gloried in the stories of the gold rush and the boom days of the district. Many were old timers of the years around 1898 and had spent their lives on their placer claims or in Dawson. Most knew very little of the territory as a whole. A large proportion were bachelors but some had families growing up. Their livelihoods were generally dependent directly or indirectly on placer mining, the government or various services in the district.

The people in the Mayo district included a number of old timers but were largely younger and supported in some way by the silver-lead prospecting, mining and trapping but there were also a few placer miners. These people travelled more and had seen something of the Yukon.

In Whitehorse the people worked in one way or another in service, supply, transportation and government for the territory. The merchants were well informed of the people and settlements of the territory.

The fourth group may be called "the river people". They lived in the small settlements along the rivers or alone. A larger proportion were married. They made their lives by cutting wood for the steamboats or for Dawson, trapping, prospecting, guiding hunting parties and running the telegraph line. They were usually younger than the Klondikers and generally well versed about the Yukon. This classification ignores the scattered population in other areas such as Kluane Lake but they could generally be grouped with the river people.

At Dawson there were two banks, Mr. Finlayson's Bank and the Bank of Commerce of which Mr. Gisborne was manager. Mr. Finlayson and a partner had come to Dawson in 1898 and started a branch of the Bank of British North America which was later taken over by the Bank of Montreal but in the early thirties it was still generally referred to as Mr. Finlayson's Bank, such was his character. He invited me with several others to supper which was a four course meal with wines and liqueurs all served by a Japanese butler in real decor. He was a bachelor and lived in style and dressed immaculately. The dinner gave me an inkling of the grandeur of Dawson that was.

August 21st I left Dawson on the Klondike at 4:00 p.m. and at 5:00 a.m. on the 23rd heard the topographers getting on at Selkirk. We arrived at Big Salmon that evening and landed with the canoes, supplies and equipment. Jack and the Whites had arrived with the packtrain two days before having travelled steadily from Minto. The next day we sorted, packed and repaired. The day after, the 26th, we set out to finish the northeast of the Laberge map sheet. The packtrain with Bill, Fred, Jim and Jimmy followed the north bank of the Big Salmon to the mouth of the North Fork. Cy, Henry and Jack brought a canoe up. On this trip again we had no base map. I traversed along the base of the hills to the northeast and then turned south towards the river across the sandy, kettle hole pitted surface of the high terrace of drift crossing Illusion and Headless creeks. Finally I came out on the top of the high cutbank as the golden sunset was fading in the cloudless sky. The horse tracks were at my feet and a mile or more down the river a speck breaking the orange reflection of the sky on the surface of the water was the canoe struggling up against the swift, shallow stream. I reached camp at the fork in about an hour and the others in the canoe arrived about an hour later in semidarkness. Hayes had said they could never get up in one day. This was the beginning of a wonderful and memorable four weeks trip.

A high cache was built at the mouth of the North Fork and our surplus supplies were stored on it. From here the full party of eight moved to the elbow of Illusion Creek, where we camped among pines, something we had done before. The weather was cold with a strong

wind blowing and as a result small holes were burnt in the tents by sparks from our pine wood fires which we were not accustomed to.

The weather was bad and though we completed our traversing around, we lost two days and if our food was to last we must have meat but there were no tracks of anything. On September the 3rd we moved over to Lokken Creek. Jack and I were now traversing alone all the time. On the move I climbed over the ridge to the north. As I went through an old burn I could hear the packtrain coming. Looking back down the mountain side I saw a bull moose standing with his back towards me, listening on an open spot about 250 feet below me and at least 250 yards to my right. It was a longer shot than I had ever attempted but had to be tried quickly as he too obviously heard the packtrain. Resting my rifle on a log I aimed well behind his right shoulder and fired. The moose dashed back into high willows behind him and disappeared. He could not go far without my seeing him sooner or later as the mountain slope was largely open. I waited but no moose appeared. Ready to shoot again I worked my way slowly down to where he had stood. When I got there his tracks were clear but no moose. Jim, Jimmy and Fred were coming up with the packtrain and Jim was shouting, "Where's the moose", but I could not see a sign of him until carefully tracking him a few yards among the willows I found him lying dead and then called to Jim, and the packtrain was soon up. There was great rejoicing at having meat. The bullet had hit the upper part of his back, splintered a rib and gone down through his diaphram severing the big arteries around his heart and cutting his wind pipe.

From the main stream of Lokken Creek we moved to high up on the fork on the south side of Solitary Mountain. All around there was an abundance of moose and in places along Lokken Creek their trails were worn down like stock trails. Jack was crawling upon a cow and calf to get a photo when Cy, sneaking along with the same objective and watching the cow, trod on Jack. The camp was at 4000 feet in a lovely alpine meadow and the flowers must be a sight there in July. All were in seed then. This area was in the second wet belt formed by the Big Salmon Range. The snowfall was fairly heavy as on the steep mountain sides there were small snow slide sweeps in the balsam timber as in the Purcells in British Columbia.

On September the 7th we moved camp to the lower part of Solitary Creek. I traversed south and east into the North Fork valley and up the creek to camp. Coming along a moose trail I was suddenly confronted by a large bull about 15 yards away to one side of the trail. He was slashing the brush with his horns, grunting and wandering along. I had my rifle as we could do with another moose but this was too far from camp. I just froze. He was going diagonally across my front and when he got my scent he gave a little start and snort but went on smashing the willow brush.

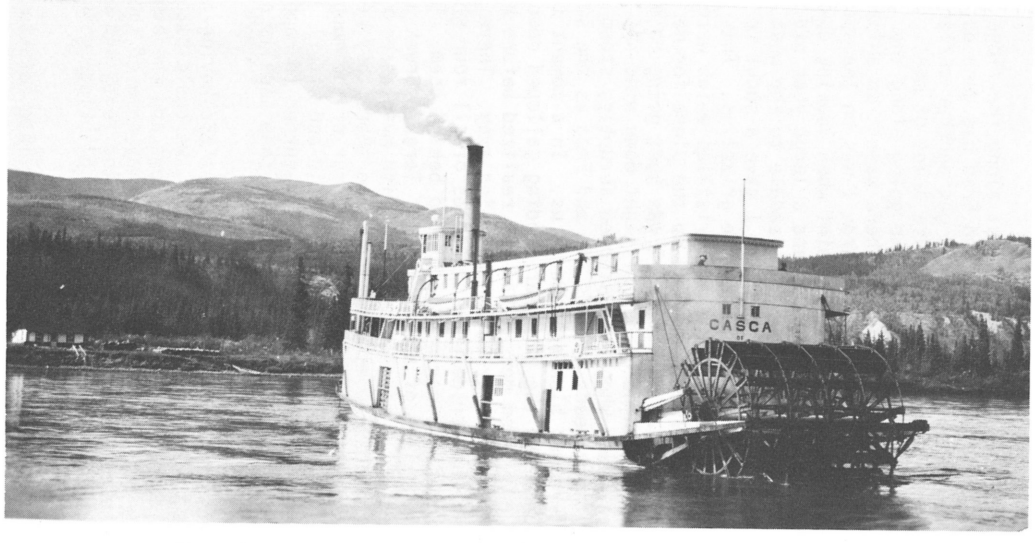
About a mile farther on I sat down on a small open promontory with trees behind me and a cliff in front to write my notes. There were a bull and a cow in the burn below me about 30 yards away. The bull was grunting and slashing the brush while the cow browsed. She was in very good shape, fat, sleek and in prime condition - very attractive. I tried immitating the bull's grunting. He pricked up his ears at once but the cow was suspicious and moved around to get my wind. At this moment I saw another large bull and two smaller ones standing listening in a small open place beyond some brush about 100 yards away. At the same time I heard a branch snap a few yards behind me. When the cow got my scent she moved off and the first bull stopped grunting and went with her. The other three continued standing. When I had finished my notes I went down across the burn towards them. Though I was out of sight in the brush, I heard one twig snap and a moment later coming out of the brush they were gone. If I had kept silent I might have seen a fight. Further on I saw another large bull but he had evidently been frightened by the packtrain as he was travelling. He had a fine but unusual spread of horns as he had great palms but hardly any brow prongs. I still had little idea where camp might really be so it was useless to shoot him.

We had a wet day in this camp and then the weather had cleared but turned cold again. We crossed the North Fork, which we could wade in places, and moved up to a camp at 4550 feet on the mountains on the south side, north of Rangifer Mountain. A number of caribou were seen at a distance by the party. Camp was again up in the balsams which make poor poles and whose wood is poor to burn giving less heat than spruce. It was windy and bitterly cold. Traversing over the mountain to the south Jack saw some moose and I saw some caribou at the head of Carlson Creek. We moved from here down into the North Fork valley and Jim and Jimmy with the horses fetched supplies from our cache at the mouth. From there we moved up D'Abbadie Creek to 3700 feet. There we had snow squalls and luckily Henry got a caribou.

My first traverse here was east along the ridge south of D'Abbadie Creek. Jim and Fred had gone out with a rifle to see if they could get another caribou as several had been seen and we ate a lot of meat. I met them on their way back to camp going along the ridge and they compal'ne that there wasn't an animal in the country. Shortly afterwards I was on the smooth, turf-covered summit of a high point when looking down I saw two grizzlies, a big one and a large year old cub. As I could see Jim and Fred in a saddle to the west making a fire to boil their billy I gave a shout to try to draw their attention to the grizzlies. This was the wrong thing to do. The two grizzlies which were about 300 feet below me started up the slope for me at full gallop. I had no rifle. I was just going to drop over the cliff behind me out of sight down wind and try to sneak away when they stopped abruptly, stood up and swung their heads towards Jim and Fred as the smoke of their fire was blowing towards us. In a moment they turned around and the big bear leading galloped down the slope away from me. I had not realized before how truly funny a big bear looks galloping away. There is a moment in the stride when the soles of all four great paws are showing clear of the ground behind them. They crossed the valley of a tributary of Teraktu Creek and disappeared but I happened to look with my glasses in that direction a few minutes later and there they were still going full tilt over the next spur of the mountain. The day was lovely but very cold and after reaching the edge of the map area I returned to camp. The following day continued cold with snow squalls and we stayed in camp.

On this trip being a party of eight and having two cook tents, 10 x 12 with 4 foot walls, we could pitch them end to end, one being the cook tent and the other the dining and stores tent. In this way some of the heat of the cook stove warmed the dining tent, and some evenings and days in we had two games of bridge going at the same time everyone playing.

From D'Abbadie Creek we moved over into Teraktu




*Fording the North Fork of the Big Salmon River, 1934 (77801)*

*Str. Casca at Big Salmon telegraph post. Loading GSC packhorses to return to Selkirk and the Pelly Ranch at end of 1934 season. (202085-E).*


*Str. Casca at Big Salmon (79647)*

Creek. The ground was now frozen solid. Going straight south I crossed the ridge where I had seen the grizzlies and then the creek and went to the summit of the pass through to the Big Salmon River. From there I climbed and travelled along the ridge to the southeast. There were only fox and wolverine tracks in the snow. Jack and I had seen great orange boulders of ultrabasic rocks scattered by the ice movement along the ridge north of Teraktu Creek so I was not surprised now to see standing just beyond the edge of the map area a high precipitous orange and red mountain of this rock.

The day was clear but very cold and I was late starting for camp. I came down into the next pass west to Teraktu Creek. There was a pond in the pass. I could not break the ice in it. Down the creek I followed a game trail and in the gathering darkness heard a large animal, probably a moose, go dashing past me through the trees. Some time later I found the horses in a small meadow in the creek bottom but could not find the camp or make out where it could be. The trail led up the mountain side through timber. I had no desire to sleep out on such a cold night. I groped my way through the trees on the lower side of the trail and found I was on a bluff with the creek below and there was camp right under the bluff. I was seldom so relieved. The tents were put up with poles and tied to trees but their sides where held down with rocks as the ground as too hard to drive pegs.

The following day was again clear and very cold. I traversed the ridge to the south and Jack to the north. At lunch beside a small cascading stream in the sun among the willows, the sunlight on the ice-coated golden yellow leaves where the branches lent over the water was a particularly entracing sight. On his way along his side that day as Jack approached an outcrop he saw that it was occupied by a grizzly and quietly made his way around it. Each of us saw several moose.

The following two days we moved back to the cache at the North Fork and then down to Big Salmon where we camped on the right limit of the Yukon a little above the Big Salmon River. Bill, Cy and I went down in the canoe. There was barely enough water to float us over some riffles. So ended this trip in a lovely piece of country but it was colder than any other period I experienced. Hayes told us that at Big Salmon when he recorded the temperature at 9:00 in the mornings it had never been above $4^{0}$F for the last two weeks. The following spring he told me that the weather remained cold but clear right on through October and we could have worked through that month.

On September 23rd Jim and Jimmy took the horses on board the Casca and down to Selkirk to winter at the Pelly Farm. They caught the Casca on its return journey and reached Whitehorse on October 1st. The rest of us worked with the canoes around Big Salmon until the morning of the 27th when Cy, Henry, Jack and Fred started for Whitehorse in the canoes. Bill and I caught the Klondike the next day. We were all in Whitehorse on October 1st. Jack counted the number of days he and Jimmy had pitched camp during the 120 days. It was 54 but the rest of us had missed a few by being separated.

We expected to leave Whitehorse the morning of October 2nd and to board the Princess Louise that night. However the Louise had been delayed coming up the coast by fog and we did not leave Whitehorse until the morning train of the 4th. This was the latest I ever left the Yukon. After supper on the Louise we gathered in the smoking room where Judge Macaulay arranged a game of bridge and drew Bill as a partner. Bill looked like a tramp in his dirty field clothes. The crowd gathered around to hear the Judge ball his partner out as this was the Judge's chief joy in playing bridge. Several hands were played and not a word from the Judge. Finally their opponents overbid their hands badly when both the Judge and Bill had fair hands. About half way through the hand the Judge took a trick and led an ace holding three more sure tricks in his hand. Bill trumped the ace and there was a gasp from the crowd. Not a word from the Judge. Bill took the rest of the tricks. After the playing was over I went to the front observation room. The Judge came in and sat beside me. He said "You know that man, Miller.". I said I did well. He went on "He's a good bridge player. When he sat down I took one look at his face and said to myself "There's a man I must never ball out". I agreed as I knew Bill would have come back like a flash.

There was a Dr. Hayes of Oklahoma who had been out big game hunting with Charlie Baxter, an outfitter who lived at Bear Creek on the old wagon road to Kluane. More of Charlie Baxter in 1935. He was interesting to talk to and we found he had an air mattress 48 x 30 inches which was handy, light and easy to blow up. Bill and I got these mattresses the following spring and mine lasted until the end of my field days. Previously Bill had had a large mattress that took him nearly as long to blow up as it took the rest of us to make bough beds. In making these beds we found it best to get large bushy boughs about 3 feet long then lay them crossing each other in a herring bone pattern with the small end to the head and middle and the butt ends out and toward the feet. In this way the soft twigs had a springy mattress of thicker parts under them that kept us off the damp cold ground. Also the twigs never became packed down and this plan also involved a minimum of work.

The night the Louise left Skagway she was again held up by fog for 12 hours and beyond Juneau again for another night. The purser asked all the passengers what connections they had to make. Soon after that we were told the boat would go into Ocean Falls and load 600 tons of paper and then to Butedale cannery to load 300 tons of fish and that we would be off schedule completely getting to Vancouver four days later still. This annoyed Bill who had made out all the pay cheques for his party and had to do it all over again. However, I hadn't made out Jack's. The visits to Ocean Falls paper mill where we were given a guided tour and also our casual visit to the Butedale were most interesting. We finally reached Vancouver on the morning of October 10th. I called on Cockfield and Nettell at the Survey office and took the C.P.R. train to Monte Creek in the evening and arrived on the morning of the 11th. The family were well and we left for Ottawa three days later.

We now had the field work of two map areas, Laberge and Carmacks, completed but many features on them needed names. In this regard we inquired of residents what names they used if any. Their names were often conflicting or confusing as ours were the first maps and they were unaccustomed to them. Old local names had preference including Indian names as when Mrs. Ira Van Bibber gave me the name of Diamain Lake, the suffix "main" meaning "body of water" in the local dialect as in Tatlmain Lake. When we had to find a name a good descriptive one had preference, then those of people who had a definite association with the feature in some way. A good example of the kind of problems that arose, came up over "D'Abbadie Creek", a name used in 1883 for the Big Salmon River by Fred Schwatka in 1883 (p. 189). There apparently being no generally

recognized name for this creek we thought it more fitting to resurrect this name for a tributary of the river rather than introduce a new one. The season after the Laberge map was issued I was in a cabin with three prospectors who had been up the Big Salmon and all of whom were expostulating on the introduction of a grand new obscure name but none of them knew the creek by the same name. One who had been there in 1922 used one name, another who had been there in the later 1920s used another name and a third who was there in 1912 called it by a third name. They were, however, satisfied by my explanation.

## CHAPTER 3: THE SEASONS, 1935 to 1937, THE OGILVIE AREA

### Section I: 1935, The lower Pelly and east part Ogilvie Area by canoe and packtrain.

In the winter of 1934-35 after rumours that the Geological Survey was to be drastically cut down if not abolished, the government of Prime Minister The Rt. Hon. R.B. Bennett late in the spring suddenly voted $1,000,000 to it with the idea that as many men as possible should be employed.

In suddenly introducing such a tremendous expansion in the field program great problems arose, the chief of which was the lack of qualified men as chiefs for the geological and topographical parties who could be enlisted from outside the Survey. On top of this were shortages of instruments and equipment. Things like Brunton compasses had to be obtained wherever possible. For instance I sold my own compass that I had had as a student at Wisconsin University to the Survey.

Dr. G.A. Young, Chief Geologist, called me into his office and told me to plan a geological program for the Yukon to use as many men as I could profitably. Time was short. Prospective party chiefs had to be written to at once. I was not to look for these among those who might be used in other parts of Canada. This limited the number of parties for the Yukon program.

I drew up a plan for three extra geological parties for exploration in the Yukon besides my own which was to continue the standard 4 mile mapping and study in the Ogilvie area. The three extra parties were to include one with horses to explore the country north of Kluane Lake and two with canoes one of which was to go up the Pelly River mapping on 8 miles to an inch by reconnaissance topography and geology as much country on each side of the river as they could by back packing as far as Hoole Canyon, the limit of navigation. Dawson's traverse of the Pelly River was to be used as a base. The other canoe party was to do the geology of R. Bartlett's topographical map made along the Teslin and Nisutlin rivers in 1931 and 1932. The Kluane party required a very experienced capable chief and no suitable man was available to take charge of it. John R. Johnston who had been my assistant from 1929 to 1933 and had three years experience along the rivers in the Yukon was the natural choice for chief of the Pelly party and Everett J. Lees fitted well for chief of the Teslin party.

Cyril H. Smith (Cy) was to take W.H. Miller's (Bill) place in the topographical mapping in the Yukon and my party was to work together with his as in former years on the Ogilvie map, which had been started last year. The number of assistants on all parties was doubled so that traversing would be in pairs.

After my field program was accepted and John and Everett had consented to work for the Survey for the summer in the field and the following winter on their reports in Ottawa the lists of instruments and equipment had to be handed in as well as estimates and letters of instruction.

Six canoes, three 20 foot and three 19 foot freighters, to be packed in pairs the smaller inside the larger to reduce freight charges, were ordered from the Peterborough factory. They answered that they had none in stock but thought they could make them in time to meet the deadline of May 30th at Vancouver when the C.P.R. boat left for Skagway. They were asked to ship the canoes on the C.P.R. express freight train that should reach Vancouver about May 28th. The same was the story for the six 9 h.p. Johnson Seahorse motors. They were in the process of being manufactured. The firms in Ottawa and Hull that made our tents also had not enough in stock for the Survey program. We settled for 9 x 9 foot wedge tents which had no side walls and ropes and as they required much less stitching than the standard wall tents they took less time to make. To my mind these 9 x 9 wedges proved the most suitable sleeping tents we ever had in the Yukon where we were continually moving and where good poles were nearly always available. One man could put them up easily by himself by pegging the four corners.

I reached Vancouver on May 28th. John, Everett and Cy were there as well as the other members of the parties. We went over the programs and looked up the express and freight. The motors had arrived but not the canoes. Finally on May 30th the express freight with the canoes arrived having come from Peterborough in nine days. For some reason, however, there was resistance to putting them on board the Princess Alice at all and we were leaving that night on board her. But finally after much argument they were joisted on to the top deck and lashed down, about the last freight taken on before sailing. If we had not got them on this boat we would have been delayed 10 days. The boat was crowded.

On board were Mr. and Mrs. Walter A. Wood of the American Geographic Society who were going to the Yukon for the first of many summers to explore the St. Elias Mountains.

We arrived in Whitehorse on Monday June 3rd and the next day we found that the tents as well as some fibre cases of equipment had not been put on the boat in Vancouver. It was too expensive to keep the Pelly and Teslin parties in the hotel with their cooks doing nothing but eat, so we bought what canvas tents we could find in Whitehorse and both parties camped by the river on Whiskey Flats, then a nice brushy and grassy area. It also proved a good place to give the parties some experience in putting up camp. Most of them were quite inexperienced.

Cy had Fred Bacon as cook and Jim White as packer for our joint party. On June 4th Cy and his party, except Jim White left by canoe for Selkirk. Jim went to Champagne and bought 6 horses from George Chambers for $700.00 as the pack train had become rather small for the joint party of 10 men. Jack E. Armstrong, my senior assistant who had been with us last year and Gerry Mason one of my two junior assistants were to go with Jim and take the horses down the river on

the Klondike to Selkirk on June 15th. I kept my third assistant, J. Bish Thurber with me. I had a good trio.

We found the Pelly and Teslin parties had most of essential equipment and that they could manage with canvas tents so it was decided they should go down river as soon as they were ready. Bish and I were to stay in Whitehorse till the freight arrived from the next coast boat as I was the one who knew to whom each piece of equipment was to go.

On June 8th the two parties packed everything into their canoes. Everett whose party was six in all had one 20 foot and one 19 foot as there were nine in his party. All six canoes pushed off more or less at the same time. It was a sight. Canoes were going everywhere. Four were being handled by students who had never navigated a swift river. First one went on to a gravel bar on one side and then one on the other side and so on. John and Everett kept behind shepherding their stranded canoes along. It was three quarters of an hour before they were all out of sight of Whitehorse.

The motors were all so new they needed adjustments of their needle valves and their shock absorbers. They were like those we had in 1932 but a little more powerful, about 9 h.p. instead of 8 h.p.

Bish and I stayed in the White Pass Hotel and often had our meals with Walter and Foresta Wood. We also met Bradford Washburn who had just completed his winter crossing of the St. Elias Mountains for the National Geographic Magazine. Rolland Legg whom I had known at McGill of N.A. Timmins Corporation was also in Whitehorse on his way to renew the option on the Laforma prospect on Freegold Mountain.

The lost equipment arrived on the 12th. Bish and I sorted it, arranged for Everett's equipment to be taken to Teslin by the trader who was to supply him and packed John's stuff into our canoe and left Whitehorse after supper. We had the 19 foot canoe and motor used by Bartlett 1931 and 1932. The Casca came down behind us and caught us up before we were half way to Lake Laberge. We had to let her pass us and then found in following her that in places the stern waves set up by her paddle wheel continued to rise and fall for half an hour after she had gone. This proved quite a problem to navigate with our heavily loaded canoe. At Upper Laberge the Casca was held up by the shallow water. We slipped past her by taking the long, narrow-slough on the left limit. Going along this in the midnight twilight was always fascinating. It gave one a feeling of escape into the wilderness. The sky to the north turning from late sunset to early sunrise and the ducks getting up off the water as we ran our motor slowly along in the shallows. The Casca had a full load of tourists but no barge and so could not take the horses. She passed us on the lake in the night.

We arrived at Carmacks on the 14th and camped for the night in front of Lokken's cabin on the right limit where there were no loose dogs. We visited Lokken, the Howard McMillins who looked after the telegraph and post office and some of the prospectors including Bill Langham, chief owner of the Laforma prospect. Legg had come down on the Casca and gone out to Freegold Mountain. Langham said to me "All I have to do now is get rid of Timmins and I have a Hollinger Mine all to myself with all their equipment which has to be left on my property by the terms of the option". Well, he got rid of them by making the terms of renewal ridiculous, and what might have become a nice little lode gold mine was closed down. Though others arranged options with Langham its development was held up and costs rose. It never had as good a chance of becoming a successful mine as it did that summer.

Bish and I were up and packed in an hour and off by 8 a.m. the next morning. We reached Selkirk by 7 p.m. John's Pelly party was camped on the terrace on the left limit about half a mile up the Pelly. The Pelly was brim full with high water full of silt and carrying all kinds of debris, logs, trees, sticks, brush and even pieces of cabins which had been undermined on its banks and fallen in. It made navigation difficult. John having no experienced assistants had to show them how to do everything. In putting up the tents several were badly torn and had to be sewn.

The Pelly party was to have Afe Brown, who was a well experienced river man, prospector and trapper and had a suitable boat, to help them up the Pelly and bring up supplies and mail once during the summer. In making out the estimate I had put down Brown's wages as $4.00 per day, helper $2.50 supplies, gas, oil and hire of his boat each as separate items so that the total was $1200.00 for two trips up the Pelly. I planned that we should pay him by contract but was not allowed to put that on the estimate. Unfortunately I had not discussed this with John thinking I would be with him when we met Brown. When Brown asked John how much he was to get per day John told him I had put down $4.00 per day. Brown blew up saying he would never work for anyone at that wage and went off before John could say anymore. When Bill Miller had paid Brown in 1934 $25.00 for taking his party from Selkirk to the Pelly Farm Brown told Bill he had not had so much cash for years. He with his wife and two young boys lived off the country by trapping and hunting. Well, this put us in a fix and John was very worried when I arrived. However we went over to Selkirk and talked to Alec Coward. He said he would take the job if Schofield of Schofield and Zimmerlee trading store at Selkirk would let him use his boat and if he could talk to Brown and Brown still did not want to go. It was finally arranged that Coward should have Schofield's boat and all was well.

On June 17th we started up the Pelly. Coward was to follow as soon as he was ready. The water was still rising so the masses of debris were a continual trouble. Also the water was thick with silt which got into everything and the motors didn't run well. Harold Weaver, John's cook proved an exceptionally good cook but found it difficult to wake in the mornings and at first things were unorganized. As a result it was nearly 11 a.m. before we got off the first day and we only reached the foot of Bradens Canyon at 6:30 p.m. where we camped on the right limit just above the island. The next morning started off much better but progress was slow due to the motors again and the inexperience of the assistants in running them and navigating a river. The Pelly had risen another two inches in the night, however, we reached Pelly Crossing at 4 p.m. and camped. John decided to take the next day here to adjust the motors and organize things a little better. I visited the Van Bibbers. Mr. Ira Van Bibber and his wife were two of the outstanding characters of the country and with the dozen or so characters of the country and with the dozen or so children lived off the country by trapping, hunting and occasionally getting employment as a hunting guide. Mrs. Van Bibber was a full blood Indian from up the Pelly while Van Bibber had come from West Virginia. Their

establishment was well laid out. A two story log cabin with a large central kitchen-dining-living room and a girl's wing on one side and boy's on the other. A meat drying shelter extended behind the house which stood on the left limit of the Pelly right below the mouth of Mica Creek. There was also a row of well arranged log dog stables behind the house.

The next day we went on, the motors running a great deal better and we reached the camp site on the left limit at the foot of Granite Canyon just above the mouth of Needlerock Creek that must have been used by nearly every party of trappers, prospectors, hunters and adventurers who went up the Pelly. Here we waited for Coward as we did not like to face Granite Canyon with the river so high and full of driftwood and the assistants inexperienced. Hodder, Johnny Tomtom and some other Indians were camped a little below us as their boat could not get up the Canyon in the high-water.

Some beautifully made Indian rabbit snares of wood and sinew were hanging in a spruce tree and two of the assistants at once took them as souvenirs. Two of the Indians told the assistants the snares belonged to them but the assistants refused to give them up. The Indians then came to me. I thought it well to explain to all the assistants that they must not take things apparently left casually around in the Yukon. Everything belonged to some one who depended on finding it where he left it. The snares were restored.

On June 25th Coward arrived. The Pelly had continued to rise each day but the last, when it had dropped two inches but it was still roaring through the canyon. It was decided to make two trips with everything loaded on Coward's boat and two empty canoes towed behind on each trip. We had to land the party and line the boat in three places each trip and it was all the ten of us could do to pull the boat up even with the engine running full speed. We also lined the Indians and Hodder in their boat up. They would have had to wait a week or more otherwise.

The next day we moved on up the Pelly past the mouth of the Macmillan River. I took two of the assistants with the transit and planetable up to the summit between the two rivers to make a start at the mapping. We were late getting back down to my canoe on the river and the party had moved further than we expected so that we did not reach camp until 2 a.m.

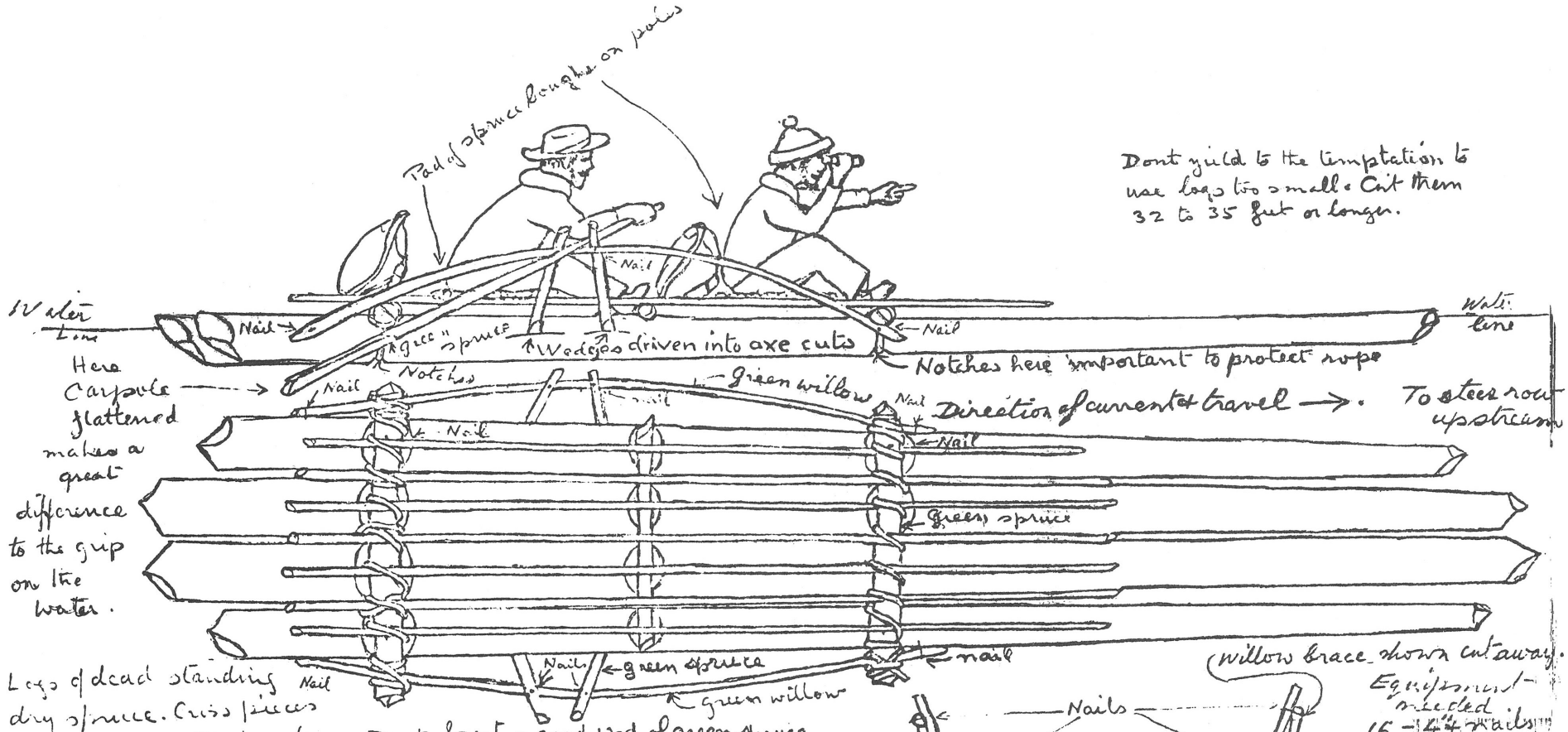
On June 30th we moved to a little below Tummel River. Coward proved a great addition to the party. He was ready to help at anything and had a very good influence on the morale of the assistants. He broad-axed two planks about 10 feet long out of spruce trees for seats at the dining table and in general made camp life run smoother. On days we did not move camp he hunted up river taking with him his rifle, axe, rope to make a raft, and a gunny sack. About supper time a speck would appear upstream on the river which turned into Coward sitting on a raft. The third day hunting he got a moose and the assistants fetched the meat down with a canoe. In his spare time he sat and whittled, making fantastic ornaments and chains out of pieces of wood. I asked him what he was making. He said, "When I was younger I made some definite thing. Now I just whittle". But that wasn't quite true, he always made something. He was an artist and a sculptor as well as a philosopher and well read. To look at him one would think he was an untidy old tough. He had married Miss Martin the Anglican missionary and school teacher at Selkirk and on his second trip up the river bringing supplies and mail for the party in August Mrs. Coward came as his helper. They both said they had never enjoyed a trip so much. I saw them last at Minto about 1949 shortly before they retired outside. They were people one wished one could see more of.

One accident occurred. It happed to Bish who was always bursting with energy. He was chopping wood in front of our tent when his axe caught in the guy rope over his head and came down, the back of the axe cutting his scalp. After supper Coward and John came over to help dress the wound. Bish sat on a box and we stood around him. The cut was about two inches long but not into the bone. I winked at John and Coward and said as seriously as I could "Do you think we should tell him". I said, "Well, we are very sorry to tell you but can see right into your brain and its awfully small". Quick as a flash Bish answered "It functions well anyway". We shaved the hair around the cut, put on a dressing and pulled the scalp together with string held on each side by loops of adhesive tape. When the dressing was removed after 10 days the scar hardly showed.

July had come and it was time for Bish and me to get moving to meet Cy with the packtrain, topographers and the rest of my party on the Stewart River at the Rosebud Crossing. July 3rd was given to writing letters and discussions of plans with John. Bish and I left the following morning. At 8:30 a.m. we passed the Yukon Rose, Taylor and Drury's boat that visited their outlying trading posts on the river on its way up to Ross River post. We ran the canyon and Squaw Rapid without difficulty and took a leg of moose from Coward in to the Van Bibbers at Mica Creek. Old Ira Van Bibber said when he was told it was sent by Coward, "Coward is a good man. He don't hang on to no bad feelings". Later it came out that they had a fight at one time. We had supper with the Fairclough's at the Pelly Farm and then camped above the mouth of the Pelly having come 120 miles.

The next day we reached Selkirk at 8:30 but with mail, supply orders, and getting gas and oil we did not leave until 12:30 p.m. However, we camped that night two miles above the mouth of the White River at 9:30 p.m. having travelled 90 miles. We were at Stewart River post by 10:30 next morning, collected mail and more gas and camped above Scroggie Creek at 8 p.m. The following day July 7th, by about 6:00 p.m. we reached Cy's camp at the old crossing of the Stewart above Rosebud Creek. They had finished supper. When Fred Bacon called them to the meal Cy had said "Well I guess they're not coming". A moment later Jim came in and said "I hear them coming". This was nearly an hour before we arrived and even supposing the breeze was blowing up river was an instance of Jim's phenomenally keen faculties.

In the next morning, we crossed the Stewart swimming the horses and taking the stuff over in the canoes moving northeastward and traversing the same day. With Jack and the other two assistants, Bish and Gerry, we usually ran two traverses a day, one man helping with the packtrain in turn with the topographers. Sometimes the lone traverser trailed behind the packtrain and sometimes I traversed alone. Bish and Gerry proved good assistants though both were inexperienced. Bish had spent his earlier summers as a lone teenager with older fishermen on a halibut fishing boat on the coast and his remarks often smelt of fish and brought many a laugh from us. He was a good student and could often say what page a mineral was described on in Dana's Mineralogy textbook. He continued through university and obtained his Ph.D. The second day from




Type of raft used to return to camps from distant traverses in the Mayo sheet and occasionally elsewhere

H&B
1977

the river we moved again. Gerry and I traversed together and passing through a large stand of tall dead spruces in an old burn a sudden wind brought trees crashing down around us. We got out of the stand quickly.

The country was well supplied with berry patches which were beginning to ripen. Black and brown bears were very numerous. On the third morning Cy and I started out a little ahead of the others telling them to join us on a bald knoll where we were going to spy out the country. A game trail came through the trees near camp and skirted the knoll. As Cy and I sat up there a bear ran up the trail past the knoll. A moment later Jack came in sight at the run and seeing us came up. Another bear was behind him. Then Bish appeared also running for all he was worth and a third bear behind him. The bears all kept on along the trail. That summer Jack kept count of the bears which he saw and they reached more than a hundred. Later in the day Bish and I were on a summit about 3900 feet high when I noticed he was playing with a black chert pebble while I wrote notes. If he had picked it up where we were sitting it was an important discovery as we were watching for the upper limit of these chert pebbles. When I asked him where he had got it he did not know if he had had it in his pocket or not. We could not find any others on the hill. This day camp was moved into the head of Independence Creek below Australia Mountain.

After a day's cold rain we moved to the east fork of the creek west of McKay Lake and then along the ridge north from Mount Burnham and down to Bull Run Creek. Today we had started in dense cloud but in the Stewart valley it was clearing and soon the clouds were gone. At supper Bish was saying how quickly he could cut down spruce trees so I challenged him to a race. Black spruce was so thick around camp, there was hardly room for the tents. The trees were about 6 inches in diameter. We each chose six trees we were going to cut down and showed them to the other. There were ant holes in a lot of the trees and I chose six of these which I knew would be hollow about a foot above the ground. Bish chose his at random and they were sound trees. When mine were down Bish had only three down. I made some teasing remarks and he guessed something was wrong. When he saw the ant's nests he stopped with an exclamation of disgust and a laugh.

On July 18th we moved east from near the head of Bull Run Creek along the road past Rousseau's farm to near Lenore Lake. Rousseau had had a nice hay farm out in Flat Creek vally. Hay for the winter stages was his main produce but he also at one time had had a dozen or more head of cattle. The clapboard farm house though abandoned some years before was still standing and in good shape when we passed. On leaving his farm he had dumped some 1000 lb or more of coarse salt at the back of the house and this had become a big moose lick. The animals had pawed out a mud pool where the salt was put. Nearly the whole floor of the Tintina Trench here had been burnt some years before and was clothed with brush of willows, aspens and a few spruce. Among the party that day we saw 33 moose and Jim shot one the next day half a mile from camp. Later Jack and I met old Rousseau at the mouth of Jensen Creek and when we asked who owned the "moose ranch" out in the valley, he laughed heartily saying that he did and a moose ranch was about all it had ever been.

From here we moved over to Florence Creek and then to the South Klondike River near the mouth of the creek. At supper the night before I ate a tiny piece of meat that did not taste good and the following two days were spent with violent vomiting and diarrhea the moment I ate or drank. However, a double dose of the strongest purgative we had made me alright. The evening after we had moved down Florence Creek at supper Jim remarked that we were so near Dawson and yet he would never see it as Cy planned to move back to Dominion Creek and thence to the Stewart River again. After the meal Jim got up from the table and said he would look at the horses and see if he could get another moose. He took the short barrelled 30/30 rifle with a hammer action carrying it horizontally on his shoulder with his left hand on the end of the barrel. A minute later there was a shot and Sim came back to camp. He had not put the hammer at halfcock and going through the brush the hammer caught on a branch and fired the rifle shooting off his little finger which had been curled over the muzzle. Cy had no bandages left in his first aid kit as his assistants had used them all up for minor abrasions. Fortunately I too had a first aid kit but did not allow it to be used for anything but serious injuries. My assistants had to use their own bandaids for minor hurts. We fixed Jim up and Cy and Jim rode horses across the South Klondike River to the power ditch intake where there was a watchman employed by the Y.C.G.C. He phoned to Dawson and a man with a buggy came from the power plant that night and drove Jim back to it and from there he was taken on by truck reaching Dawson in the early morning and so he had his wish to seeing Dawson. What a man will do to see Dawson. He hever heard the end of it.

We now moved back west across the Tintina Trench and up on to the pass to Dominion Creek camping on the old road at the head of Kentucky Creek as high as we could find any water. Here Bish distinguished himself to everyone's gratification. There was little horse feed and the hourses kept trying to get past camp down the road. In the early morning Bish heard some of them passing around camp, ran out in his bare feet and pyjamas going at least a mile to get ahead of them before he could herd them back.

Working in the brushy trench with frequent showers we were wet through up to the waist most days. Nearly everyone complained of pains in their legs. The characteristic feeling was as if ones muscles had sand in them. Long woollen underwear helped to prevent it but the only cure was to keep dry for a day in camp.

From the road up Kentucky Creek we had a long, hot move to the lower part of Sulphur Creek. A fresh lot of supplies and mail were brought out from Dawson by truck to Taddies' Roadhouse at Granville for us.

It was now time to start on the mining industry trip. I obtained a ride into Dawson on the mail truck. On this trip we picked up three old Klondikers as we went up Dominion Creek on our way down Hunker Creek. They were all dressed in morning coats, striped grey trousers, stiff white shirts, top hats, spats, nugget watch chains and sticks much to my amazement as they came out of the usual log cabins. They were going to Ganderson's funeral. I was indeed sorry to hear he had died as he was one of those I looked forward to calling on. For years he had worked on Hunker Creek where he had a good claim and had everything set up most efficiently to mine it. On my first visit to him he gave me a molar tooth of a mastodon, like a huge human molar, the only one I ever saw in the Yukon though mammoth molars were common. Ganderson had made a fortune out of his claim and enabled his two maiden sisters in England to live in style. They finally persuaded him to go back and live with them but only a

year passed and he was back on his claim again. When I asked him why he had come back he said he couldn't stick it. "Here" he said "I can just go out of the door of my cabin to have a piss and look at the view while I am doing it".

I visited the usual officials. Mr. Jeckell took me up Bonanza to see the Lone Star lode prospect at the head of Victoria Gulch. This was a lovely day and most interesting. As usual the Jeckells were exceedingly kind to me and had me to stay with them in their summer cottage opposite Rock Creek.

On August 3rd I left Dawson on the Casca in the morning and was glad to find Major Calkin of the R.C.M.P. on board as he was always interesting to talk to. We were delayed for some time at Selkirk with boiler trouble. On Monday the 5th I landed at Yukon Crossing at 11:30 a.m. Arrangements had been made with Charlie Baxter of Bear Creek on the road to Kluane to take me into Freegold Mountain prospecting area as I had been told he was packing equipment and supplied to the area with his horses. I wired to ask him if he would take me in and out for $170.00. He agreed. On landing I found the Hon. George Black waiting. He had learnt I was going into Freegold Mountain with Baxter and had decided to go in with me. He had his bedroll but no tent so I asked him to share my 7 x 7 wedge. It was a bit of a squeeze.

Baxter was a very well know and experienced hunting guide and around the fire after supper I plied him with all sorts of questions. "How many grizzlies have you seen shot?" "Sixty-four". "Did you ever see a grizzly get hold of a man?". "Yes, it was like this. I had a hunter and his wife for a fifty day trip. (50 days was regarded as a minimum time for a hunting trip). Both were good shots and had full game licences. We outfitted at Whithorse and we went out along the road to Kluane. When we passed Cracker Creek I was driving in front on the wagon with the cook and the hunters were riding behind. A large grizzly crossed the road ahead of us. When the hunters came up it was decided that the husband should shoot it. He made a good shot wounding it badly and it went into a patch of thick brush which made it a dangerous business to find. After waiting some time we started cautiously through the brush in line abreast at about five yard intervals. The hunter was on the right, then his wife next to me and the cook on my left. After a little while I saw the bear apparently lying dead a few yards in front of me. The cook had with him a small dog he wanted to train as a bear dog and I said to him, "Sick the dog on the bear. Now's a good time to teach him". The cook went forward and threw a little stick at the bear to encourage the dog. The moment the stick hit the bear it was up in a flash and after the cook who ran past me as I stood motionless. Beside me the bear caught the back of the belt of the cook with one paw and raised his other forepaw to crush him. I swung my rifle to the bear's ear and fired. The bear dropped stone dead. The cook kept running. He was the most scared man I ever saw and took some days to get over it though he was not hurt".

Baxter had many interesting experiences to tell a few of which are still recalled. One day, out with a hunter, they were searching the area around them for moose when they spotted a large bull with a good head attended by a cow. While they examined the ground with their glasses for the stalk a rather smaller bull with a smaller head approached the big bull. The bulls started to fight. The big bull was getting the best of it until suddenly he stopped and the smaller bull got around him and gored him in the flank nearly knocking him over. The big bull seemed paralyzed. The small bull drove off the cow while the big one remained standing where he was. Baxter and the hunter rode down to see what was the matter with the big bull. When they reached him one eye was gouged out and his blind side deeply pierced. He was dying. They shot him and took his horns.

One day when Baxter was out with Dr. Hayes of Oklahoma whom we had met going down the coast in 1934 he took the doctor up onto a high bare knoll in the open country in the region of Beaver Creek, west of White River. A little before they reached the top Baxter stopped and turning to Hayes said "When we are on top of this knoll you will be able to see 1000 sheep, 200 caribou, 10 moose and 10 grizzlies. They stayed on the knoll all day counting and watching the game and recorded 1019 sheep, 230 caribou, 21 moose and 14 grizzlies. This story was told me both by Hayes on the boat and by Baxter on this trip to Freegold Mountain. Their accounts were identical.

We arrived in the prospecting area at about 1 p.m. on August 7th, and camped by the cabin of Jack Carpenter and Bill Forbes, two well known and much respected old prospectors. By the afternoon of the 10th I had seen all the active prospects and we packed up at 5 p.m. and started back.

We reached Yukon Crossing on the afternoon of the 11th. We had strict instructions to always obtain the Minister's permission before flying but I had told Dr. Young I would fly when the opportunity arose to save a week or more and justify it afterwards. He did not forbid me. I wired for a plane to take me to Mayo, but owing to foggy weather it did not come until 1 p.m. on the 13th. This was my first ride in a plane. I sat on a crate of eggs. On arriving at Mayo I drove out to Keno. The next two days were spent in going over the new developments on Keno and Galena Hills. On the 17th Schellinger took me to Hoffman's Roadhouse on the Keno-Minto Bridge road. The roadhouse was run by Mr. and Mrs. Van Cleaves who must have been in their sixties but kept it spic and span and served excellent meals. They had a very good vegetable garden, including a good crop of potatoes. In the afternoon Van Cleaves drove me in his old car to Mayo Lake where in those days Wernecke had his summer house on the bank of the river flowing from the lake where old Larsen formerly a miner was pensioned as caretaker. Along the shingly beach forming the end of the lake was a row of summer cottages of people in Mayo.

Van Cleaves and I rowed down the lake to Ledge Creek where we stayed with Mr. and Mrs. George Reynolds. Their cabin had a lovely site some way above and back from the lake looking southwesterly across the south arm. In front was a flower and vegetable garden with a rabbit fence around it. Here the Reynolds spent their summers, George placer mining and Mrs. Reynolds housekeeping and gardening. Ledge Creek had contained some pockets of old rusty gravels that were quite rich in very coarse gold and the creek made them easy to work. These, however, were largely worked out before Reynolds acquired it. But an interesting feature of the heavy minerals he did recover was that they consisted of coarse crystals of cassiterite and pyrite beside a little coarse gold but little else. Mrs. Reynolds was formerly the head nurse of the Mayo hospital and met George when he was brought in with his feet badly frozen. She was English and well educated and was said to have had the 1914 Star of the British

Army. She was renowned far and wide for her broad medical knowledge and at times consulted on cases by the local doctors who were young and far less experienced. She was greatly liked and respected. The next day I visited old Gagnon on our way back to the west end of the lake. He spent his summers on Steep Creek by himself recovering a little very coarse gold. We also stopped at Gull Creek where Chambers, a placer miner was working. From the lake we drove to Keno and I returned to Mayo the following day.

On August the 20th I left Mayo going down the Stewart River on the Hazel Bee, a small river boat somewhat like the Loon also owned by the White Pass. It was piloted by a well known character, Pierre Marcel. One other passenger was on board. Pierre and the other passenger landed at the mouth of the big oxbow slough just above where the present bridge is over the river today. Each had their shot guns and after a few minutes there were four shots and they soon returned carrying four geese. Pierre did the cooking and everything. We reached Stewart at 3 p.m. on the 21st and I spent the night at the roadhouse there. Cy Smith arrived with a canoe after lunch the next day but we had to wait for mail and supplies to arrive on the Casca at 5 p.m. the following day. After we had loaded the canoe we had supper at the roadhouse we ran down the main river 18 miles to camp on an island above Rosebute Creek getting in about 8 p.m.

The day after was taken as Sunday and spent in choosing a camp site across the river. The place had to be where the Casca could land us coming upstream on the 25th in the morning. In this way we got horses and all across at one time. But, we were unable to move until the third day after crossing on account of heavy fog and rain.

Then we moved into the hills to the southwest. Going up a ridge near where camp was to be I shot a huge bull moose, with a spread of 56 inches although his horns were not fully grown. Jack Armstrong and I did what we could to clean and butcher him with our jack knives but we could not cut his throat to clear his intestines. We got out the liver and went into camp about two miles away. We returned with Jim and two pack horses. When Jim saw the moose he stood gazing at it for nearly a minute and exclaimed "What a monster. No wonder you couldn't cut his throat". To do this while Jack and I held the carcass open Jim crawled inside and cleared everything out. The kidneys were like great bologna sausages and one was more than the ten of us could eat at a meal. It was good but Fred's stuffed heart was our favourite meat dish.

During the next three days we kept moving south and then eastward back to the river. The only notable thing was the quantity of bears everywhere. On one occasion Gerry and I came out of the timber on to a saddle that had been burnt and had become clothed in berry bushes and scattered clumps of willow. There were at least five bears in front of us including a big black sow and two cubs. Before we could get out sight she had seen us and came for us. Gerry and I ran down the slope a few yards and doubled back behind a thick willow clump where we stood motionless. The sow dashed past us a few yards away in full view and disappeared among more willows. We quickly and quietly sneaked off in the direction we had originally come from.

By September 1st we were back at the river and moved camp by canoe to a spot on the left limit a little below and opposite Stewart. Jim and Bish brought the horses with only their saddlery on about seven miles along the telegraph line which ran up and down over the bluffs and gulches along the river. Jim rode ahead and kept going as fast as he could while Bish kept the horses up running nearly the whole way.

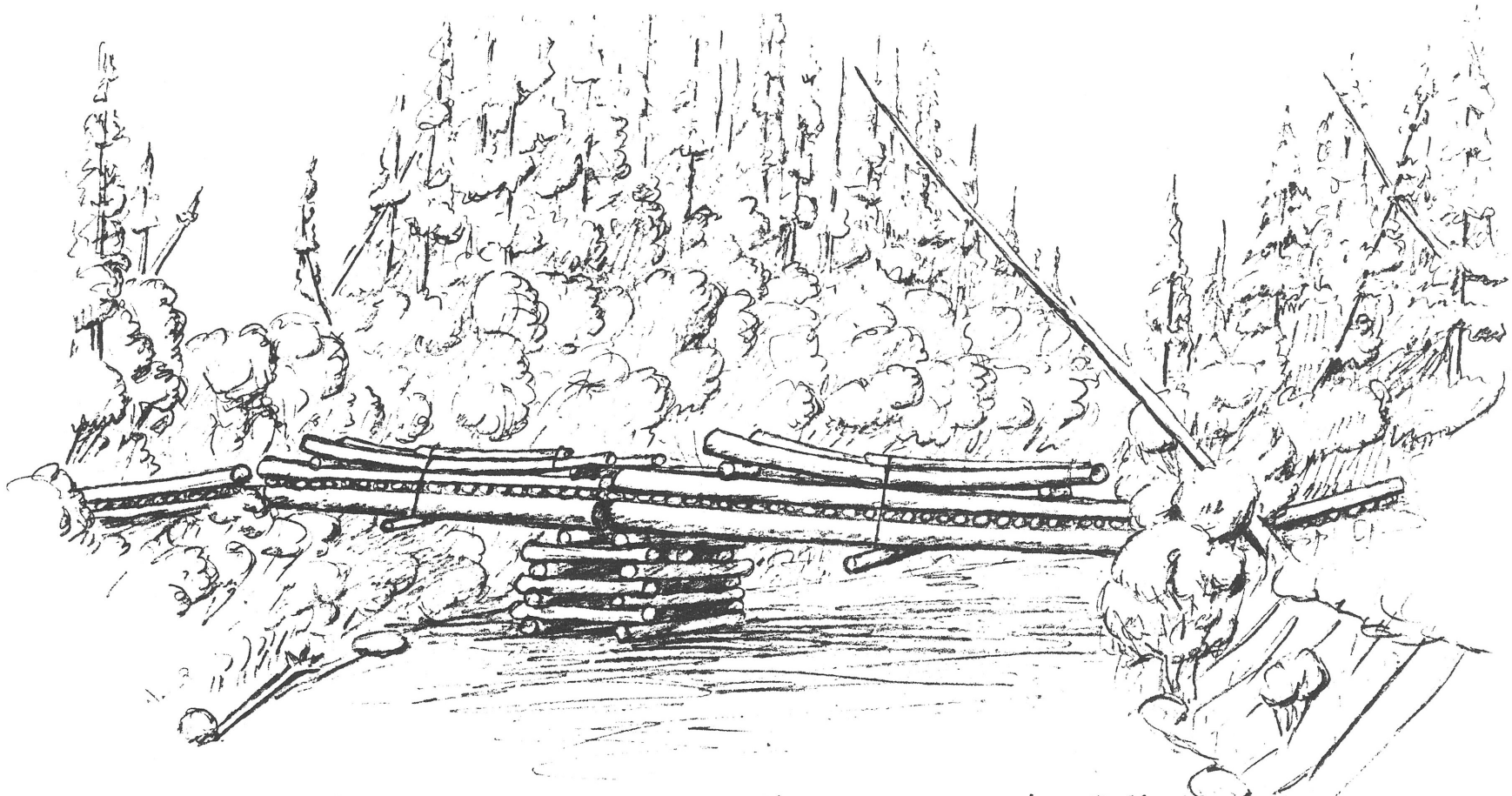
From the main river camp was moved to one mile up the Stewart. The Keno, which as usual was pushing a barge, brought the horses on the 4th. The topographers now left us taking the canoes and Fred Bacon. Jim now had both the pack train and the cooking to look after but was well helped by my three assistants.

The day after we moved south over to Scotch Gulch, then up Thistle Creek, over the Barker Creek, and thence to Ironrust Creek. Traverses were made on all these moves as usual. On the 11th we camped about a mile and a half up the west on Stevens Fork of Scroggie Creek and the following day moved down Upper Scroggie Creek to about a quarter of a mile up Walhalla Creek from its junction with Scroggie Creek. There were cabins in various degrees of decay along upper Scroggie and some had shelves of books. In one the books were all on sex. We were now following the route used by the topographers last year so Jim and horses knew it.

On reaching Scroggie Creek we came onto the second of the old winter stage roads between Whitehorse and and Dawson. The three, referred to here as the Rosebud, Scroggie and Mayo roads had been built during the first and second decades of the century and used in succession as the winter mail route to Dawson successively when new mining areas blossomed. As will be told later we followed many parts of these roads in 1936 and during subsequent years when working in the Ogilvie, Mayo and McQuesten areas before the building of the present Highway in 1950 so that an account of them is desirable here.

The original winter stage road from Whitehorse to Dawson was built in 1902. It followed a route up Little River valley, west of the Miners Range, down the Nordenskiold River to Carmacks and thence to Yukon Crossing. After crossing the Yukon River it continued northwest on the east side past Minto to Old Pelly Crossing, opposite the lava cliffs two miles up the Pelly from its mouth. From the Pelly it followed a relatively straight line to Granville on Dominion Creek and thence by Hunker summit to Dawson. Between the Pelly and Stewart rivers it climbed six summits, 3000 to 3500 feet a.s.l. This, the Rosebud road, crossed the Stewart River at Rosebud Crossing five miles above Rosebud Creek. From there it turned north up Valley Creek over a summit to Wounded Moose Creek and thence to Granville. Later after Scroggie and Mariposa creeks were staked a second, the Scroggie road was built and the Rosebud road fell into disuse.

The Scroggie road, branched from the Rosebud road about 10 miles from the Pelly Farm above Old Pelly Crossing and followed a low valley to Jane Creek. After crossing Jane Creek it climbed over one summit about 2800 a.s.l. to continue down Walhalla and Scroggie Creeks to the Scroggie Crossing on the Stewart. Throughout it was well located on dry, sunny slopes and had good grades. Beyond the crossing on the north side of the Stewart it wound eastward close to the river, blasted in part from the rock cutbank. Crossing Maisy May Creek it passed the farm there of that name and three miles beyond turned northward up Black Hills Creek valley at the head of which it climbed over a summit more than 3000 feet a.s.l. to descend Montana Creek into the Indian River valley which it followed



The Lower Crooked Creek bridge on the Whitehorse - Dawson winter trail.
Painted in oil from my tent on a wet day July 1945. Copied 1978.
Note. truss construction with loop of steel cable holding the logs together. A.C.B.

westward before turning north up Quartz Creek and thence over the Calder summit to descend Bonanza Creek to Dawson.

After the development of the Keno Mine in 1919 a third, the May road, was built extending northeast from Minto on the original road to the present Pelly Crossing and up Willow Creek, past the Crooked Creek bridge on the present highway. Five miles north of the bridge this road forked. One branch headed northeast along the south side of the Stewart River to Mayo and the other northwest over the lower Crooked Creek bridge to New Crossing on the Stewart. Beyond this it followed much the same route as the present highway until it swung west and crossed the summit to Jensen Creek on Dominion Creek. The building of this third road led in turn to the abandonment of the Scroggie road as the main mail route but parts of the two older roads continued to be used at times. It is worth remembering that these three roads were built "before bulldozers", by manual labour and horse drawn ploughs and scrapers. All these roads in their day were equipped at intervals of about 20 miles with roadhouse establishments where the teams were changed and stabled and travellers could be given board and lodging when necessary. In the horse days this employed a large number of people which decreased drastically with the introduction of first tractor trains, and then trucks in the 1920s.

Despite their construction and location for winter and neglected condition the roads were useful trails for use in the 1930s and 1940s. Stretches along them that had been corduroyed across muskeg were slow and very tiring for the horses as many poles were rotten or broken and they often had a foot of water over them. In some burnt sections alder and willow jungle had grown up along the roadway so that the route had to be followed on one side but in the unburnt forest the road formed clear avenues and on dry areas it was usually in good condition and these parts more than made up for the others as a useful trail for us.

L.I. Greer and Le Boeuf were the only men on Scroggie Creek at that time. Greer had a cabin on the north side of Walhalla Creek just west of a pup coming in a little above Scroggie. Le Boeuf was mining on the top of the bench on the left limit about a mile below the mouth of Walhalla. The year before when Bill Miller met him, Greer immediately swore at him calling him every kind of name for letting the horses scatter stick and stones along the trail that followed the old stage road. Green kept the trail smooth so that he could push his "wheelbarrow" which was pulled by his dogs along it. Bill went right back at him in the same language and Greer was friendly at once. His cabin was well situated on the little terrace looking up Upper Scroggie valley and received all the sun possible. Water was laid on from the pup coming down behind the cabin in summer by a little board flume. In front of the cabin was his vegetable garden and below it in Walhalla Creek he had an ingenious fish trap which held the grayling that swam into it so that he could scoop them out when he wished. He had lived there alone for years spending his time on the chores of living, cutting and hauling wood, bringing supplies from the Stewart River, hunting moose, reading, a little trapping and so on. The list of grub he ordered each summer for the winter was luxurious. He must have had some income. In 1934 he said there had been 19 moose in the valley of Walhalla but this year there were only seven. He only shot one or two a year and he could not account for the abrupt decrease in their number.

Greer was a practical joker and many stories were told of him. One winter when he was returning from Whitehorse he stopped at Minto. Mrs. Robinson who ran the roadhouse there knowing Greer was going on to the roadhouse at Old Pelly Crossing run by Mrs. Schaffer at that time, asked him to deliver a joint of fresh pork as a present to Mrs. Schaffer which Greer did. But on presenting it to Mrs. Schaffer he said, "Mrs. Robinson sent you this joint of young bear". Mrs. Schaffer said with disgust, "What would she do that for. Surely she knows I won't eat bear meat". Greer said innocently, "I have to stay here for a day or two and if you care to cook the joint I'll eat it." So Greer stayed at the roadhouse until he had eaten the pork and it was not for sometime that Mrs. Robinson found out what had happened to her present to Mrs. Schaffer.

LeBoeuf lived in a cabin up on his bench claim in the summer and in Dawson in the winter. He showed Gerry and me around his workings. They consisted of a number of wide shallow trenches from which he had recovered that summer a small test tube of gold and platinum in about equal quantities. He was dreadfully thin and worked desperately all day having no proper meals because, he said, he could hardly eat anything. As far as we could see all he had were some cans of Klim and three dried rabbit carcasses hung high on a pole to keep them out of the flies. He asked Gerry and me into his cabin. We sat on the bunk at the side of the cabin while he sat on an old rocking chair in the centre looking out of the door. He told us that he lived mainly on Klim and that when he swallowed his food went into a pouch that had developed in the side of his throat. He then had to work it on down his throat by pressing on the side of his neck with his fingers. The following winter I read that he was operated on in Dawson for this and that his case was described in a medical journal as unique. He was intensely proud of being a returned soldier and was wearing his kakhi tunic with his ribbons on it. He was also proud of having a brother who was an abbé in Africa.

After LeBoeuf had told us how weak he was I said that it was fortunate that he had Greer so near in case he needed help. Staring in front of him he quivered, turned white and shouted "I would rather have the Devil by my bed than Greer". He said he had gone over to visit Greer and Greer had told him to get out. It then came out that he was very lonely since his dog had died. This dog had been given to him sometime before by Greer to keep him company. He went on to tell us that the voices that came down the stove pipe had told him that Greer had poisened the dog. He was convinced that was so as the voices from the stove pipe were always right.

Talking to Greer later it appeared that the dog had died because LeBoeuf had not fed it properly which seemed to us most probably the truth. Also Greer said LeBoeuf had come to visit him late one night after he was in bed and he told LeBoeuf that if he could not choose a better time to see him out of the whole summer he had better get out. This sounded just like the kind of thing Greer would say. If LeBoeuf had taken no notice all might have been well but LeBoeuf was sensitive and on this occasion he timidly apologized and left a large cake as a present. The next day Greer tried it and it tasted awful. He gave it to his dogs and they were sick.

We had Greer to supper and also played an amusing game of bridge with him in his cabin. He commented

on his hands saying what he had each time. We moved up the road along Walhalla starting our homeward journey to the Pelly Farm. The ruins of a fine log roadhouse with the roof still on stood on the northeast side of the road about four miles up Walhalla from Scroggie. The weather which had been extraordinarily warm now turned much colder, the ground froze and there was snow on the hills and a little in the valley. We camped on a sloping terrace opposite Alberta Creek among open aspens. As the leaves had fallen we could see everywhere. The weather though cold was gloriously sunny and these fall days were delightful. We stayed a day to traverse over the mountain to the south which turned out to be mainly formed of coarse green "textbook" pyroxenite and the name Pyroxene Mountain was suggested for it.

On the 16th we moved over the Jane Creek summit to a particularly attractive campsite among large branching pines on a low terrace overlooking a wide expanse of meadow. Jane Creek meanders through a broad meadow in a deep channel and cannot be crossed by hobbled horses on except at the old road crossing which was easy to block. As soon as I came into camp Jack and I went down the creek about a mile around a bend in the valley to where there is a well-used moose lick, a little muddy pond. We were not there more than 15 minutes before a moose came down to it. The shot was 70 yards and with Jim and two horses we had the meat hung up in camp before supper.

We gave the horses a day's rest here as the feed had been poor at the last camp. But the day was not much use to us as it started to snow. We then went on into the farm in two days camping at Whelan's roadhouse on the way and arriving there on the afternoon of the 19th. It was a relief to find John and his Pelly party safely there. We were none too soon getting there as the next day it snowed several inches on the river flat and the day after the temperature was -4°F.

In going up the Pelly John had left a cache of supplies, gas and oil at one place ready for the return journey. When he came back to it much of the gas had been stolen by the curious method of driving a nail into the corner of the 4 gallon cans in each case and then putting the cans back in the cases back as they had been. There was only one person who might have done such a thing and that was Hodder. This was his return for our lining the party he was with up the canyon. It was the only case of theft any of us suffered in all the years in the Yukon.

A trip to Selkirk showed us we had two days to dry and pack the equipment in the old homestead cabin. It was a good place for us except that in the spring when ice dams formed at Victoria Rock below Selkirk it generally was flooded about 3 feet deep. As usual everything, for this reason had to be hung from the ceiling or put up on racks 4 feet high and the canoes put up on a high rack at the back of the cabin. Jim took the horse shoes off and the horses were turned over to George Fairclough, then owner of the farm, to care for through the winter at $60.00 per horse. The Pelly Farm proved a better place for the horses than Charles McConnell's ranch at Robinson south of Whitehorse as McConnell was generally short of hay and the Pelly Farm had lots as well as good fall and spring range.

On September 23rd in the afternoon all was ready and the two parties were taken down in Fairclough's boat to a good landing place on the right limit of the main river opposite Selkirk below the mouth of the Pelly. When Fairclough had gone we had a nice fire going and a large pot of very good mutton stew, the last of a sheep John's party had shot at the foot of the Glenlyon Range up the Pelly. We did not know how long we would have to wait for the Aksala. It was near 0°F and the crystal clear setting sun forecast another sub-zero night which we did not look forward to without tents. However, we had just started eating the stew when the steamboat reached Selkirk and she came across the river for us about half an hour later. She had to cross the river from Selkirk anyway to reach the steamboat channel. Cy and the topographical party were on board. The feeling of comfort and relaxation on boarding the steamboat with no more worries, four good meals a day and nothing but the scenery and pilot's yarns and news to enjoy was tremendous.

When we reached Hootalinqua after a few days we found Everett with the Teslin party waiting there and took them on board too. Thus we all arrived safely at Whitehorse together a day or two before the C.P.R. boat left Skagway to go down the coast.

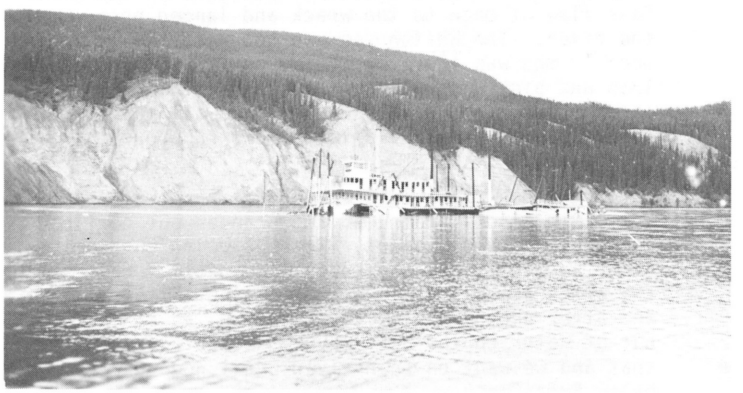
John and Everett returned to Ottawa where they worked on their reports and maps through the winter sharing an office with me in the Museum. Mr. Boyd went over the topography of John's map and commented to me that his drawing of the topography was well done. Dr. Young was pleased that both John and Everett finished their reports and maps in the spring, a thing few of the "new" party chiefs accomplished. Their work increased the knowledge of the geology of the southeastern part of the Yukon very appreciably. But the real reward came 30 years later, however, when in 1965 Mr. Al Kulan discoverer of the Faro orebody said in the Whitehorse Star he had been attracted to prospect in the area by its recommendation in John's report.

## Section II: 1936, Ogilvie Area, by packtrain

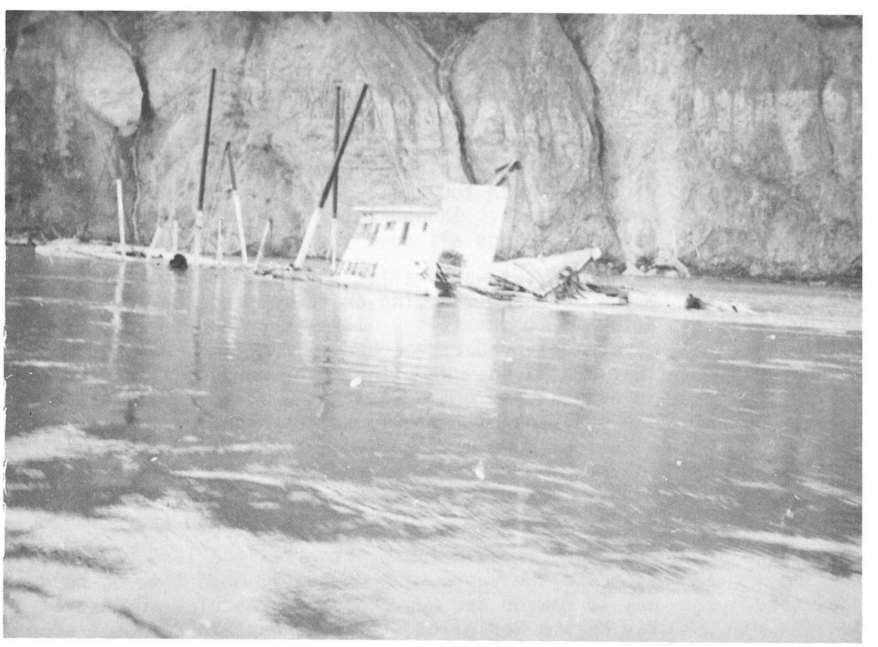
The million dollar grant of 1935 which was to have been spent in one year had been modified so that the Survey was allowed to spread the fund over three years. This resulted in a continuation of the enlarged field programs. In the Yukon a detailed study of the prospecting area of Freegold Mountain west of Carmacks was planned and John R. Johnston was appointed to take charge of it. Also there was the continuation of the Ogilvie map area for which we now had the complete topographical map.

I left Ottawa on May 29th and after leaving the family at Monte Creek arrived in Vancouver on the morning of June 5th. Both parties assembled the next day and we boarded the Princess Louise that evening reaching Whitehorse June 10th.

The Freegold party and three of my party, Bill C. Howells, my senior assistant, Gerry Mason and Kim Rathbone, packer left Whitehorse on the Klondike the evening of June 11th. Fred Bacon, this year my cook and Bob (W.N.) Taylor, assistant and I watched the Klondike leave. We were going down by canoe. Every possible ton of freight seemed to be loaded on her. Her capacity was said to be 300 to 350 tons and 40 passengers but on this occasion rumour had her loaded with 375 tons and some of the passengers were sleeping on bales of hay on the freight deck. There were four horses with the freight and some cows tied

*Wreck of the Klondike, June 12, 1936. (81585 (both)).*



*All that remained a year later (83073)*

to the new Territorial Government grader on the bow. In addition on the bow was the White Pass wood agent's Dave Wilson motor boat. Among the passengers were Mr. J.B. Mertie of a U.S. Geological Survey party, with his assistant. As we watched Captain Coglan who was in charge take the Klondike upstream from the wharf to turn her around we could see how heavy she was and how sluggishly she handled compared with her usual ease of handling. Coglan was reputed to be one of the best pilots on the river.

Expansion of the dredging by the Yukon Consolidated Gold Corporation was the main factor that led to the substantial increase in freight on the White Pass railway and river boats. This had necessitated the putting into service this year of all of the White Pass steamboats some of which had not been employed for a year or two. As a result there was a shortage of experienced Yukon river-pilots. Coglan had with him a cub pilot who had never handled the Klondike down-stream before.

Coglan took the Klondike down to Lake Laberge and turned it over to his pilot to run down the lake but returned to the pilot house and took her through the Thirtymile himself. On reaching Hootalinqua he found the Teslin in flood and very high so that below it there was lots of water and room in the main river. He turned the boat over to his pilot and went down for breakfast.

Ten minutes later in rounding a bend the pilot failed to point the steamboat with its bow inwards and its wheel to the outer side of the bend soon enough. This is essential as the surface water of the river in flood flows diagonally to the outside of the bend and normally would carry the boat against the outer bank and this is just what happened at about 8:30 a.m.

Mertie and John were on deck. Mertie said "My but these river pilots run close to the bank". The next instant there was a crash. The side of the bow had bumped the rocky bank of cliffs and a minute or so later the stern swung against the bank and smashed the sternwheel and rudders putting the boat completely out of control. She was buckled along her whole 210 feet of length and holes were in her hull and superstructure. She started to sink and freight and baggage began falling out of her as she drifted helplessly bumping and making more holes at each bend. The engineers deserved great credit for opening all the steam valves and preventing an explosion. No one else except the chief steward, Mr. McGregor who had been in a shipwreck before knew what to do and no one took charge. The whistle was blown to man the boats and a disorganized attempt was made to do so. No one put on life preservers. As the steamboat hit the bank from time to time some people jumped ashore. Finally the three women and two children passengers were put off in a life boat with two or three men to row but despite the women baling desperately the boat began to sink, either from water coming in through the dry seams or from the hole to let the rainwater out. However, one of the men jumped into the water which was up to his arm pits and pulled the boat now sunken in the water into the lee of an island. The women and children spent the day on the island with nothing to eat and amid clouds of mosquitoes.

On board the Klondike due to the buckling some people had to be rescued from their cabins by smashing the doors with axes. A few minutes after she began to sink two men cut the horses loose and they got ashore but some of the cows were drowned. Passengers piled their things on the deck above the cabins. Bill Howells and Kim Rathbone saved some of their baggage by throwing it ashore but John saved only his brief case. In the meantime Dave Wilson has succeeded in getting his boat launched and the motor going. It was due to his efforts that most of the passengers were taken ashore and finally all those scattered along the banks were collected. When the boat was cleared of people she drifted on sinking lower and lower until the deck above the cabins, some 30 feet or more above the keel, was awash and the suitcases and bags left up there were carried away by the water while most of those left in the cabins were recovered later though wet. The boat floated broad side down the river in one bend with only the top deck and pilot house above the water. This required a channel at least 210 feet wide and about 40 feet deep. Finally the channel divided and she was pushed up onto the bar in the middle of the river in "Klondike Bend", gradually rising higher and higher, such was the force of the current.

Dave Wilson had taken with him on his boat the attachable phone carried on all steamboats and as soon as all the people were safely off he hooked on to the telegraph line and reported the accident. As as result we heard of the wreck in Whitehorse about 11 a.m. Mr. Herbert Wheeler, President of the White Pass flew at once to the wreck and landed beside it on the river. The Whitehorse was got ready to leave at once. She was there by 1 a.m. on the morning of the 13th and picked up all the passengers taking them on down river. They had had no food all day but fires were built and blankets had been brought from the Klondike.

Fred, Bob and I left Whitehorse about 8:30 p.m. on June 12th in one of the 20 foot canoes but our load was heavy with equipment. We kept going through the night as usual, as Lake Laberge was calm. We reached the wreck about 9 a.m. on the morning of the 13th and after photographing the Klondike as it lay half out of water on the bar. Everyone had gone before that and we went on down river until noon and camped below Fyfe Creek.

As soon as we left the wreck we saw all kinds of wreckage, freight and baggage in the water, on the bars and along the river banks. Some Indian families at Byers wood camp had salvaged a lot including it was later said 1700 lbs. of flour and a trunk of Mrs. Adami's who was one of the three ladies on the Klondike. Mrs. Adami was a bride and it contained most of her wedding things. As we passed a large Indian woman was parading proudly along the river bank with a pink silk nightgown much too small pulled on over her usual Indian attire. Indeed later we heard of people recovering things all down the river even past Selkirk.

About two weeks after the wreck the carcass of a cow appeared floating on the surface of the river attached to something. Its anchor proved to be the government grader that had slid off the bow and so that was saved. When the river went down salvage began in earnest and coming up in the fall we only saw the skeleton of the hull of the Klondike. The superstructure, engines, boiler and anything of use had been salvaged. Mr. Wheeler ordered the building of a new Klondike exactly the same except that in the new boat plywood was used in place of tongue and grove lumber.

Going ahead a few weeks after the loss of the Klondike the Casca made unusually good time on her way to Dawson and was ahead of schedule. Ordinarily Kid Marion Her pilot, relieved Captain Campbell soon after leaving Carmacks and took her through the Five

Fingers and Rink Rapids but on this occasion she reached the rapids before the watch had changed. Campbell ran her through the Fingers and Rink but just below the latter the boiler of the old steamboat Dawson which had blown up years before still lay in the water on the left limit. Campbell turned the Casca too sharply to port and a plank was torn from her hull below the water line as she grazed the boiler. She began to sink and Campbell turned her upstream and beached her bow on a bar but the stern remained in deep water. Most of the main deck was flooded with several feet of water. Baggage and freight were soaked including the things ordered by Mrs. Adami to replace her losses on the Klondike. There appeared to be a good chance of repairing and salvaging the Casca but in trying to winch her around to bring her stern into shallower water her back was broken and she too became a loss. She was still on the bar when we went up river in the fall but everything of value had been salvaged. Mr. Wheeler had ordered a new Casca to be built in Whitehorse exactly like her except for the plywood. With the new Klondike she was commissioned in the spring of 1937.

Returning to our own journey down river we reached Carmacks the next day and found John and his party there. They had saved very little and I advised John to return to Whitehorse on the Casca that was coming up in the evening and get re-equipped. We both wrote the Director.

The three of us in the canoe then went on down river. Howells, Mason and Rathbone had gone on down to Selkirk on the Whitehorse. This year the Mines Branch had asked me to take some 35 mm moving pictures of the placer mining operations in the Klondike District and provided me with camera and film. It was a good chance to take some movies of Survey life too. We landed above the Five Fingers on the right limit and carried the camera and tripod down to a suitable place below the rapid. Bob was to take the pictures while I ran the canoe through the steamboat channel of the rapid. When the pictures were developed they showed the canoe enter the rapid and disappear in the water which was very nearly what happened. The river being very high there were tremendous rolls in it and then big waves below. Even without Fred and Bob the canoe had not much freeboard. It almost swamped, water pouring in both bow and stern. However, the current carried the canoe through so fast that it was out of the rough water in less than a minute and as the motor kept running I was able to land where Fred and Bob were. We emptied and repacked the canoe and went on, stopping for short visit with Happy LePage at his wood camp near Yukon Crossing. Finally we camped at a particularly choice river site on a low terrace near McCable Creek.

We arrived at the Pelly Farm just after noon on June 16th and later fetched the other three of the party from Selkirk where they had been since landing from the Whitehorse. The next two days were spent getting ready to start off northwest into the Ogilvie map area with the packtrain and also waiting for supplies which were to come down from Whitehorse on the Casca on the 18th. We fetched the supplies that evening and were all ready to move in the morning but before going on to the happenings of the next day some notes on circumstances surrounding the commissariat and travel with the packtrain may perhaps be recorded.

This was my first season in the Yukon that the party was wholly geological with the cook, packer and the packtrain under me all season and the planning and supplies were solely my responsibilities. The problems were very sililar to those in outlying areas in other parts of Canada but the Yukon circumstances and the period, the third and fourth decades, during which they applied make them worthy of mention. A major factor in planning was the distribution of trading posts and steamboat routes. In the Laberge (1931 and 1934) and McQuesten (1946 to 1949) areas there were no posts but both were transected by steamboat routes so that we depended on Whitehorse for mail and supplies in the former and on Mayo and Stewart post in the latter. In the Carmacks area (1931 to 1934) there were both Carmacks and Selkirk and in the Ogilvie area (1935 to 1937) there was Stewart and also Dawson which lies a few miles to the north and steamboats traversed both areas. For the Mayo area (1938 to 1941) the town of Mayo was the base but there was no steamboat route in it so that it was necessary to turn to float planes. Work in this area, however, would have required the service of river men to bring supplies up the Stewart River above Fraser Falls and up the Macmillan River had there not been suitable lakes in it and if bush flying had not developed in the Territory during the few years before we worked there.

If we had ordered our supplies wholesale from Vancouver a considerable cash saving would have been effected but this would have been very poor policy. The personnel of our parties being from outside the money spent on supplies was almost the only part of the field appropriation left in the Territory and this anyway was but a small return for the unstinted local support we received and needed.

As for work in other northern regions the whole season had to be planned in general before leaving Ottawa and the first order of supplies for June was mailed near the end of April to a river post, Selkirk, Stewart or Mayo to allow the trader time to get items he was short of.

On arrival at Selkirk, which will be seen to have been our starting point for many years, much of our first order was filled with goods that had been brought in the previous fall. For instance our eggs had almost always been kept all winter in the naturally cold cellar under the store. Some rotten eggs were expected but the others were alright for cooking, except poaching. During the season orders had to be sent in the month before they were needed with instructions to the trader when to send them and where to tell the steamboat purser to land them. The weight of food was kept about four pounds per man per day and this was plenty for the horses to start on a four week trip.

In June and early July we hardly ever had either fresh meat or fresh vegetables. Later in the season, however, we were generally able to obtain some of both. We usually had one orange per man per day and potatoes, roots and dried fruits. Otherwise our food was quite usual. Breakfast was mainly of hot cakes.

My own outfit, the field manuscript map and drawing board, fitted in two fibre cases as side packs. With my fly, tent, bedroll, axe, rifle and after 1942 shovel on top this made a substantial horse load. Besides this load and the stove-horse there were usually five horses carrying fibre cases mainly of food. The others carried soft loads, tents and bedrolls, and after 1938 the packer and cook usually rode.

In our forested parts of the Territory a packtrain, though slow and laborious had, with a good packer a supreme advantage over other transport, even helicopters.

It could place camp almost anywhere it was wanted. It necessitated more careful planning and doing without some luxuries carried with our big canoes but when the cold weather came horse blankets and pack covers were welcome additions to bedding. Moving by canoe was simpler and quicker but it was restricted to the navigable rivers along which high cutbanks often prohibited camping at the desired spot.

But now let us return to the Pelly Farm on the evening of June 18th when all was ready to move with the horses in the morning and we went to sleep with them close around camp. When morning came they were gone and after Kim and all the assistants had hunted for them all day four were still missing. I spent the day making out claims against the White Pass for the losses on the Klondike. It rained the next three days but we all hunted for the lost horses without success. On the 24th, Kim, Bill Howells and Bob went to Selkirk to get an Indian, Andrew Baum to track the horses. Gerry and I packed one of the other horses with the movie camera, tripod, and our rucksaks and went over to Volcano Mountain to photograph it. When the others returned to camp with Baum they had found some fresh tracks heading southwest but no horses. The next day Kim and Baum hunted the missing horses and came in late with them having found them at the mouth of Black Creek some 12 miles below Selkirk. I paid Baum $10.00 as contracted the first day.

The horses, particularly a black mare who had led them away, had delayed us seven days. Now we moved off on the morning of the 26th up the Rosebud road behind the Pelly Farm and turned off along the Scroggie road where it branched off to Whelan's Roadhouse, mentioned last year. It was a ruin and a poor campsite but a good place to hold the horses from going back. The next day we continued along the road to the choice Jane Creek campsite also used last September.

On this trip the party with the packtrain consisted of Gerry, Kim, Fred and myself. Bill and Bob went down to Stewart River with a canoe to bring it up to the mouth of Rosebud Creek while we were going across country. Bob was a natural river pilot and as he had an outboard motor of his own he was a great asset when it came to using the canoe.

From the Jane Creek camp we started traversing and moved down Jane Creek to Grand Valley Creek and thence to Rosebud Creek where we took a "Sunday" on July 3rd. At supper on the 2nd Gerry said he knew from last year when he was with Cy and the topographers where there was a good moose lick not far away and he went to shoot one. He got one alright but broke two rules we had. First the lick instead of being near camp as he thought turned out to be about four miles away, three miles from camp being the absolute limit. Secondly he had shot an old lean cow which had a calf somewhere. It was largely uneatable.

Kim went the same day and fetched Bill and Bob from the mouth of Rosebud Creek to camp. Then we worked up the creek to the Rosebud road and followed it to Rosebud Crossing.

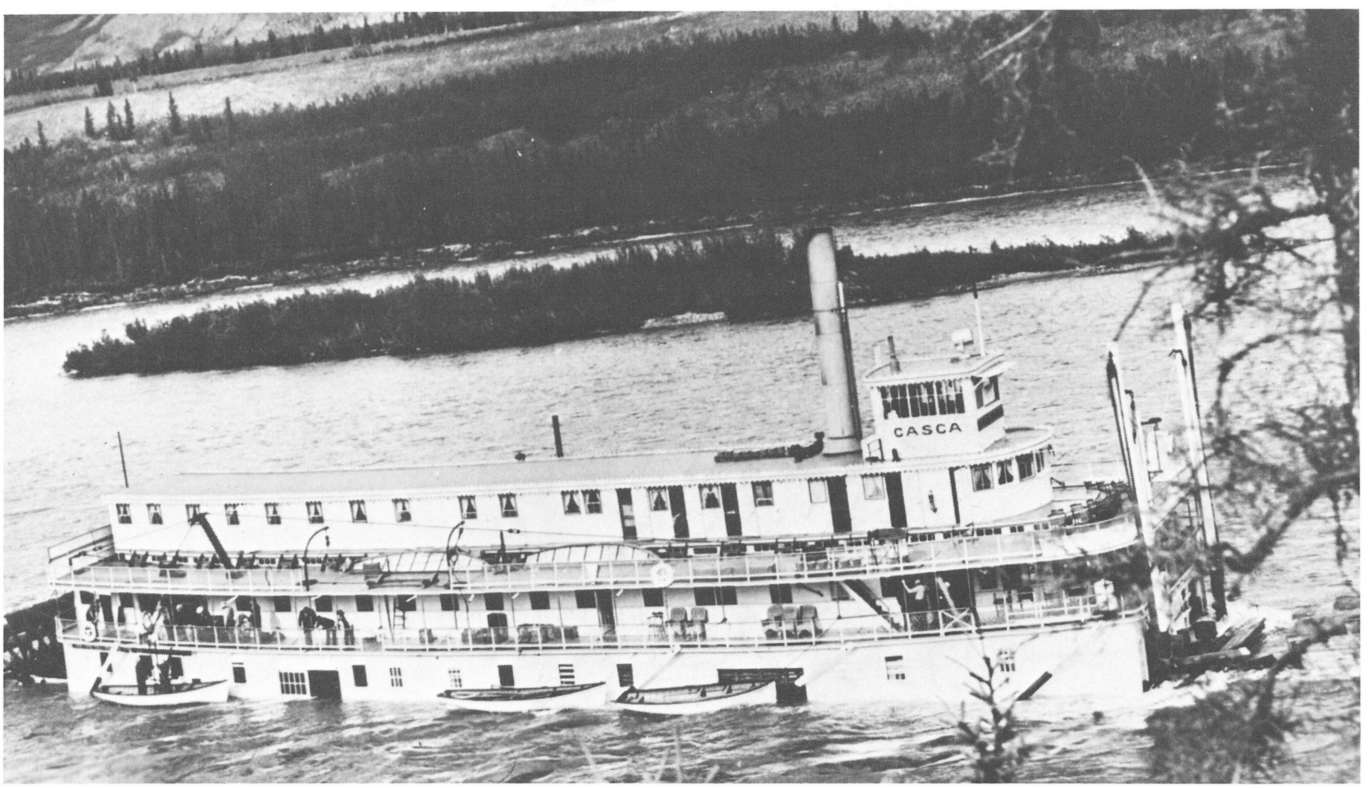
An old character named Miller lived at the Crossing who earned his living by cutting wood for the White Pass steamboats. When I walked up to his cabin Kim had just turned the horses loose and here was Miller stalking one of them with his rifle as his eyesight was poor and he thought it was a moose. I was just in time to stop him.

The weather had been fine but now it settled in to rain and the river was rising so as soon as Bob and Gerry who had drifted on a raft down to the mouth of Rosebud Creek returned with the canoe we swam the horses across that evening. The next day, the 10th, camp was taken over and erected near the site of the "Stewart Crossing" roadhouse of the first winter trail to Dawson. Now only some charred logs and burnt metal remained among the brush and nearby some panels of a white picket garden fence lay on the ground. Assuming the fence to be Mrs. Stewart's (see Publications of the Dominion Observatory, Vol. 1, No.2, Precise Levels by D.H. Nelles, D.O.S., p. 32 (1913)) after poking around I found the iron post bench mark, 1285 feet a.s.l. In 1960 the brush had now grown to trees and a search for the fence and post failed to reveal them. That evening sitting enjoying the silence a few hundred yards up the road I heard a strange, soft, whistling noise approaching. In a minute or so a mother porcupine appeared waddling along the road with two young ones some yards behind her. She was calling them and quite unconscious of my presence brushing by boots as the passed.

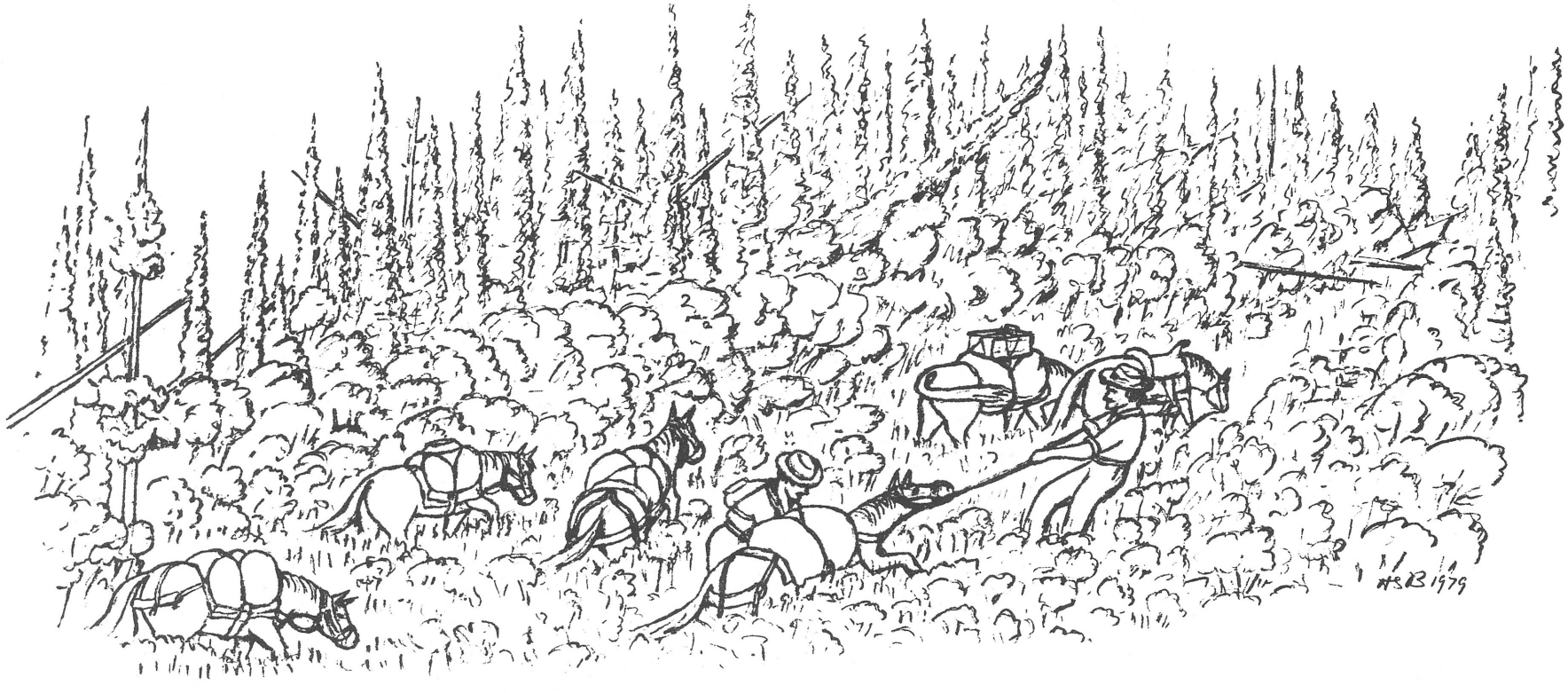
As the rain continued we did not move on until the 12th when we travelled for two days in succession along the road up Valley Creek. Then we went west over to Black Hills Creek and the northward prolongation of the Scroggie road camping at Canyon Pup. Jack Carpenter who with his partner, Marsh had staked Black Hills Creek in 1920, was living in the Black Hills Roadhouse. The creek was originally staked in 1898 but little mining had been done at that time and the claims had lapsed. In 1936 it had been recently drilled by the Y.C.G.C. and it was said to contain $1,000,000 in its dredgeable ground but with rising costs this was not considered quite enough to make it worth installing a dredge with all its establishment.

From Canyon Pup we reached the west fork of Wounded Moose Creek in two moves, first one going up Black Hills before we turned east. The old winter stage road that came up Black Hills Creek spread on the Indian River divide into a braided pattern of routes made in springtime when the frost was coming out of the ground but a good road ran down Steele Creek into Montana Creek and thence to Quartz Creek. On the second day I traversed alone over to and down the west fork of Eureka Creek and then turned east going up the old stage road over to Wounded Moose Creek. As I went down Eureka Creek I was surprised to see an old man with harness on struggling up the slope towards me pulling a log carried by four bicycle wheels. When I reached him he had brought the log up to his cabin. He grunted at me and beckoned to me to come into his cabin which was well built and tidy. For a mement I thought he was bushed but a look at his face dispelled any such idea. He produced a pencil and pad and wrote that his name was Tompts and that he was a deaf mute. We conversed in writing and signs. He was a Pole and had placer mined on Eureka Creek for 25 years but now just spent his summers there and his winters in Dawson. The police visited him every month and brought him a few supplies bought with his pension, but he lived mainly on his vegetable garden and the rabbits he snared. He had moved his cabin that spring log by log by himself up to a knoll from which he had a fine view down the creek. The one I had seen him

*Str. Dawson entering the navigable channel of the Five Finger Rapids (no date; 112433-A).*




*Str. Casca aground in the Rink Rapids after puncturing her hull on the boiler of the Dawson wrecked some time before (no date; 112433-B).*




The thawed channel in the permafrost on the old Dawson winter stage road. Often it was nothing but a wet soggy way cut through the forest thirty or more years before HSB 1978

pulling happened to be the last one and for his wood shed. There were several shelves of books on the wall of his cabin. He told me his only living relation was his sister in Poland who wrote to him every few months. Later when I saw Mr. Jeckell he told me Tompts was 78. There was something very likeable about him but after a short visit I had to go on down the creek.

Robert Cameron and a well known character referred to as "Steamshovel" or "Hobo Brown" were placer mining about a mile below Tompts. On reaching their working I saw a man digging in the cut. I said "You're Mr. Brown?". "Hobo Brown". He promptly corrected me. He was reputed to be able to dig as fast as ten ordinary men. After a short inspection of their working with Cameron I went on down to the forks of Eureka Creek. It was surprising to see there two or three empty cabins all nicely fixed up with painted picket fences and gardens. It would have been interesting to look around more but it was getting late and I was not sure the packtrain would reach the chosen camp site so I went straight on following the old stage road that connected Quartz, Montana, Eureka and Wounded Moose creeks. It wound eastward steadily up the side hill and then on reaching the divide into Australia Creek it skirted along a contour for two miles or more before it turned southward through a saddle and side-hilled down to Wounded Moose Creek. Camp was close to the fork.

About half a mile up Wounded Moose Creek from the ruined roadhouse there is a spring of water slightly warmer than is normal in the streams. The water rises crystal clear with gas bubbling up throuh it and tastes strongly of iron. The gravel it flowed over is crusted with rust and around the edges of the water is a crust of some salt. Moose trails lead to it and in a clump of spruces nearby there was a shooting platform about 18 feet above the ground.

On July 20th, we moved south up the extension of the Rosebud road along the main stream of Wounded Moose Creek and over into Valley Creek. The country here had been burnt and moose were abundant. The next day Kim got a bull which was very good eating. We then moved eastward past Wounded Moose Dome. As usual on the moves this year I traversed alone and that day I saw eight moose. Going up onto a long spur connecting with the divide between Australia Creek and those flowing to the Stewart I saw the packtrain in the distance on the skyline. I was following a well worn moose trail running along the summit of the spur through old burn in which some dead trees were still standing among the scattered willow and young spruces that were coming up. There was a crash ahead and I saw a bull moose had knocked over a dead tree. He was coming towards me along the trail as though the devil was behind him. This seemed a grand chance for a photo. My camera was out in a moment and I stood behind a small spruce that was right beside the trail. I planned to step out suddenly on the side of the tree away from the trail and startle him into stopping. As he approached I became more and more nervous and when I stepped out into full view he was about seven yards away, my hands were shaking. He just kept on coming like a steam engine and went by so close I could have touched him. Needless to say all I got in the picture was a blurred patch.

From this camp we worked our way north across Australia Creek to Granville where I left the party to start the mining industry trip on which I took the moving pictures for the Mines Branch some of which were used in the film "Gold from Gravels" that was eventually put together. The other parts of the film showing survey life of extricating horses stuck in muskeg and other such scenes of action proved excellent but were never used and apparently discarded by the Motion Picture Bureau.

After going around the Klondike district I went to Sixtymile and Miller Creek and then back to Dawson and then flew to Mayo where the veins of the Hector group on Galena Hill had recently been discovered. These veins brought a new lease of life to the district and have since been the main source of ore for the camp. I was back at Stewart on August 9th and the next day found the party camped just below the forks of Henderson Creek. They had worked their way across from Granville via Montana Creek.

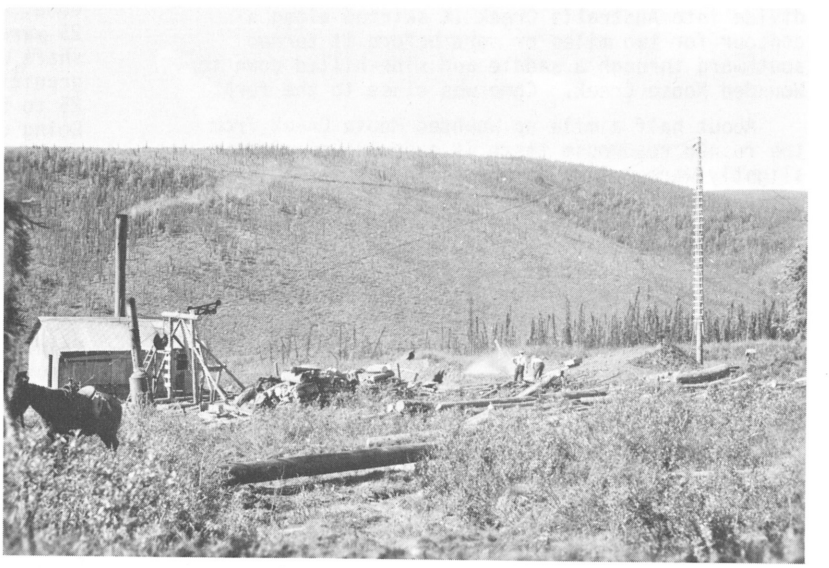
After getting supplies and mail we moved on the 12th up the east fork. On this fork there were cabins here and there as well as old workings but they were more numerous in the upper part. About halfway up the east fork were a group of ruined cabins, the head frame of a small shaft where nothing had been done, 4 iron dump trucks and other equipment. About 25 yards southeast there was a large, well-timbered shaft with two wide compartments and a dump of fresh granitic gneiss which suggested the shaft might be 25 to 50 feet deep. It was filled with water. Going on up the creek half a mile Gerry and I came upon a cabin whose door was open and which was in use. After looking around inside and out of the cabin for some clue of the owner we heard a noise over in the creek and there we found old Captain Thornton working. He was scraping off the surface of a patch of bedrock. We introduced ourselves and he took us back to his cabin. There he stood in the door talking to us while he kept us out in the pouring rain. One would have thought that he had the body of a murdered partner inside. He told us that the shaft in the gneiss was the work of "Second Bedrock Heydon", a doctor who was renowned for his idea that there was a second layer of gold pay gravels lying on a second surface of bedrock beneath the bedrock found in the placer workings. This had led him to sink a deep shaft on Bonanza Creek where he had hit a water course and flooded the claims below his. He had been run out of Bonanza Creek and started to try again on Henderson Creek but ran out of money.

From the east fork of Henderson Creek we moved northwestward for two days over the divide into the head of Ruby Creek getting a moose as we came into camp there.

Near camp on Ruby Creek was one of those muck ponds that the moose use for licks. Beside it was a pingo-like mound of peat on the top of which a shooting turret had been dug out. It commanded the pond and all the approaches. The floor was carpeted with every imaginable kind of empty cartridge from .22s up. A winter sleigh road had been built from it to connect with the road up McKinnon Creek.

There is also a lick at the coal outcrop on the west side of Haystack Mountain. Here there were the bones of a bull moose scattered around. The bones of one leg were embedded in a thick growth of spongy bone which enclosed several strands of hay wire. The horns too carried numerous porous cup-like bone growths along them showing how the moose had been infected by the wound around the wire and had not been able to

*The wood-burning steam dredge at Sixtymile River in 1936 when it was being worked by E. Holbrooke. (81612).*



*Steam boiler and hoist, shaft-head gin pole and self-dumping equipment at Ray Stewart's deep-groun placer, Miller Creek. (81610).*

*Hon. George Black, Member of Parliament for the Yukon 1921-1935 and Speaker of the House of Commons, 1930-35. When ill health forced his retirement in 1935 his wife was elected to the Yukon seat and served to 1940 when Mr. Black returned to active life and was returned in the general elections of 1940 and 1945. (202085-R).*

grow normal horns in the summer before he had died there.

A grave lies on the summit of Haystack Mountain Jack Armstrong saw it there on a traverse in 1935 during my absence from the party on the mining industry trip that summer. Some time later when he was telling his companions about it in a restaurant in Toronto a man came to him from a nearby table and said he had heard what Jack had related and that he had been one of the pallbearers who had carried the coffin up and buried it there. The deceased had been a placer miner on Quartz Creek and his cabin had faced down the creek and across the Indian River valley to where Haystack Mountain stands up as the commanding feature of the view. The miner in his will instructed that he should be buried on the top of the mountain and that the pallbearers should have a case of whiskey to help them in the task. This was not easy as the mountain is named for its general form and stands more than 2300 feet above Indian River valley.

In the days of horse stages broad meadows for growing hay were cleared along the Indian River valley between McKinnon and Montana creek and in 1936 a large galvanized iron hay barn stood there abandoned amidst a sea of willows that had grown up on the uncut meadows. Originally spruce timber had grown up to 4000 feet in this area but much of it had been burnt. Now the slopes were largely clothed in willows and some birch with young spruces among them up to about 3500 feet but above this the spruce seemed to find it hard to return and there were hardly any young ones in the upper 500 feet though old, bare, bleak trunks standing here and there evidenced the higher level of the former timber line. There were quantities of moose and many bears in this part of the country.

From Ruby Creek we moved on August 17th to the Indian River bank opposite Ophir Creek. Here my tent was some way from the others and a game trail passed in front of it. My tent was always open except when the mosquitoe bar was down or rain or snow threatened to blow in. In the morning Kim came to wake me. He said "Do you know your rifle is cocked". He knew I never had a cartridge in the breach in camp but that otherwise it was always ready. "Yes", I said. "If you look at the mud at your feet you will see why". There was the fresh track of a bear almost in the door of my tent. All I knew was that something had aroused me and I got up, saw the track and loaded my rifle in case it should return.

From here we moved over the head of Reindeer Creek and then into Rosebute Creek. In the north fork of Rosebute for a stretch there were cabins on almost every claim but a number of them were unfinished. The story is that soon after Rosebute was staked news of the Fairbanks strike arrived and nearly everyone left. A ditch and a little work had been started at the fork.

From Rosebute Creek we then climbed over the ridge into and down the west fork of Henderson Creek. When taking shelter from a downpour in a cabin of which part of the roof had caved two of us found a shelf on which was a complete outfit for recharging shotgun cartridges including cans of shot and black powder. We enjoyed ourselves blowing up parts of the rotten logs until the rain eased. Little or no mining had been done on this fork but an old boiler plant and a gravel dump stood about two miles above the fork of the creek.

On August 24th we moved down to the end of the road at the slough behind the island the settlement of Stewart River stands on. From there we took everything up to camp at the site of last year, three miles up Stewart River by canoe.

Formerly the settlement of Stewart River had been larger but it was still important as the junction for the transhipment of passengers and freight, particularly the supplies and silver lead of the mines in the Mayo district between the boats on the two rivers. The island that the settlement stood on at this time was just below the mouth of the Stewart on the right limit of the Yukon. The buildings consisted of a roadhouse with saloon, bar and store, the White Pass freight shed, a number of cabins and the ruins of several others including at least one former other roadhouse and store. The inhabitants included the roadhouse keeper and family, the White Pass foreman and family, a number of stevedores, trappers, prospectors, woodcutters, retired old timers and last but not least the telegraph operator who lived across the main river where the line was.

Among the people there seemed to be an unusual number of characters among whom, Dick Gooding, an Englishman, the telegraph operator was perhaps the most interesting. Gooding was a good operator and much liked and respected although he was a voluble, professed communist. He loved to argue. He was an avid reader and I am indebted to him for lending me several good books including Haiji Babba. When not at work in his office or out keeping up his section of the line he often corssed the river by boat or on the ice to join the group that gathered in the saloon of the raodhouse. There they talked the long winter evenings away. One winter night after Gooding had put on his pack to go home across the Yukon, the others conspired to see how long they could keep him there talking. He walked back and forth in the saloon talking with quite a heavy pack on his back for about two hours before he finally left to cross the river on the ice.

One of the best stories of Gooding is of the time he was sent to Atlin to relieve temporarily the operator there who was on holidays. Here a group frequently gathered in his cabin to talk. One evening Gooding was expounding the stupidity of having a Royal Family in England and what a useless bunch Royality were. An American in the group took this as an appropriate time to join in and began running down the Royal Family. Gooding jumped up and knocked him down saying "I'll say what I like about the Royal Family but I'm not going to have an American running down my Royal Family. What does he know? He hasn't even got one."

While we are still discussing Stewart River I must say a word about Mr. and Mrs. W.E. Bamford who ran the roadhouse and store while we worked in the neighbourhood. Bamford had been with the White Pass as purser on the Casca and when he married took over the roadhouse and store about 1935. The store particularly prospered in the hands of the Bamfords. During the first year they had it they sold 5 tons of goods, the second more than 20 tons and succeeding years well over 100 tons. The merchants in Dawson felt their competition as at Stewart River with no municipal taxes and Bamfords could undersell them and furthermore, Bill was one of those traders who was never stuck in filling the wants of his customers. If he

did not have something he got it by the next boat and his goods were of the best quality. The store was left open when the Bamfords were out and one day a note lay on the counter listing some $300.00 worth of goods a man whom the Bamfords never met had taken and stating that they would be paid for when the customer had the money. In due course the cheque arrived. Such was the honesty of those days.

On the 26th we bought our final lot of supplies for the season, the horses were brought up and across the Stewart by the Keno and we took about 450 pounds of supplies by canoe to the mouth of Scroggie Creek. The following day we prepared to move and four of us went down to Stewart in the canoe. We shipped it with the motor by freight to Selkirk and other freight including rock specimens to Ottawa. To get back to camp we planned to walk up to the head of the island where there was a big log jam opposite and a little above camp, build a raft and float across the Stewart. When Bamford heard this he said he would like the raft for winter wood. We invited both the Bamfords to come with us and have supper. They could then return to Stewart on the raft. This they gladly accepted. After supper they pushed off. The sun had gone down and the light was fading. There was something very characteristic of the Yukon and also intensely lonely in the sight of the Bamfords on the raft, a little black speck disappearing down the river in the after glow of the sunset.

August 28th the plan was to move to about three miles up the long creek draining the east flank of Mt. Stewart. We knew the Stewart valley floor might require a lot of cutting trail for the horses so I traversed alone and the others all went with the packtrain. When I reached about 3000 feet on the spur going up towards Mt. Stewart there was a good game trail among dwarf birch, huckleberry bushes and scattered spruces. Suddenly I caught a glimpse of two little black animals running away along the trail in front of me. A few days before the assistants had seen some black wolf cubs and this at once came to my mind. I pulled out my .22 pistol and started after them. My mistake was clear when a large brown bear appeared coming for me. The cubs now passed her and climbed a tree. There was nowhere for me to go. I walked slowly towards her. She slowed and then stopped. I did the same. She started rooting around but was still blocking the trail.

I shouted. This was the wrong thing to do. She started for me again, and we went through the same performance. This time, however, I carried my rucksack in front of me. She stopped and turned back towards the tree the cubs were in and grubbed around again. Somehow I had to get past her. I backed away about 25 yards and gathered a pile of dry birch brush that would blaze up when lit. With this already I fired a shot in the air. There was a "woff". The cubs came out of the tree in a flash and they were all gone but I found myself trembling.

After passing over Mt. Stewart and turning down the long spur northwestward towards camp I was suddenly confronted by a bull moose its horns clear of velvet and polished. It started aggressively towards me and I dodged down into a patch of very thick trees and froze until he had gone.

The sun had set before I reached where camp was to have been. Not a sound. Not a sign. The area had been burnt and was largely open with clumps of willows and small aspens. The cloudless evening promised a cold, clear and moonless night. Darkness was gathered when I walked up onto a small open knoll and called. The absolute stillness of the wilderness burst into chorus in every direction with answering coyotes and wolves. My pistol made a very loud report for so small a gun and I fired three shots. This only brought a louder chorus from the wolves and coyotes all around. I was just starting down into a clump of big spruces that had escaped the fire along a small stream to spend the night when I heard a rifle shot far up the river. I reached camp at about 11 p.m. They had not heard me or my shots at all.

From this camp we walked over to Barker Creek where a Mr. W.H. Taylor, an elderly, educated Englishman, was working on a small bench placer. He had spent many summers there and was recovering a surprising amount of coarse gold for the little work he did. He lived in Dawson during the winters. From Barker Creek we moved past lower Preacher Creek to camp on lower Scroggie Creek.

September 1st coming down from Grizzly Dome two of us came into an open glade, floored with gravel sloping down to a small stream that was cutting away the far bank of muck and frozen peat. I turned to Gerry and said "This is a perfect place to find a tusk". In my next step I almost tripped over a large vertebrae and there a few yards away was a mammoth tusk as well as other large bones. The point of the tusk had been broken off during the life of the animal and was worn smooth. It was badly cracked but not decayed. It weighed about 45 pounds and was 3½ inches in diameter and 60 inches long around its outside curve. According to a book on mammoths, the fact that it was nearly uniform in diameter throughout its length showed that it was the tusk of a cow mammoth. We carried it by turns to where the packtrain could pick it up when moving up Scroggie.

The next day was Sunday. Kim chopped his foot but not badly. On September 3rd we moved to upper Scroggie and the next day to the mouth of Mariposa Creek. The tusk was such a nuisance to carry in one piece over the top of a pack that we cut it into three equal pieces with the hacksaw, one for Gerry, one for me and the third to divide among the rest of the party. As there were lots of better tusks in the Museum there seemed no point in keeping it whole. A carbon 14 dating in 1974 gave its age as about 16 000 years BP.

Mariposa had been worked for about two and a half miles up from its mouth. Some workings had beautifully made high dry stone walls to keep the bedrock drains clear. There were cabins on most claims. Some were stocked with everything, clothing, bedding, cooking utensils, books, chests of tools of every kind, rifles, and shotguns. It was said that about 1915 a recruiting officer visited the creek and most of the miners closed up their cabins and enlisted never to return.

On the 7th while the packtrain moved back down upper Scroggie to camp on the road about two miles up Walhalla Creek. Two of us traversed north along the ridge on the east of the valley. The winter before rabbits had eaten off the dwarf birch on the ridge leaving thick clumps of sharp dry, hard, dead twigs about two feet high. Walking among these clumps and looking about as usual I tripped and fell forward into one of the clumps. One twig pierced my lower lip into the roof of my mouth and another gave me a cut below my left eye. I pulled the piece of twig from my lip which bled well. It became very swollen and

made eating difficult for some days but no infection developed and as time went on it healed up and the scar became hardly noticeable.

About midday it started to drizzle and then to rain steadily. We got into camp late, thoroughly wet and cold. By 11 p.m. the rain changed to snow. About 3 a.m. I was wakened by a sharp crack and down came my tent. I pulled on my parka and rubbers and crawled out into more than a foot of snow. I woke all the party and got the snow shaken off all the tents including the cook tent. Contrary to good practice the assistants had used a dry ridge pole in putting up my tent. It kept on snowing until mid-morning of the 9th but the bulk of the snow fell during the first night after which there was 15 inches around camp.

Luckily we were in a well sheltered site with wood handy. The horses were a problem at first. They kept trying to head homeward for the Pelly Farm, and ate nothing but stood on the road trying to get past camp. However, when it became sunny on the 10th Old Buck who was the wisest horse went up onto the open south facing hillside behind camp. Here the surface of the snow showed bumps and each bump covered a clump of coarse bunch grass. Soon they were all up there feeding and fed well. Ordinarily they would not eat this grass which was something like a smaller, finer addition of the dry belt rye grass of British Columbia.

The storm had caught quantities of birds on their migration southward and they were concentrated after the precipitation had stopped, around camp and along the valley under the clouds which hung low until the 10th. Notable among them were bluebirds, juncos and thrushes. A number of hawks were catching a lot of them and a thrush took refuge around my tent. A few days later on traverses it was pitiful to find little groups of dead bluebirds and juncos huddled together on the sheltered sides of outcrops where there was some shelter from the snow.

In the afternoon of the 10th the sun came out and though the night was clear and cold the next day the temperature in camp was well above 40°F. On the 10th we went out in two pairs to hunt but though we came upon lots of fresh moose tracks in the snow none of us saw any. This was disappointing as we needed meat to keep our supplies up. Also Gerry and I had seen four moose as we were coming down from Grizzly Dome before we found the tusk. Though this tramping through the snow was cold for our lower legs and feet which were always wet with melting snow the days were now glorious and delightful. The leaves of the aspens and willows had turned to their unusual pink and golden hues characteristic in the Yukon but had not fallen. The sun shining on them as they were now covered with snow or films of ice gave the landscape a lovely sparkling radiance.

On the 12th Kim and Bob took the packtrain down to the crossing at the Stewart River to pack up Greer's winter supplies for him to his cabin at the fork of Scroggie and Walhalla Creek as well as bring our own stuff from the river. Bill, Gerry and I went up Walhalla to Le Boeuf's old cabin at the mouth of Sharpe Creek that comes down from the west flank of Pyroxene Mountain. As we always hoped to see a moose I had my rifle. On the way back we saw a small black bear. Bill wished very much to shoot it for its skin. As I knew we would be in this camp for some days I lent him my rifle and he got it. He skinned and butchered it and we tried bear steaks but I can't say we liked them. Bill was able to have parts of several days working on his skin as I had decided not to move until the 15th. With more than 15 inches of snow at about 1600 feet a.s.l. at camp I dreaded what we were going to find at the Jane Creek summit that was about 2800 feet. We had Greer to supper twice. The packtrain returned with his stuff on the 13th. Much of the southwest slopes of the hills were now partly bare but it was still very heavy walking. However, the road was on the sunny side of the valley all the way up Walhalla and we hoped for the best.

In parting with Greer I said "I'll walk up from the river and see you next summer". "No" he said "I'm not going to go through the agonies again that I always suffer in the spring. I am going to do away with myself before that". About March 1937 the Dawson News carried a paragraph telling of the police patrol finding Greer dead on his bed in his cabin and that he had left a note saying he was committing suicide.

The 15th was a beautiful day and our food was going down. It was time to be moving in. The rest of the party moved camp to the site we used last year opposite Pyroxene Mountain. Bill and I tried to traverse but found the snow was up to our waists as soon as we left the sunny slopes. We went back to the road and followed the packtrain up it. About half way to the Jane Creek summit the snow appeared to have been about 22 inches deep but then thinned rapidly eastward. There was only about half as much snow when we got in the lee of the mountain and when we moved over the summit to Jane Creek on the 17th there was only about 6 inches. This storm extended over much of north and central British Columbia as well as the Yukon and as we heard later stopped all surveys. We traversed the next day and moved the day after to the Jane Creek camp site. In the evening I went to the moose lick but there were no moose tracks only those of wolves in the snow. No moose came.

At Jane Creek after a day's traversing we moved to Whelan's roadhouse where we camped for the night and then we reached the Farm on the following afternoon, the 20th. After getting everything dried and packed away for the winter including the horses, Fairclough took us over to Selkirk on the afternoon of September 25th in his river boat. There just after dark we caught the Whitehorse which was pushing a barge. The barge meant a leisurely trip up the river and it also was a good place for Bill to go on working on his bear skin. On board was a man, Anton Money, who had a placer working near Frances Lake. He was an impressive talker and Bill came to me and related how he had heard to his amazement at Money talk an American tourist into giving him a cheque for some thousand dollars as an investment in his placer claims which from all reports were of little value.

John Johnston and his party boarded the steamboat at Carmacks and after a day in Whitehorse we took the morning train for Skagway where we boarded the Princess Louise in the evening for Vancouver, landing there on the morning of the fourth day. I called at the C.P.R. night train to Monte Creek. The weekend was spent with my mother and sisters on the Ranch where Violet and the two children had spent the latter part of the summer and from there we returned to Ottawa.

## Section III: 1937, Ogilvie Area, by canoe

In 1937 the geology of the Ogilvie map area was to be completed as was the topography of the Mayo map area where it was planned to start geological work in 1938. In order to complete the Mayo topography in one season A.C. Tuttle (Tut) and S.G. Gamble (Sam) with their parties were sent to the Yukon this year and we all went up the coast together.

My party consisted of W.N. (Bob) Taylor who had been with me in 1936 and was to be my chief assistant together with Phil Davis, and Win Irish as juniors and Clarence Sherlock, the cook of former years. We were to work entirely from canoes. With Tut's and Sam's parties we left Whitehorse by canoe on the evening of May 31st and ran down to Scow Point where we had to camp as the wind was too high to face Lake Laberge. On the evening of June 2nd at 10:30 p.m. we tried to go down the slough on the left limit which was sheltered and we had used in former years but the water was too low. We then went out into the lake down the main channel as far as the end of the piling but could not go further on account of the wind. Finally we got away about midnight but the wind came up. We just got into Jackfish Bay safely, camped and went to bed. However, the wind dropped and the lake calmed down during the morning so in the afternoon we packed and went on down to Lower Laberge, where we camped a short way down the Thirtymile. The next day we all went on down heading for the Pelly Farm. This was the last time I went down the main river by canoe.

When we got near the Pelly Sam's motor gave out and I towed him up to the Pelly Farm. This was slow as the Pelly was high. At the farm we got everything sorted out for the three parties. Tut and his party, including Fred Bacon as cook and Hartley and Cam King and another assistant went on to Stewart in their canoes and Sam waited at the farm while the horses were shod and for some freight to arrive. I waited at the farm for some freight and on June 9th I took Sam and two assistants up to the Pelly Crossing so that they could occupy some of the Carmacks triangulation stations and project the triangulation into the Mayo map area. The 34 miles on the Pelly took us all day against the strong current but I came down in the evening in two hours with the canoe empty and the current behind me.

On June 10th my party went down to Los Angeles Creek where we found a cool shaded camp site. We needed it. When we called at Selkirk that morning, the police thermometer read 101°F in the shade. These days the sky was cloudless and the sun burning and it was often a problem to find water for lunch on our traverses as all the little streams were dry. We back packed up Los Angeles Creek spending three days around its head waters and visited the placer miners on Kirkman and Thistle creeks. On the 19th we moved to an island on the main river above the mouth of the White River. Our camp sites as usual on the main river and the Stewart river had to be selected so that the canoes tied up at the banks were sheltered from the wash of the steamboats.

On June 21st we went up the White River which is of a type all of its own. The water is filled with white silt from the glaciers of the St. Elias Mountains which makes it look white and is the origin of the river's name. The current is 7 to 8 mph in places and we could hardly make headway against it. The course is braided occupying most of the valley floor. The channels are forever changing and going up when one enters what seems to be the main channel and ascends it one commonly finds that it is fed by numerous small tributary channels and gradually diminishes so that no navigable channel remains at the head. The bars are a mixture of silt with a little sand and gravel in places and numerous snags stick up in the channels. Many of the higher bars and islands have a covering of goose grass on them and there were quantities of geese that had nexted on the islands and lived along the river during the time that neither young nor mature birds can fly. Finally we reached Twelvemile Creek and camped. The following day it rained. Camp was on a silt bank clothed with goose grass, alders and willows and about 4 feet above the water when we arrived. On returning from our traverses the second day the river had risen and was running through the cook tent. Clarence was desperately trying to keep things out of it and luckily the sleeping tents were a little higher. The river, however, seemed to have stopped rising but anyway we moved to a high bank four miles downstream.

During the summer a trader with two helpers started up the White in a large gas boat. They had engine trouble and one of the men jumped onto a low bar to hold the boat but the others never got the rope to him and were swept down the river finally landing at Stewart. It was three full days before the motor was repaired and not until the fourth day after he had been left were they able to rescue their stranded crewman. He had been all that time on the bar in the middle of the river without a coat, food, shelter or even a fire as there were no trees or wood. He was lucky the river had not risen and washed him off the bar.

After finishing up the White we moved to Frisco Creek and then on the 30th got supplies and mail from Bamford at Stewart and went up the Stewart to opposite Gay Creek. July 2nd the Keno came up and dropped off our mail. We then moved again up to an island a little below and opposite Maisy May Creek. That evening a curious, rough-looking character dropped in coming down the river on a raft and stayed the night with us. He did not seem to have a thing. It was John Olin, who regaled us with stories of the troubles he had had with the police and fights he had been in. Years later I met him in Mayo with his wife and children. He was trapping and a respectable citizen.

Two of us went down by canoe to Brewer Creek and walked up to see Gould. His cabin and workings were about two and a half miles from the river and some 300 yards below the fork of the creek. He had been placer mining and prospecting in the neighbourhood for many years and had found gold on Telford, Simmons and the next two creeks to the west but said Brewer was the richest. His workings here consisted of a number of scattered shafts and short drifts which on the surface seemed to follow no particular pattern. From these in winter he brought up small dumps of gravel out of which he washed his gold in summer time. The ground consisted of several feet of "muck", silty peat, and then a few feet of gravel below it lying on bedrock which was 15 to 25 feet down. From one foot under the surface moss the whole section was well frozen and he thawed it by means of steampoints heated

by a porcupine boiler*. He was a small wiry man of aesthetic countenance. Last summer when he turned in 60 ounces of gold he caused a little staking stampede on Brewer Creek but only Scottie and Semple had done any work there as the result. Their claims were below and not as good as Gould's but they did take out a few dollars. Gould said he recovered $10.00 to $20.00 a day when he worked.

His shafts were too small for us to get down but he wriggled in and out of them with ease. After seeing the surface of his workings we went to his cabin expecting to eat our lunches with him but the smell of rotten meat was so awful and I said we planned to have lunch later. At the door of his cabin was a corral about 14 feet square with a fence 8 feet high and a gate through which one had to go to enter the cabin. In the corral and cabin he kept a husky bitch and a number of half grown puppies. Old moose bones and hide were strewn around the corral and in the cabin. Gould and I went in to see his pan of gold which at first he could not find. Finally he shooed out the puppies from under the bunk. They had been lying in it. There was more than 30 ounces of gold in the pan as well as some the puppies had scattered on the floor but that didn't seem to worry Gould. The gold was mainly coarse, the coarsest I have seen in the Yukon but there was some finer gold with it. The gold was a good rich colour, well rounded and several pieces must have weighed close to an ounce. The finer gold was wiry and unflattened. The smell was so awful I excused myself as quickly and gracefully as I could and joined my assistant. He had stayed well away outside the corral as he could not stand the stench. We ate our lunches well up the creek.

There used to be a farm on the north side of the river just above the mouth of Maisy May Creek. It was run by a man named Skelton and his family. The situation was something like the Pelly Farm but it did not have as good a range. There was a large cleared meadow of hay and oats on the river flat and a sunny, grassy mountain slope behind it. In the days when the stages used the Scroggie road this farm was the main source of feed for the horses in the Stewart valley section and supplied the roadhouses on both sides of the river. In 1937 Skelton, his retarded son, in his twenties, and two men were taking in a crop of hay and oats to be floated on a wood raft down to Dawson.

There is a story of the life on the farm that shows how proficient some of the Yukon girls were at shooting. Anna Hosfall, one of the eight daughters of Joe and Mrs. Hosfall of Selkirk and Minto (see C. Sheldon, Wilderness of the Upper Yukon) was cooking for the haying gang at the Maisy May farm one summer when a bull moose came from the river and crossed the meadow close to the cabins just before meal time. Some of the men started shooting at it without success. By the time Anna came out of the kitchen to see what was going on the moose was some distance away and running hard. She said "Quick give me a rifle. We need meat". One shot and down went the moose. Judging from several accounts she and her sisters were thoroughly proficient in all phases of northern life including driving their own dog teams.

On July 6th we crossed the river and backpacked up Maisy May Creek valley where there was an old wagon road. Some placer work had been done there and also timber had been hauled down the valley. There had been a good stand of big spruces there as in so many of the creek valleys.

A few days later two of us going up the mountain spur behind the farm saw a bull moose diving for water lily roots in the pond that lies on the flat. While I wrote notes my assistant timed the dives and found the moose often stayed out of sight under water for about two minutes. On one of these mountain spurs there was a big colony of typical brown groundhogs like those in southern British Columbia. This was the only place I noticed them in the Yukon though they are said to live around the Klondike.

On July 10th we moved camp up to near Deep Creek and that evening Bob and I took a canoe to the head of the long slough that the creek runs into and got a moose as we drifted silently down to camp.

The 13th to 16th was spent on a backpacking trip up Deep Creek valley. The weather was poor and it was a particularly miserable trip. We then moved down river to camp on an island on the left limit above Scottie's wood camp about opposite Tenderfoot Creek. This was a particularly nice camp and we used it several times. From here we moved again down river intending to camp at the mouth of Chris Creek on the main river but ended by coming back up to the lower end of the slough below Henderson Creek mouth.

While here on Sunday, we were all wakened up early by a pair of Arctic loons. I much prefer their call to that of the common loon. Then about 11 a.m. a man walked into camp. He had been without food and lost for several days. He spoke with a German accent, was about 25 years old and desperately thin. He and his partner had gone up Rosebute Creek. Somehow he had been separated from his partner who had the food and he couldn't find his way back to their camp. He had finally kept climbing up and down over the mountain spurs along the river. I told Clarence to give him a little tea and soup for lunch but not to give him much. Remembering Dr. Camsell's story of the disastrous effect of a cook giving his party a big first meal after they had been starving. We then gave him more in the afternoon and again for supper. He was much better the next morning and we took him to Stewart River.

One of our motors gave out about this time and Bob replaced its defective parts with those from one of Tut's motors. This proved successful though the "reconditioned" motor did not have its former pep.

How we came to get Tut's motor is a story. This was the year of the great high water on the Stewart River. Tut's party had started up the river in their two canoes at the height of the flood. He was navigating one canoe in front and Hartley with Cam King sitting in the bow, was following in the other.

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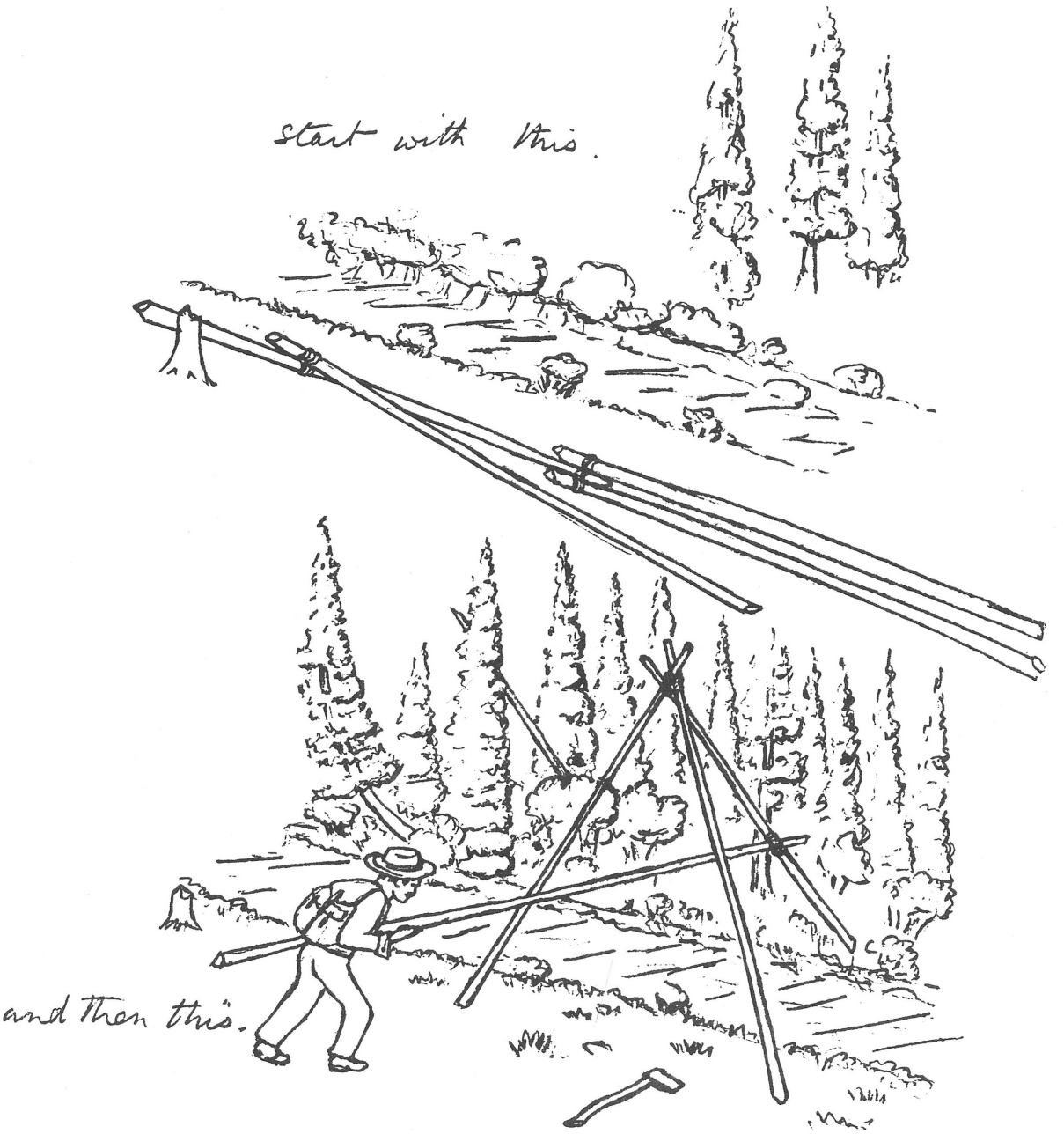
*These were narrow, vertical borders with a fire box at the base and short, horizontally radiating capped pipes all up their sides. The whole was sheathed in iron which was capped by a conical base to the smoke pipe. Pressure gauge, safety valve, filling cap and steam valve all projected through the conical top. Their virtue was that being narrow they could be transported on dog sleds. Their rusting remains were a common feature on many abandoned worthless claims both in the Klondike district and on many a distant creek where some lonely miner had sunk a shaft in the frozen ground.


*Str. Aksala loading wood at Rosebud Creek, Stewart River. (84637, 84642, 84646)*

*Captain Hugh Morrison stands on upper deck. (84647)*




To cross a difficult stream too swift, rough and deep to wade. Bridge it and climb across on the horizontal pole. Pull the whole thing after you to recover the ropes. Don't forget to throw your axe over when you are ready.

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When they were about 12 miles up the Stewart from the main river and were going up a long slough on the right limit behind an island, Tut was ahead. At the upper end of the slough where it opened into the main channel there was a tremendous cross current and on their right was an immense log jam anchored on the head of the island and extending down the side of the slough for more than 100 yards. Tut crossed into the main channel successfully but Hartley's canoe upset and disappeared.

Cam had a red sweater on, a perfect garment to snag on some projecting stump or stick. He had been sucked under the log jam and felt himself swept along scraped and bumped against one log after another until when he felt he could no longer hold his breath and he thought he was done, suddenly he found himself thrown up on the surface of the slough. He had been carried more than 200 feet under the log jam. The canoe and all their equipment was gone. When my party went up the river the level had dropped considerably and the slough was partly dry. The log jam had settled on the gravel beneath it. Scottie and Semple had found one end of the canoe projecting from under the logs and cut the canoe out. Nearly all the equipment and the motor were with the canoe but everything was filled with river silt. When I saw the canoe at Stewart in July, it was twisted like a corkscrew from end to end through about 90° but in September after it had dried on the bank it had resumed its original shape and was little damaged.

The work this summer was greatly lightened by having Bob Taylor as senior assistant. Though he had little geological training he was observant and made up for it by his keenness. He was one of the youngest assistants I have had but being a strong, quiet and capable character made up for his youth. He had no lack of initiative and did not have to be told what to do. Several times at supper I mentioned when we had better get the gas and oil mixed and things ready for tomorrow's move only to find that he had guessed what we were going to do and already prepared for it.

We now started working down the main river from side to side in the course of which we made a trip a few miles up the Sixtymile River and called on Bob Porsild who was placer mining about six miles from the mouth. The Sixtymile was so low we had difficulty in getting the canoe more than about four miles up. We left it and climbed over the spur on the north side around which the river bends. From on top we had a good view but could see no cabin or workings which it turned out were hidden by the end of the spur. But, we saw two men leave a boat about a mile above us and go into the timber. Going to the boat we found a trail and followed it among the brush and trees. Suddenly I felt a jerk and found that I was caught in a moose snare. A loop of thin steel cable was around my chest and rucksack. I slipped out of it easily as it was not attached to a strong spring pole, but depended on the struggles of the moose to draw it tight. A minute or two later we met Porsild and his companion who were carrying the meat from a moose they had caught in another snare on their way to their boat.

We joined them and went down the river in their boat to their cabins. There we had lunch with the Porsild family and saw their placer working which was not much. On the south side of the river here, however, some years before an attempt had been made to mine on a large scale and there was still the remains of a large board flume still extended for a mile or more up a creek on the right limit.

At Bailey Creek about 8 miles below Sixtymile on the left limit of the main river old man Bailey lived the year around cutting wood for a livelihood. He had four men helping him get the logs to the river and build it into rafts to float down to Dawson where they were to be cut at the sawmill to suitable lengths for firewood.

On August 4th about 2:30 p.m. when two of us were working along the main river in a canoe examining the outcrops along the banks a plane circled over us and landed. We went to it and found the pilot was Holland who had been at R.M.C. with me and who was flying for the White Pass. He said Mr. Wheeler had sent him to fetch me as Violet who was on her way to visit us was seriously ill on the C.P.R. boat at Skagway. Holland had landed at camp to find out where I was. He said he would go to Dawson to get gas and passengers and be back in two hours to pick me up at camp. When he returned to camp I was ready and had laid out the work with Bob that the party was to do in my absence. As Holland came down on the little slough the wing tips seemed almost to brush the trees on each side. There were several passengers on board including Dave Wilson, the White Pass wood agent beside whom I sat. Dave said no other pilot would land in such a place and I could see he was nervous as to whether in the short run the slough provided we could clear the trees but we did just.

We were in Whitehorse at 6:30 p.m. The C.P.R. coast boat was leaving Skagway on the evening the next day the 5th but there was no train that day and Skagway and the mountains were clouded over with the ceiling only about 1000 feet above the sea. However, Mr. Wheeler said he would see what he could do to get me there. About noon when we took off from Whitehorse airport in a White Pass trimotor Ford plane the sky had cleared there. The pilot was Vernon Bookwalter, the best pilot of the company. Mr. Wheeler sat beside him and I sat at the back in the otherwise empty plane. The sky was fairly clear as far as Bennett and then we saw ahead of us three dense banks of clouds one above the other. It looked hopeless. We circled around several times in and out of clouds and below the mountain tops towards the White Pass. I saw Bookwalter and Wheeler shaking their heads. Then without warning we plunged downward. My belt held me in the seat otherwise I would have been thrown into the air. I seemed to be nearly standing on my head. We were so to speak falling, falling, falling until almost as suddenly we flattened out and there was the valley leading to Skagway and we were down. Bookwalter had seen for an instant through a gap in the clouds a patch of the mountain side that he recognized and gave him his location above the White Pass. He dove for the valley. It was indeed a generous and kind act on Mr. Wheeler's part to take me to Skagway and he only charged me the price of a single fare. His first job as a young man in the early 1980s had been working on the Province newspaper in Victoria for my father.

I went with Violet to Vancouver. Marian, my sister who is a doctor met us there and we went over to Victoria where I left Violet with her. I returned by a C.N.R. boat up the coast. It was crowded with tourists and the service was not up to the C.P.R. standard. I was in Whitehorse on August 20th. The

*Anne Elizabeth Porsild in front of her father's cabin, Ten Mile Creek, Sixtymile River area July, 1937. (83123)*

*Greer, his dogs, barrow, cabin and garden at junction of Walhalla and Scroggie creeks; 1937. (79331).*

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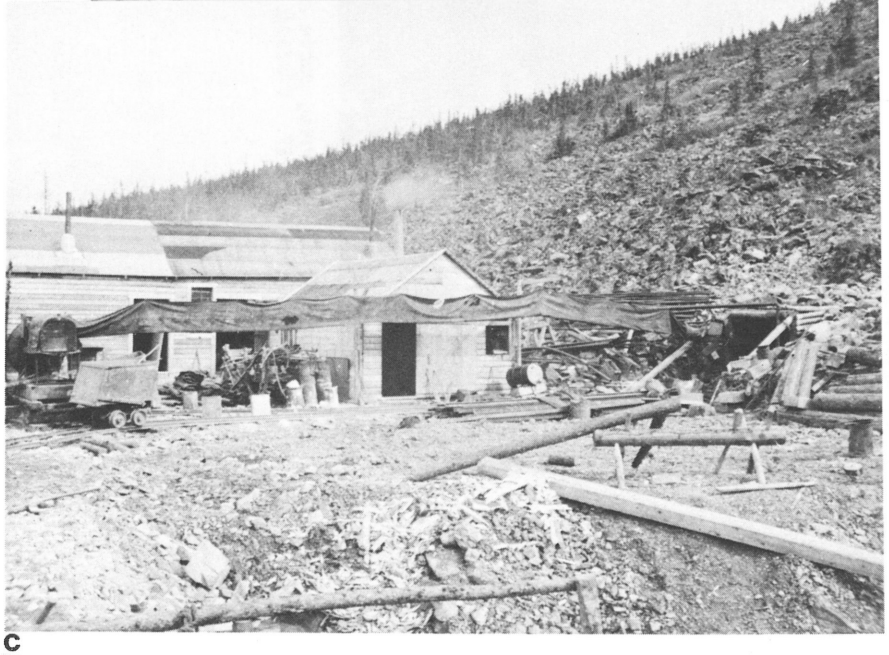

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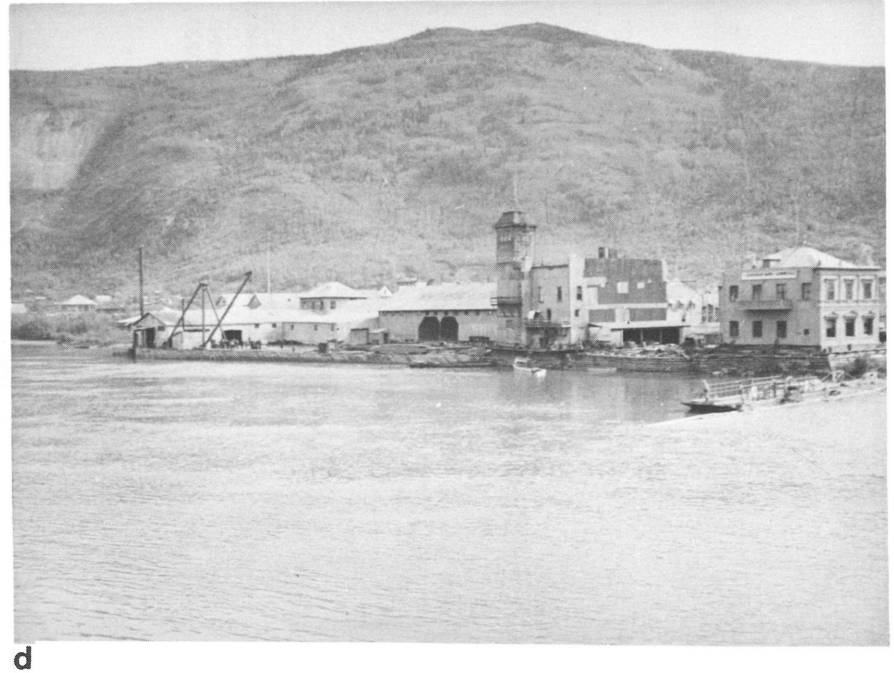

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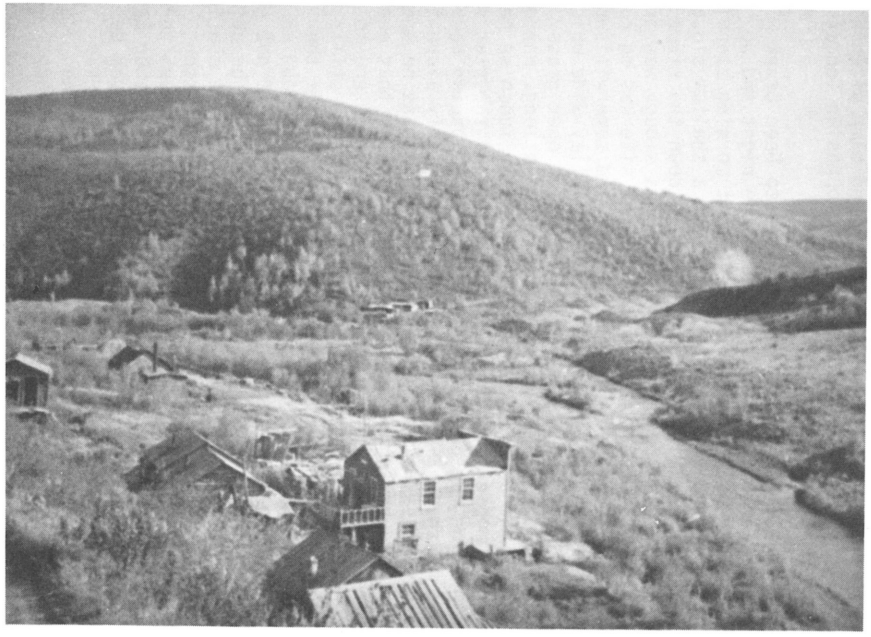

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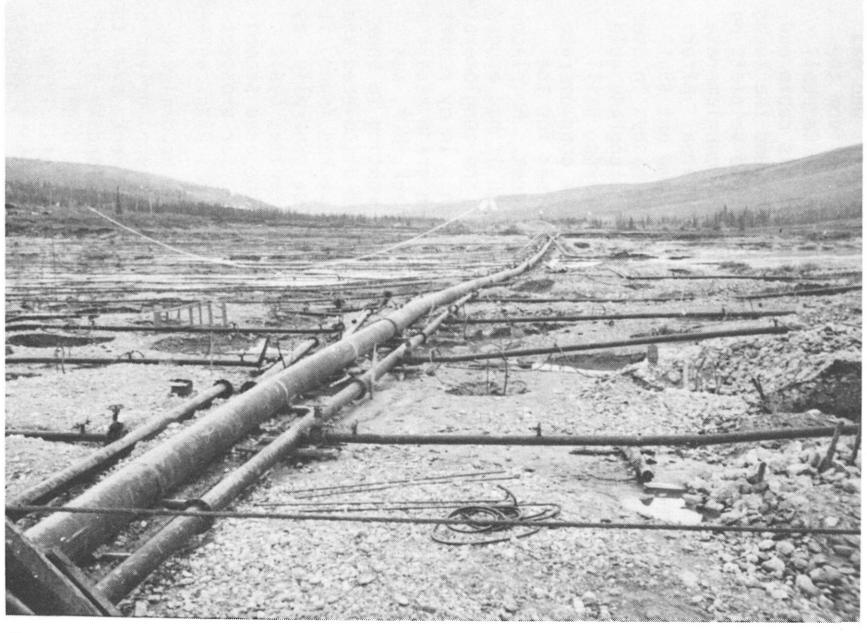

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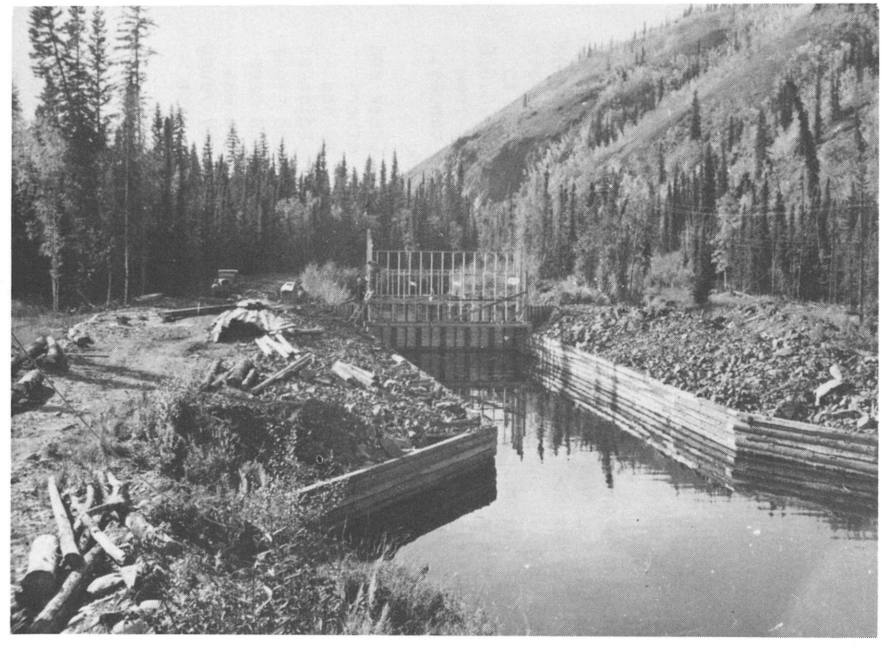

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a) *Sacked lead-silver concentrate at Mayo awaiting shipment by boat to Whitehorse, 1937. (83136)*

b) *Waterfront at Mayo, 1937. (83139)*

c) *Portal of the Calumet Mine, Galena Hill, 1937. (83135)*

d) *Waterfront at Dawson, August 1937. (83149)*

e) *Grand Forks on Bonanza Creek, August 1937. (83174)*

f) *Piping used to thaw a large area on Middle Sulphur Creek. (83159)*

g) *The intake of the South Fork canal. (83178)*

next day I flew to Mayo to visit the mining recorder and various active prospects as well as the Elsa and Calumet mines and went over the road construction program as well as that for the airfield at Mayo. It was one of my duties as resident mining engineer to be prepared to report on mining roads.

The Keno took me down to Stewart on August 23rd and I caught the Aksala the following day to Dawson. After the usual calls I reached the Hunker Summit roadhouse on the afternoon of the 25th and spent the night there going down the next evening to our camp that Bob had had moved by truck to Jensen Creek. At Dawson I had collected the necessary information on the Sixtymile and Klondike roads as well as the airports of Whitehorse, and Dawson on which I had to report and also the various workings of the Y.C.G.C. had been visited. Before I had arrived back from "Outside" Bob had moved to Dawson with the canoes, stored them there and moved camp to Jensen.

On August 29th I traversed up Goldrun Creek and over the ridge to Sulphur Creek while the others moved camp to Sulphur Creek using a truck we had ordered. Here as on so many of the ridges adjacent to creeks where small scale placer mining and steam thawing had been done the original forest had been cut for firewood and buildings and the ground was scarred by numerous roads partly overgrown by young brush of willows, birch and spruce. On the 31st we were moved again, this time to Quartz Creek arriving after dark at the end of the truck road. We had breakfast the next morning at Y.C.G.C. dredge camp and got a man with a team of horses and wagon to move us down to the old sawmill site just above the Quartz Creek bridge over the Indian River and camped there. From there we traversed across the Indian River and, one day visited Stewart Campbell who had been obtaining spectacular assays in gold from the Tertiary conglomerate up McKinnon Creek. Campbell had an assay laboratory at the back of his cabin and did assaying for various prospectors around the Yukon including some working on high grade gold veinlets on Freegold Mountain. His results for the conglomerate were producing a great interest in the area. After spending some time talking to him it came out that he used the same crucibles to melt the assays in over and over. Thus the ones used for the highgrade gold samples from Freegold were used afterwards, still crusted in slag, for the McKinnon Creek conglomerate. No wonder he was getting high gold values for the conglomerate. We examined McKinnon Creek. No placer gold had ever been found in it although it had eroded its valley in several hundred feet of the conglomerate. The verdict from this was clear enough. In my report that winter I did not mention the high grade assays of the conglomerate. The Hon. George Black, M.P. was quite annoyed and wrote a hot letter wanting to know why. I wrote back exactly what we had discovered and pointed out that if I published what we had found, it would throw a wet blanket over the area generally, as far as prospecting went whereas the granite, basic intrusion, limestones and schists in the area seemed to show that it had other possibilities for prospecting which should not be discouraged. Mr. Black agreed.

On September 3rd a big truck of Sam McCormick's (he ran a large trucking business in Dawson) driven by Tommy Campbell, drove us out of Quartz Creek, over the Calder summit down Bonanza and up the Klondike River to Mullenbeck's farm above the Rock Creek bluff. Campbell didn't arrive at Quartz Creek until 12:30 p.m. The day was one of terrific downpours. The truck was stuck in mud holes a number of times but after a while Campbell always managed to get through without help. It was dark and raining when we put up camp late in the evening. The next day it cleared up and I got a drive along the Y.C.G.C. power ditch as far as the south Klondike intake to see any outcrops along it and at the same time the others traversed southwest of the Klondike River.

On the 5th we were driven to Bear Creek and camped there for the night. The next day I spent the morning at Bear Creek and then went into Dawson about 11:30 a.m. where I had lunch with John Stenbratten, famous "Stampede John". The party arrived in Dawson on a truck with camp about 2 p.m. and I found them about 4 p.m. We got our grub order, loaded our canoes and moved two miles up the main river to camp at Independence Creek. This moving by trucks around the Klondike could not have been accomplished without the generous and energetic cooperation of the Y.C.G.C., the various truckers we dealt with and without the good common sense of Bob Taylor. During this period in the Klondike the weather had been awful, rain every day and the roads in bad shape, "real placer miner's weather". Rain and its water is what every placer miner prays for.

From Independence Creek we moved about 10 miles up to Ensley Creek. From here we traversed both sides of the river. On the morning of the 9th I floated down to Dawson on a raft to see Mr. Jeckell and caught the Klondike at 8 p.m. to return to camp. The following day we started up the river in earnest and ran into a bunch of caribou. I had a shot at one on an island but as I was in the canoe which was still moving I missed and the animal ran off. On the 12th we picked up our mail at Stewart and went up to our former camp site above Scottie's wood camp pitching the tents in the rain about 6 p.m. opposite Tenderfoot Creek.

On the 14th we moved from here to Deep Creek beside Lindstrom's wood camp for the night and we continued up the Stewart on the next morning stopping at a particularly good camp site on a shallow slough on the right limit about five miles down the river from the east edge of the map. (This slough was too shallow to use at all in 1960). The site was on a wide flat covered by grass, aspens and some willows. Between the flat and the northwest valley side which was of the usual type, steep with wide open grassy sunny slopes and glades of trees, was a long, narrow oxbow lake surrounded by spruce. After lunch we heard a bull moose grunting and looking across the flat saw him up on the open valley side. He was pacing back and forth on a trail extending horizontally along the steep grassy slope. At each end of his beat he spent a minute or so hooking the trees around at that end with his horns and then walked to the other end to repeat the performance. He kept on and was still doing this after camp was up. Bob and one of the others went over to shoot him. But after about an hour or so they came back and said they could not get across the lake and if they did we would not be able to bring the meat across the lake. The moose continued his sentry duty into darkness. Three days later coming along the flat I shot a bull moose about three-quarters of a mile from camp but now the weather had turned damp again besides being mild and a good deal of the meat spoiled. The aspens and willows had turned brown from their golden colours and the leaves seemed to be rotting on the trees without falling.

On the 20th we returned to our camp above Scottie's. This was on an island facing the main channel and about 300 yards upstream from the foot of the island which was separated by a deep slough from the main bank of the river. Scottie's cabin where he had his dogs was about 50 yards up the slough. His wood was stacked in two long piles each about 5 feet high and 8 feet apart parallel to and 12 feet back from the bank. There was an open space about 50 yards wide behind the wood piles. Just below the wood piles and the mouth of the slough a gap had been cut in the vertical bank for landing the wagon from the steamboats that was used to bring the wood out from the forest. Below the wagon gap the river had undercut the bank and sweepers hung over the water. Across the river the bank rose from the water in rock cliffs about sixty feet high with one gap in them where a man or large animal could come down to the river. Above this the mountain rolled steeply back with grassy slopes and scattered clumps of aspen and spruce.

I was getting ready for supper. The setting sun shone full on the mountain opposite. A bull moose grunted and there he was high on the slope across the river, hooking the trees and coming slowly down. I told the others to keep quiet and got Bob who had seen him too. We took the smaller canoe and drifted down into the deep shadow of the trees along the bank of our island. Bob was in the stern and myself in the bow. Here was a chance to get meat for ourselves and Scottie, the Bamfords and other friends in Stewart.

The moose came down slowly as we sat in the canoe holding onto a branch. He had to come down to the river through the gap in the cliffs opposite and had to land at the wagon gap below Scottie's woodpiles. After awhile he appeared at the water's edge. There he played in the river, splashing the water over himself, hooking it up with his great horns, snorting, squealing and grunting. He was a grand sight in the golden evening sunlight, his coat shining and showing his great thick neck and bulging muscles to advantage. It seemed he would never start to swim and the light would be gone soon but at last he headed into the river just as the sun went down.

When he was about two-thirds of the way across I signalled to Bob and we glided slowly out from the bank coming downstream towards him so that he could not go back. He did turn but thought better of it. Bob handled the canoe perfectly. Finally the bull got onto his feet in the edge of the water at the entrance of the wagon gap and stood broadside looking at us and snorting about 80 feet away. He seemed a perfect shot but if I shot him there he would fall backwards on the steep slope into the river and be carried by the swift current into the sweepers. He turned up the wagon gap. My shot at his shoulder knocked him down in the gap but the current carried us downstream and we could not see him. It was a minute or so before we could get back. In the meantime Scottie's dogs had started whining and Scottie sensing there was something about had grabbed his rifle and come along the bank outside of his woodpiles a second or so too late to get a shot as the moose scrambled up and went behind the ends of the two woodpiles. Had Scottie been a few seconds sooner or on the other side of the woodpiles he would have had a clear shot. We hunted for his track till darkness without success and again the next morning but we could only track him a few hundred yards through the dense alders and willows. I have since been told I should have aimed right into his rear end. This was the only animal I ever wounded and did not get except the moose in 1931.

Bob had written to me before the season started asking if he could bring his twelve gauge shotgun. Although it was a rule of mine that no one could bring guns on the party, I agreed. I bought him a box of 25 cartridges and he got us a duck for every shot which made a nice change in our diet.

On September 21st after trying to track the moose without success we broke camp and reached Stewart before lunch. There had been no frost and the vegetable gardens and notably the potatoes were still growing. We packed and stored our equipment including the canoes at Stewart. The motors and other freight were shipped to Ottawa. We flew by float plane to Whitehorse and caught the Princess Louise at Skagway on September 25th for the usual journey home, to Ottawa, via Vancouver and Monte Creek.

## CHAPTER 4: THE SEASONS 1938 TO 1940, THE MAYO AREA

### Section I: 1938, Mayo Area by Canoe

The geology of the Ogilvie map are had been sufficiently completed in 1937 for me to start the Mayo map which had been chosen to be the next because the silver-lead mining and prospecting were concentrated in it. Tuttle and Gamble had the plotting of the Mayo topography ready for me in the spring of 1938. But two topographical parties in one season in the Yukon, as in 1937, was more than the territory's normal share considering the demand elsewhere in Canada. I wanted very much, however, to have the topographical mapping well ahead of the geology for three main reasons; so that the geology would not have to wait for the topography to be done; so that if expansion became feasible there would be maps ready for more than one geological party and so that if a prospecting strike was made in a new area geological work around it could be started promptly. After discussions Dr. G.A. Young and Mr. W.H. Boyd the latter agreed that Tuttle should start the McQuesten map in 1938. This was enough and all I could expect to get. He was to have his canoe and the packtrain and with two canoes I was to work those parts in the northwest of the Mayo map area that I could reach from the Stewart River and Mayo Lake with canoes and with whatever other transport that I could get for the roads and trails.

After leaving my family at home at Ottawa on May 20th I spent the long weekend at Monte Creek and left Vancouver with my party and also Tuttle's topographical party on the Princess Louise on the evening of the 26th. This year Phil Davis was my chief assistant and the others were Bill (W.R.) Bacon, Jack Hoadley and Fred Pearse. I was very glad to have Fred Bacon again as cook. We reached Whitehorse on the 30th and left on the Casca the next evening. The water in the Yukon was very low and we were stuck on a bar for two hours at Upper Laberge. Tuttle and his party landed at Selkirk to start from the Pelly Farm with all the horses. My party arrived at Stewart River on the morning of June 2nd. The Aksala was waiting there. We got the canoes and equipment on board and our freight and baggage transferred to her and left after lunch. She then went to Carlson Slough to pick up a barge from which the Mayo silver-lead concentrates had to be unloaded. This took until 8:00 p.m. The trip up the Stewart was lovely and the weather perfect. We painted the canoes that were on the front of the nearly empty barge as well as sorted and repacked the equipment. The river was lower than it had been last fall. On the way up the river we loaded wood from old Miller's wood pile at Rosebud Crossing. The purser told me that when the Aksala made her first trip up the Stewart that season he called by megaphone to old Miller who was standing on the bank and who had hardly seen a soul since the fall before. "King George has died". Miller said "What's that?". "King George has died". "I didn't know him" answered Miller.

We arrived in Mayo on Sunday, June 5th and bought our supplies from the two stores Taylor and Drury's and the N.C.C. that afternoon. After supper in the restaurant we moved in the two canoes up the river and camped in the big slough about 6 miles from Mayo at 10:30 p.m.

Our traversing started the next day on both sides of the river and in this way we worked up as far as Fraser Falls which we reached on the 8th. The bedrock section was poorly exposed but the glacial geology was interesting. We found the upper limit of the McConnell glaciation on the south of the river but having no airphotos it was hard to trace. Also I did not realize its significance and took it for a minor resurgence of the earlier glaciation. The weather was very cold and cloudy. The wind never seemed to stop blowing. All the campsites were coated with silt from the highwater of the spring before and the silt got into everything. Above 4000 feet the frost was just coming out of the ground making traversing difficult above that level and the lower levels were brushy with downed timber while traverses often started and ended with wearily trudging across the wide muskeg river flats. Two assistants going up south of Gordon's Landing were confronted by a wolverine on a big rock that showed every sign of attacking them if they came any nearer. They tactfully made a detour. Evidently it had a den nearby.

On June 23rd we went down to Mayo and Mr. C.E. Fisher (Bud) who had a garage and trucking business drove us with one canoe 20 foot and all our equipment and supplies by truck in two trips to Mayo Lake. We had supper in the open at the foot of the lake and the water being calm I decided to move at once to camp on the west side of the Nelson Arm behind the island*. Fred Pearse was good at handling the motor and canoe and brought the last canoe load to camp arriving at 6:00 a.m. The 22nd was spent in fixing up camp and examining the placer workings and ruined cabin on Cliff Creek almost opposite camp across the lake. The following days we visited the Reynolds on Ledge Creek and Old Gagnon on Steep Creek and traversed. June 28th we moved camp to the end of the Nelson Arm and traversed southwest. We fixed up a sounding line of 180 lb. cod line and when circumstances allowed sounded the whole lake methodically during the next week or so. I had been told of fabulous depths for the lake. The greatest depths in the main lake and the Nelson Arm are the same, 375 feet. The sides slope steeply down to a relatively flat bottom about 350 feet deep except where the ends slope slowly up to the mouths of Edwards and Nelson creeks and towards the outlet.

On July 3rd we moved into the east part of the main lake and camped behind a poorly sheltered beach on the south side near the end. There were many Indian stumps around this camp site which is now submerged since the outlet of the lake has been damned. From here again we traversed both sides of the lake including the Fork Plateau.

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*Footnote: At this time there was no hydro dam at the outlet of Mayo Lake so the lake level was at least 10 feet lower than it is today.

On the plateau at about 8:00 p.m. one evening three of us were walking along the north rim which drops abruptly away in cliffs for a way down. It was a lovely peaceful evening. With the lake spread below us and the mountains on the far side casting long shadows, the view was indeed beautiful. After a long traverse we walked along in single file and in silence. There was that absolute stillness of the Yukon. Thick soft grass covered the ground and willow bushes about 8 feet high were in thick but scattered clumps. I was leading when, coming to an open glade in the willows that extended from the cliff rim on our right up towards the higher part of the plateau on the left, something made me turn my head. There less than 50 yards away was a large grizzly sow lying on her back playing with two cubs. I turned to the others, put my forefinger to my lips, pointed and crossed quickly behind the willows beyond. This was probably the closest and luckiest escape we had from grizzlies. Every time we were on the Fork Plateau this and in later years we found fresh sign of a grizzly and cubs.

In this section we first found the graphite schist horizon and realized that here at last, after all these years and covering thousands of square miles we had a distinct horizon marker that would reveal the structure.

At the east end of the lake Edwards Creek had built a shallow delta shelving slowly westward into the lake. About 50 yards out from the sandy beach in front of the trees above the water and a favorite place for gulls and terns. On the southeast corner of the lake Steve Arbitini had a cabin.

From the east end of the lake we moved up Roop Creek to Wilson's Cabin. This was a most fascinating canoe trip. On it one starts up Edwards Creek which is a large, swift, gravelly stream. Then one turns off to the north into Roop Creek to follow its deep, narrow channel with mud banks, a sluggish current and logs across it under which the canoe could just scrape. From this one enters a shallow lake and has to find where the creek flows into it from the northeast. Again after sneaking along the creek from pond to pond the stream suddenly divides and the easterly fork has to be followed through reeds into another shallow lake. Here one runs the canoe still with the motor just idling north around two islands, and turns south to find a reed bordered channel where Roop Creek enters the lake. Once more one sneaks along the little channels, barely wider than the canoe from pond to pond finally to emerge into a third deeper lake. Instinctively one opens the throttle and speeds up the motor but there is a hedge-like row of willows across the middle of the lake with a gap in it. Just as one reaches the gap, horrors, under the clear water are two huge boulders so close together that the canoe and worse still the propeller can hardly pass between them without striking. Once through here, however, there is Wilson's cabin sunk into the face of a terrace on the far side with a few large spruces around it and wonderful to relate, after coming through all this muggy, brownish, muskeg water in the ponds and creek, here beside the cabin is a large clear spring. The terrace behind the cabin was open as the timber had been burnt and much of it had fallen down. Roop Creek enters this last lake as a small, gravel bottomed stream though farther up it again has a deep channel over which we had to pole vault when returning to camp from traverses.

We traversed the hills around and found in the valley near the cabin a well used moose lick with a shooting platform overlooking it from a clump of spruces. We needed meat so Phil with the Survey 30/30 rifle and I with my own rifle went over to the lick. It was a beautiful, still evening. We climbed up onto the platform and sat there in silence for two or three hours. Though the sky was clear the sun had long gone down behind the Gustavus Range and we were in twilight. About midnight we heard a wolf in the brush near us. If there were wolves about there was little chance of getting moose so we climbed down and started back to camp. On the way we heard splashing in a small lake nearby and approaching it we saw a moose going out of the water of the far side. I was walking in front and although the light was poor I shot. Half a second later Phil shot. His rifle seeming to be almost behind my right ear. This was most disconcerting. The range was rather long for the 30/30. My shot had been fatal and the moose fell just out of water on the other side of the lake. Phil fetched the others including Fred Bacon from camp which was not far and we cut it up and packed it into camp in the early morning. This was the only game shot in 1938. There was an abundance of waterfowl and other wild life including the wolves around the lakes.

This year the whole party was congenial and the three first year assistants were all very capable.

On the thirteenth we moved back to our camp on the main arm. From here we planned a back packing trip for four of us to the head of Granite Creek. The day before starting on the trip we packed most of our supplies and utensils up to the upland level east of Mount Albert, later referred to as Albert. As my sister, Nan, said on seeing it in 1969 "I see why you spoke of the mountain as Albert. It stands out and has personality". The following day we left the two Freds to watch camp and to move it to the mouth of Keystone Creek while we climbed with our bedding up to our cache of supplies. The mountain side was steep with long grass and bad down timber of large spruces crossed in every direction. From here we picked our way to the fork of Granite Creek where it comes down from Mount Hinton. We erected our fly and made ourselves as comfortable as we could. Our camp was pitched on a sloping gravelly terrace in a delightful spot where we had a grand view across and down the valley of the creek. We saw a bull moose in the valley coming there. This valley was almost unique in that as far as we could see there was no sign of there having been any forest fires in it.

From here we traversed the higher parts of the Gustavus Range and it was with much satisfaction that we were able to carry our section over the main ridge to join with the units of Cockfield's map of Keno Hill.

On the second day traversing from this camp two of us climbed Mt. Hinton from the east and as usual examined all the country around with our glasses. Looking directly south we saw two big grizzlies together on the north side of Albert. The next day it rained steadily and as we still had some food we spent it under our fly. The following morning the three assistants packed all our bedding and utensils down Keystone Creek to the lake while I traversed over the ridge of Albert and then down.

Not knowing where the grizzlies might be now I climbed slowly and quietly through the timber listening for the slightest sound and watching all around me. There were signs of grizzlies every here and there. Finally I reached a knoll above timber on the northwest side of the lower, rounded mountain east of

Albert. There I sat down and scanned the country for the grizzlies. In a couple of minutes I saw them in the big cirque on the east face of Albert. They were digging for a marmot and in doing so had made a trench nearly large enough for them to have been buried in. From their interest in one end it seemed that the marmot was still there. He must have been down in a crevice in the bedrock where they could not get him. They tired of this and started digging roots and to my dismay, working their way slowly towards the low pass in the ridge that connected the mountain I was on to Albert. The pass was at the end of the ridge close to the mountain I was on. Beyond the pass the top of the ridge sloped up to the summit of Albert and being the side of the cirque was flanked by shear cliffs about 100 to 300 feet high that continued without break around the head of the cirque under the mountain summit and thence north. Plainly I must either wait for the bears to go through the pass or I must cross the pass and get up on the ridge well above them before they reached it. I decided on this latter plan and hurried along the talus covered slope of the mountain towards the pass. Fortunately the geology appeared all the same as there was no time for writing notes. I kept a watch on the grizzlies. When I was approaching the pass they were too and I was on the point of turning back to wait when the sun which had been covered by cloud came out. The grizzlies now changed their direction and started working their way up into the cirque. In this they suddenly made a dash for the trench they had been digging as though the marmot had poked his head out. Then they continued feeding on vegetation up into the cirque. However, I realized that they might turn again to the pass any time and that there could be no slowing my pace until I was up on the cliffs. At last I crossed the pass. A well used game train ran through it and a deeply worn but moss covered sheep trail extended along the ridge above the cliffs onto the summit of Albert which is rounded and grassy as so often is the case where rams have made their refuge. Now the sheep had been shot out of this whole range in which they had once been numerous. In the early days Keno Hill had been originally called Sheep Hill, because of the flocks ewes and lambs there and prospectors could get one any time.

As it was we saw one old sheep track in the cirque east of Mt. Hinton. When I reached the summit of Albert the two grizzlies were right below me under the cliffs. I could have dropped a pebble on them. Here I sat and wrote my notes, marked the traverse on the map and watched them as I ate my lunch. The wind was on my back from the west. All of a sudden they both stood up on their hind legs sniffing and peering all around as they turned their heads slowly from side to side and raised their noses. Now I could see what huge bears they were. One was a typical silver tip, almost white at a distance but his dark brown under fur showed underneath when he moved. The other was a bleached sorrel colour. As abruptly as they had stood up they now dashed down the slope to the trench they had dug and the sorrel thrust her head into the end of it as formerly. The silver tip gave her a tremendous swat on the rump and then there was a fight. They rolled over and over wrestling on the slope like two immense puppies. Suddenly again they broke and stood on their hind legs sniffing and looking all around. All their composure was now gone and after a moment or two they started for the pass. Their gait looked so leisurely but it was as fast as I could run and in a short time they were through the pass and gone.

I finished my lunch and followed the long spur westward down to the lake where Fred Pearse picked me up with the canoe and told me the others were in. When coming along the spur and looking over the lake I noticed large patches of ripples on the surface of the water which was dead calm. With my glasses I could see the ripples were made by swarms of some kind of fish. This was July the 19th.

The two Freds had put camp up and behind my tent were two spruce stumps. One was of a large tree cut down with a saw and the other was an Indian stump. The roots of the saw stump spread along the present surface and those of the Indian stump were buried. We photographed them and then dug down to see where the roots of the Indian stump were. They spread out about 15 inches below the present surface. Also the Indian stump stood between the roots of the saw stump thus throughout its life the tree of the saw stump had sheltered the Indian stump from rain and sun. The saw stump had 167 growth rings and was cut down in 1922 for lumber for a saw mill that had been a little way down the outlet of the lake. Thus the Indian stump it would seem was cut down in 1755 or earlier. We cut off the top of the saw stump and shipped it with the whole of the Indian stump to the National Museum. In 1977 a Carbon 14 analysis dated it as about 1725.

A long, gravel beach formed the west shore on the north side of the outlet of the lake. Behind the beach two or more low gravel ridges at slightly higher levels formed a relatively flat strip of land bounded in turn by a steep driftbank 20 feet or more high. Scattered poplars, willows and shrubs grew between the beach and the bank and among them Mayo residents had built five or more summer cabins.

The outlet, the start of Mayo River, began in a bay about 50 yards wide at its entrance and extending west a hundred yards or more down the river. On the north shore of the bay was a stretch of low ground between the river and the drift bank. On this sunny, sheltered strip of low land Livingston Wernecke, General Manager of the Treadwell Yukon Co., had built a bungalow, a guest house and two or three cabins that the family used as their summer home and to which he brought the directors of his company and other important visitors. Also this was the base for the float planes with which he distributed his prospectors and hunting guests to the few widely scattered isolated lakes in the unexplored mountain wilderness that stretched from the southeast around to the northwest. Here as caretaker he pensioned and retained an elderly miner, Larsen. With the building of the dam near the outlet for water storage all the low ground around the lake has been flooded.

We had finished traversing around the lake and camped at the foot on July 24th on the south end of the long beach. From there we visited Davidson Creek where some placer miners were working and traversed in all directions from camp. Two days later Bud Fisher's truck moved us up Duncan Creek to the mouth of Williams Creek. Between here and Lightning Creek the greatest concentration of placer work had been done on Duncan Creek but the pay was deep and the gravel unfrozen so that water hampered the placer mining. However, there were a number of cabins along the creek and some were still occupied by old timers including Bob Fisher and his sister, Maria Fisher, both of whom were active prospectors and as they ordinarily dressed in similar clothes, at a distance they were hard to tell apart. They both had the same walk. Bob Fisher had been lode prospecting for many years and was reported to have some good claims. One day someone asked him if he would

take a million dollars for all his claims. "No" he said, "that's less than they are worth". "Well" said his visitor "would you sell them for five hundred thousand dollars". "Yes I might do that" said Bob Fisher.

Miss Fisher gave a tea party for a number of local ladies one day. During it she needed to refill the tea pot and went to the kitchen at the back of their large cabin. The guests heard a shot near the cabin but that was not unusual. Miss Fisher returned and served them with more tea. It was not until after the party when some of the guests helping with the dishes looked out of the kitchen door and saw a dead black bear lying close outside that they realized Miss Fisher had shot a bear and never mentioned it.

From Williams Creek we moved by truck to Keno City. The rain poured down and we accepted bunks in the back of Walter Johnson's big cabin for the night. He was a huge man and often referred to as One Ton Johnson. The weather cleared the next day and with three horses, that is an old team and little saddle horse provided by Johnson, we packed a light outfit up to the pass between Lightning and Allen creeks. Johnson took the horses back to Keno.

From here we traversed the northern parts of the Gustavus Range. In this two of our traverses were long. In one of these three of us went up to the head of Lightning Creek, crossed the head of Allen Creek into McKim Creek, and then circled back to the north and west towards camp. This is a wild, beautiful piece of country. As we hoped to get some game I had my rifle with me. There were quantities of marmots everywhere. On coming up to the small lake on the head of McKim Creek I missed two shots at a wolf that was loping around it. Then we turned north and came upon the knoll between the two creeks that is circled by a moraine. Coming back towards Allen Creek along the upper part of the long, grassy and brushy slope, in passing by a high rugged outcrop on our left we saw a row of marmots above us looking at something to our right. It was a wolf standing in the open about 50 yards away. The instant we came in sight it gave a loud warning whine. Then we heard other wolves running away from behind the marmots through the willows. This wolf in the open seems to have been acting as a decoy to draw the attention of the marmots while the others stalked them from behind. I missed two shots again. The other long traverse was to Cobalt Hill which stands overlooking the bend in Ladue River.

Since leaving Mayo Lake a number of lode prospects were visited on convenient days. On August 11th Johnson came up with the horses and we moved back to Keno City. Here I bought a large bundle of fresh leaf lettuce for 50¢ from one of the local prospectors. In the fall when I sent in my accounts recording "Lettuce 50 cents", I received a letter saying "Lettuce 50 cents. How much lettuce was this? Itemize.". I wrote back "Lettuce 300 leaves 50 cents" and had no further complaint from the accountant's office.

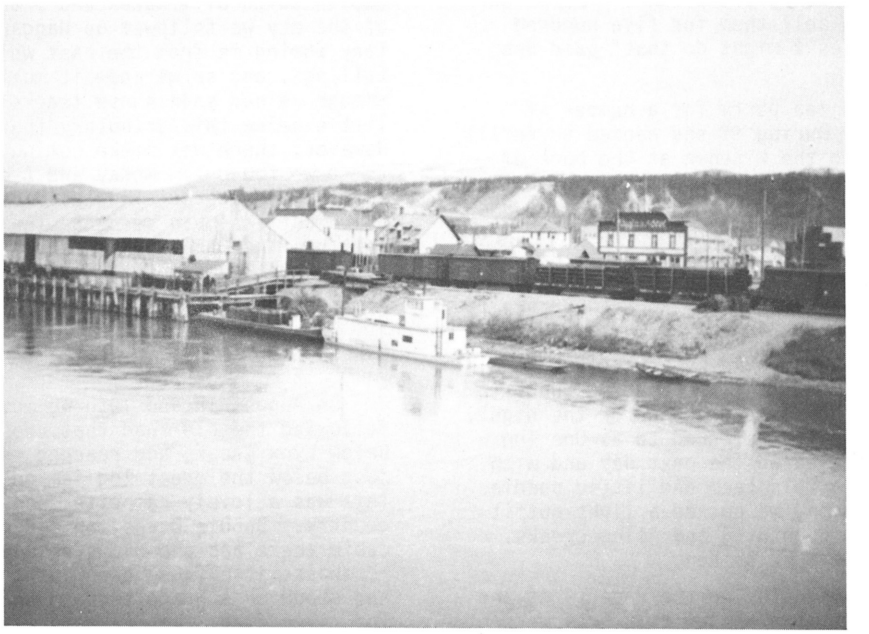
At this time the weather had turned rainy but we set out with the three horses and Johnson as our guide on August 14th for Dublin Gulch. We started down the winter road leading to the Beaver River country and followed it to the crossing on the South McQuesten River below Hanson Lakes. We then headed northwest over to camp in Lynx Creek. (This creek was originally called Lick Creek on the early claim maps but the name was corrupted to Link, the popular term for Lynx.)

The second day while the others moved camp to Dublin Gulch Bill Bacon and I traversed. At the end of the day we followed up Haggart Creek to the tributary coming in from the east which was full of placer tailings, and so we knew it must be Dublin Gulch, but, though we had seen horse tracks in Haggart Creek a little below this tributary there was no sign of camp. However, there was smoke coming from a cabin and going to it we found Tom McKay and Archie Martin, two well known prospectors. They told us we were on Dublin Gulch but they had seen no sign of the party. After some hunting about we saw some smoke about two miles farther up Haggart Creek where camp proved to be. Johnson had completely missed Dublin Gulch. The next day we visited the placer workings, meeting Fred Taylor who had two men working for him and also saw George F. Potter.

On August 18 and 19th we moved down Haggart Creek following the old road that crossed to the left limit below Lynx Creek, and reached the old roadhouse site just below the great log jam on the South McQuesten. This was a lovely campsite, one of the best in the country. Bobbie Burns, an old prospector, had his cabin there and the old stable still stood but the roadhouse itself had been burnt down. The buildings had stood on a broad terrace about 15 feet high above the river flat. The terrace was clothed with grass, scattered willows, and young spruce trees. A big spring rises at its base. There is a lovely view across the river flat to Mt. Haldane. The old road passed along the terrace in front of the buildings and then down onto the spruce covered river flat. It crossed the river on corduroy about 100 yards long built on the top of the log jam. This log jam completely filled the course of the river for at least a quarter of a mile extending nearly down to the mouth of Haggart Creek. All this has since been bypassed by the building of the bridge over the river and the new road up the right limit of Haggart Creek as will be seen in 1942. This was my introduction to Dublin Gulch and Haggart Creek which I was to know so well and enjoy visiting so much in later years. Even this short, rather unsatisfactory trip stands out as one of the pleasanter parts of this season.

On August 21st we moved over the road up Ross Creek and down to Sullivan's Roadhouse at Halfway Lake. There we said goodbye to Johnson and the horses. We traversed from here onto Mt. Haldane and one night Fred Pearse and I slept in the open near the road construction camp where we had our supper and breakfast the next morning. The night was clear and frosty with magnificent northern lights. In the morning we crossed the McQuesten valley by a trail, and over the river on a log we had been told of, to traverse the north side. On the ridge there we came upon one of those trees which we quite often saw. The tree had been a big living alpine fir. Splinters were strewn in all directions, some 20 yards away while the top of the tree lay as always where its roots had been. The roots had burst out of the ground as though they had exploded. There was no charring or scorching. The cause of this remains a puzzle to me. Are they frost bursts? Strikes by high voltage lightning, or what? We also found other trees I knew were lightning strikes which were of two kinds. One type was charred and burnt, the other had a spiral strip cut down its trunk.

On the 24th we moved by truck to Minto Bridge where there was a very nice camp upstream from the



*Waterfront at Whitehorse, 1938. The Loon in foreground. (84600)*

*Thawing ground on Middle Hunker Creek, 1938. (84805)*

bridge, on a flat beside the roadhouse and cabins before the area was flooded by the hydro dam. Here I left the party to traverse and caught a plane from Mayo on the 27th to Dawson. There I stayed with the Jeckells in their summer cottage at Rock Creek and made the usual calls. On the 29th Mr. Jeckell and I drove over the Sixtymile Road going as far as the International Boundary and then back down to sleep the night at Holbrook's dredge camp in Sixtymile valley below Miller Creek. The whole Sixtymile road was to be improved as it was now getting quite a lot of use. The day was lovely and the views of the scenery magnificent as the road follows the summit of the gently undulating plateau ridge from Dawson to the Boundary. The dwarf birch and willows on the upper levels had reached the peak of their fall colours and the foreground sloped away in sheets of copper and golden tints. To the north across the Yukon River the peaks of the Ogilvie Mountains rose from the deep blues of the spruce forest through a broad band of red and yellow hues of the birch and willows to their snow covered summits tinted a delicate orange pink by the sloping rays of the fall sun.

We found Holbrook had converted the old wood burning steam dredge to one of diesel electric power. After the night with the Holbrooks we visited the Stewarts on Miller Creek and watched Ray Stewart and Gordon, his son, pour a gold brick. Once the gold was made into a brick it was a hard thing to steal in the Yukon in those days. We lunched with the Stewarts and drove back to Dawson. After a visit to Granville for a night I flew back to Mayo and returned to camp on September 3rd.

On the 5th I walked up Minto and Highet creeks. I had heard the Ray brothers, Harvey and Irving were placer mining on Highet below Middlecoffs and that Mrs. Irving Ray was cooking for them. They were then strangers to me and as I walked up to the cabin door I pictured Mrs. Ray as another 300 pounder like Mrs. Britton at Kirkman Creek. I nearly fell over when a pretty girl opened the door and said she was Mrs. Irving Ray. Their working was behind the cabin in spur of hill that projects from the north side and causes the bend in Highet Creek. From their working I continued up to Middlecoff's where I spent the night. The following day was spent with Rudolph Rasmusen, a well known lode prospector going over various silver-lead veins around the head of Highet Creek. The night was again spent with the Middlecoffs and the day after I walked back to camp. On the way while I was eating lunch at Roaring Fork Creek bridge a truck stopped. The driver and I had talked for some time about various subjects. This was my first meeting with Ed. H. Barker whom with the Rays I saw a lot of in later years on Haggart Creek.

From camp I drove to the Elsa mine all the way by the new Silver King road for the first time. Various prospects on Galena Hill were visited and Schelly who was managing the Elsa for Wernecke that year drove me into Mayo.

As I had been asked to visit some prospects in the Wheaton River district south of Whitehorse by Matthew Watson and as I always tried to see one or more new areas every summer I left the party to move into Mayo, traverse some areas up the Stewart River around Gordon's Landing and then pack and store the equipment in Mayo. I had arranged this for them and for them to fly to Whitehorse on the 14th.

On the 10th I flew to Whitehorse and boarded the train the next morning to Carcross where I stayed in the hotel. Matthew Watson who ran the store in Carcross arranged to take me up Lake Bennett in his cabin motor boat the following morning to Millhaven from where a teenage boy was to guide me to Tommy Brook's cabin on the slope of Mt. Stevens in the Wheaton River valley. Watson grubstaked Brooks to work on his lode claims. The wind was fierce on the lake but we landed in the calm of Millhaven before lunch and reached Brooks cabin in the afternoon. Tommy Brooks was an interesting character being a writer and poet as well as prospector. The next day we went over the claims. This was my first visit to the Wheaton and it came up to all I had heard of it. The area is one of rolling mountains between the Yukon Plateau and Coast Mountains. The valleys are wooded with park-like stands of spruce and pine between stretches largely of dwarf birch or meadow. The upper slopes are delightfully open and clothed with grasses and alpine plants and the area has a general air of dry belt country.

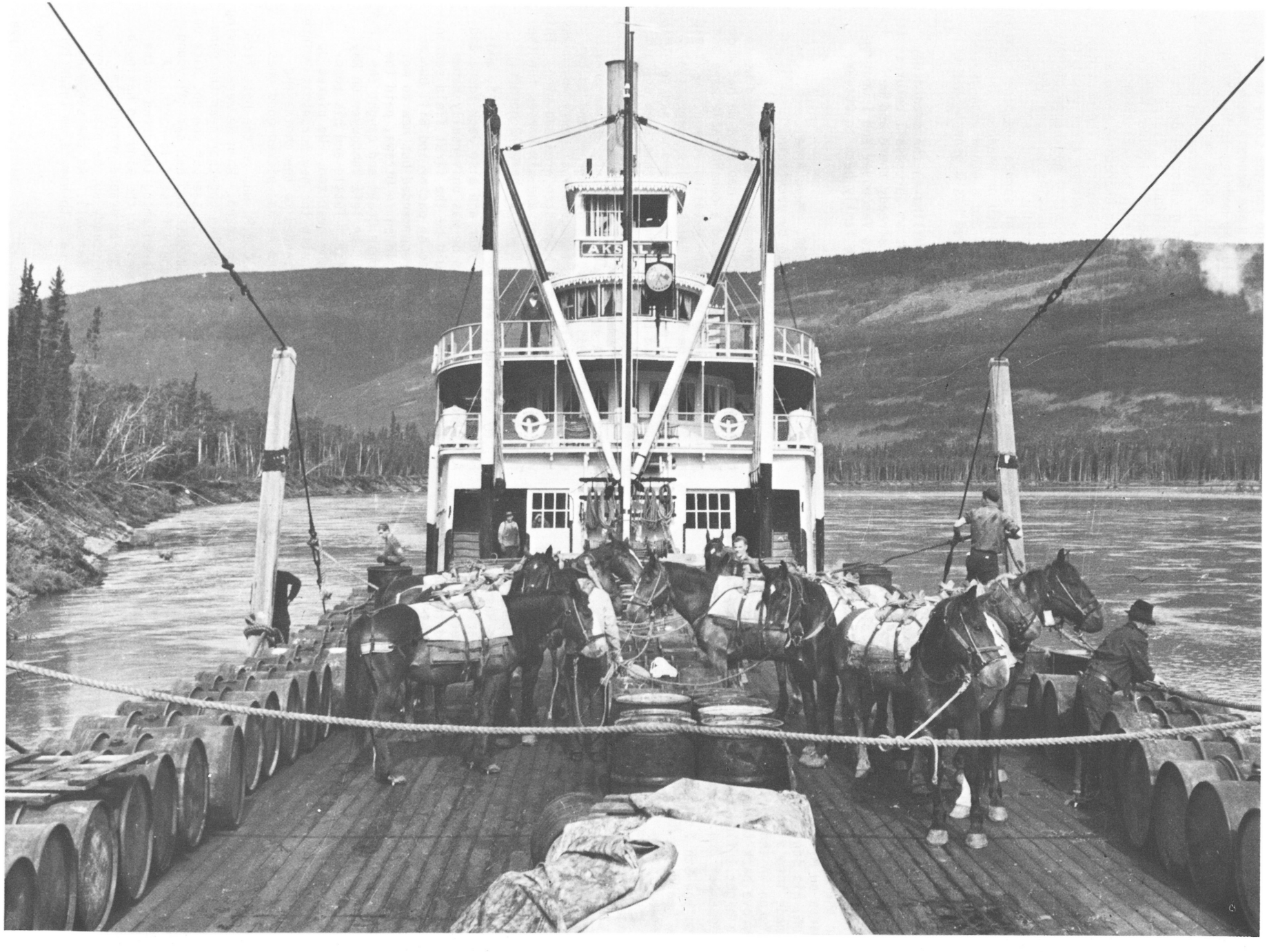
Watson picked us up at Millhaven the second day and after spending the night at Carcross I returned to Whitehorse. The party was already there and we returned outside together to Vancouver and I went on to Monte Creek and took the family back to Ottawa.

## Section II: 1939, Mayo Area, the grand circle by packtrain.

Last summer though transportation confined us to the northwest corner of the Mayo map area we had made a good start. We had covered a considerable area and joined our mapping with the detailed work of Cockfield and Stockwell on Keno and Galena Hills respectively. This had worked out satisfactorily and we had something to show. I told Dr. Young that in this area at last we had some chance of working out the section and general structure. For 1939 I planned a grand tour of the outlying and little known parts of the area. The packtrain was to have six new horses and to be divided between Tuttle's topographical party which was to continue mapping the McQuesten area and mine. This year he was to have the canoes and six horses for the completion of that map. I was to have 12 horses.

My assistants were to be Bill Bacon, chief, and Fred Pearse both of last year and also Jack Young and A.T. Anderson or Tubby as he was universally known for both of whom this would be the first field season. Clarence Reinertson was to be packer and Bill Duncan cook. Both were highly recommended but new to me. I left Violet and the children in Ottawa, paid the usual weekend visit to Monte Creek and caught the C.P.R. night train to Vancouver. We left Vancouver on May 25th on the Princess Louise. Tuttle and his topographical party were on the boat too. We picked up Bill Duncan and Clarence with the new horses at Prince Rupert. Clarence had attended to the choice and purchase of the horses and he had picked good ones.

Inspector Binning, R.C.M.P. was on the boat from Vancouver and I met him on board. When we were leaving Prince Rupert we were standing together near the gang plank for the same purpose, to see our men got back on. He was dressed in a tweed suit and had several young constables with him on their first trip north. A sergeant in uniform appeared among the crowd on the wharf, clearly three sheets in the wind and having a wonderful time with the girls draped around him. Finally he came none too steady up the plank carrying his knapsack and waving farewell. As the sergeant stepped on deck, Binning said to him "I am Inspector




*Moving the packtrain to Mayo from 26 Mile Landing aboard the Aksala. June 9, 1939 (86844)*

Binning Sergeant Smith. How long have you been alone up the Nass?" "Three years Sir." "Too long", said Binning "keep out of sight".

We reached Whitehorse on the 29th. The planes and river boats were crowded. The next day the two Bills and Jack flew to Mayo where they were to get our equipment out of storage. As Bill Bacon had been on the party the year before he knew where everything was. Then they were to camp opposite Johnny Vinegar's on the road to the mines about a mile and a half north of town. Fred and Tubby went by steamboat down the Yukon and up the Stewart to join us some days later. Tuttle and his party with Clarence and all the new horses left Whitehorse at 9:30 p.m., May 30th on the Whitehorse. The two packers, Clarence and Mike Burke and the new horses were landed opposite Selkirk just below the mouth of the Pelly and rode along the trail under the lava cliffs to the Pelly Farm where the rest of the horses had wintered as usual. The two packers were to work together, to shoe the horses, collect and sort the pack equipment and then take all the horses up the trail along the Pelly valley to the crossing and thence north over the winter road to Twentysix Mile Landing on the Stewart River where the winter road to Mayo is close to the bank and there is a good campsite. In the meantime Tuttle and the rest of his party continue on the Whitehorse down river from Selkirk to Stewart where they caught the Aksala and transferred their equipment to her. The Aksala left Stewart at 7:00 p.m. on June 2nd and put them off at 10:00 p.m. Sunday, the 4th at Twentysix Mile where they camped and started the season with a number of short back packing trips while they waited for the horses and the canoe I was to bring to them from Mayo.

In the meantime I had to wait in Whitehorse for the mail plane and flew in it to Mayo on the evening of June 1st. I was very glad to find camp all well fixed up at Johnny Vinegar's and to be able to go there instead of sleeping at the grubby "Chateau Mayo".

Johnny Vinegar was a little Indian market gardener who made his living growing vegetables for the mines and people around Mayo. He was good natured, hard working and knew his business. His "carroot", "cappouches" and "lettusy" were the best in the district. He also made excellent home brew from ice with which he entertained his guests. His only water was from his well in his cabin and in dry weather he watered his plants from it, a cupful to each. In this camp we depended on his well for water.

The weather was unsettled and there was still a lot of snow above 4000 feet. The Stewart was high but had started to go down. On June 2nd we were moved by truck to our campsite of last year on the west bank of Mayo River above Minto Bridge. After lunch Schelly picked me up and drove me to the Elsa mine and back. The next two days we traversed, getting lifts when we could along Silver King road on ore trucks. Fred and Tubby arrived on the steamboat and got a lift to camp.

On June 6th I went into Mayo, for the order for the next five weeks and a second order for the following month for ourselves and another order for Tuttle's party. Our own supplies were taken by Bud Fisher's truck to camp at Minto Bridge where the party was picked up and moved to Mayo Lake to camp and traverse while they waited for Clarence and me to arrive with the horses. I thought this might be a week. In this it was a great help having two good assistants who knew the ropes from last year in Bill Bacon and Fred. Also, I saw Bill Duncan was a gem.

I packed Tuttle's supplies into the 20 foot canoe I had stored at Mayo last fall and started drifting down the river to Twentysix Mile as Tuttle's motor was with him. After one stop for supper and tea of 15 minutes I reached Twentysix Mile at 10:30 p.m. Only Harry Webster, the cook was there and sound asleep. Tuttle and his assistants came in on the 8th and the same afternoon Clarence and Mike arrived with the horses about 4:30 p.m.

I had planned to ride with Clarence and our 12 horses along the winter road on the south side of the Stewart valley until opposite Mayo. Here we would swim the horses across the river or if the water was too high wait for a steamboat to take them across.

On the morning of the 9th Clarence had all our horses ready saddled and we were in having breakfast when Mike shouted "Steamboat". It was the Aksala with a barge. Nothing could have been better. We flagged her and put the horses with their equipment on the open barge and were in Mayo before 5:00 p.m. However, we had left Clarence's duffel bag behind in the canoe with one of his motors he had hurriedly unpacked and installed. As the motor was running badly and the Aksala made the river rough for nearly a mile behind her, this was a feat of navigation. We were most thankful to get the bag.

Clarence and I bought a number of things, had supper, packed the horses lightly and made the nine miles to the campsite at Minto Bridge that evening. The following evening we reached the camp at Mayo Lake much to the party's surprise as we were about five days earlier than I had led them to expect. Had the Aksala been an hour earlier we would not have been ready for her. Had she been an hour later we would have been on the road which follows a route generally some way back from the river.

June 11th we sorted and repacked and the next day started on the trail along the north shore of the lake. The topographers had covered this trail in September 1937 from the east end of the lake, 21 miles, in one day travelling light. I allowed two days for it as the horses were heavily packed and I wanted to get some traverses done. With one assistant I went up Pingpong and down Keystone Creek. The ground was very soft with the frost coming out. From the latter creek we followed the trail of the packtrain and saw what a difficult time they were having. The ground was soft and wet. The trail flooded by the lake in places as the water was high. Besides this it was narrow and a good deal of cutting had to be done and in some places it had virtually to be built. We didn't get nearly as far as I had hoped and I decided to drop traversing until we reached Granite Creek and so keep everyone together. The second day we did not make as long a move as on the first. One horse fell into the lake but Clarence snubbed its halter on a tree and saved it. The pack had to be cut off and though retrieved, it was soaked. We camped at the eastern most creek coming down from the Albert group of mountains. There was very little horse feed at these camps. The third day going along the lake there was a mass of huge blocks of rock at one place. The trail led along a narrow ledge with a great rock projecting above it and a six foot cliff dropping into floating driftwood with deep water under it. Clarence's saddle horse was led past the rock while Clarence with his lasso fastened to the pummel of his saddle held the end in case the horse should bump the rock and lose

his footing which was what happened. Then each pack horse roped in the same way was led by the rock in turn. Their packs bumped the projecting rock throwing them off balance which would have made them step over the cliff with their hind legs had not Clarence snubbed each one.

The latter part of this day went better. We reached the mouth of Roop Creek and camped opposite it. The following day we moved to Iron Creek crossing Granite Creek which was up to the horses bellies. From here the packtrain was to move the next day to and up the Ladue River valley and to pitch camp near McKim Creek. Fred and I traversed up the divide between the Roop-Ladue windgap and McKim Creek. The walking on the ridge was awful, like walking in 8 inches of thick pea soup but we finally came down onto a bluff on the south side of McKim Creek. The Ladue valley was spread like a map below us for miles. Not a sign of camp but two moose peacefully browsing where it should have been. There was nothing to do but work our way down the valley to find camp which we found just where the river turns east. The party had only come three miles though they had been hard at it all day. Clarence particularly felt badly as he took it as his responsibility to see that camp was moved to where I wanted it. The ground had been soft, the horses sinking into it 8 to 10 inches at each step and as they lifted their feet the ground sucked at them. They were tired out. They had been packed and moving for 5 days, that is every day except the 11th since they had left the Pelly Farm and with no time to relax and feed well. The next day was June 17th and taken as Sunday. Clarence and I scouted for a route up the Ladue valley but found it had to follow 200 or 300 feet up on the hillside due to the winding of the river. The first part was along a precipitous talus slide and up between cliffs. It was decided to take only 5 good horses, lightly loaded and that Bill Duncan and one assistant would stay behind to look after the camp and the other horses. We did this on the 18th. The next day two of us traversed around the base of Cobalt Hill and two traversed on the northeast side of the valley. The following day while Clarence took the horses back to the main camp we traversed across the Ladue again as there was a good ford at our light camp. When we came down to the main camp where we had to cross the river on a small raft that had been built for us.

On June the 21st camp was moved about 5 miles down the Ladue River valley while two of us traversed again in the Patterson Range. The following day it rained hard and we stayed in. The day after this Jack and I traversed along the top of the ridge of the Patterson Range while Clarence, Bill Duncan and one assistant moved camp to where the Ladue turns north. Bill Bacon and the remaining assistant traversed on the other side of the valley.

Besides the soft ground, deadfall and patches of dense spruce bush there was no trail on these moves since we had left Roop Creek. The horses were still tired. They had had little feed. Clarence often had them in camp on moving days about 6:30 a.m. and as a result they frequently had their packs on for 9 or 10 hours. They got no chance to nibble on the move as except at lunch time they had nose baskets on to prevent them dawdling and picking a bite of grass on the way. When they were unpacked they were too tired to eat well the first night. To keep them in condition on what they could rustle required frequent rest days. Fortunately "move a day, rest a day" suited both the horses and the geological work well and this became the general rule.

It was now beginning to soak into my head what a pick party I had this year. Bill Duncan was a Scot and a good plain cook. Though he never made cakes or pies he made excellent bread and knew how to keep everyone contented. He was thoroughly experienced in our kind of camp life. His cook tent was kept just so and everything in order. If an assistant annoyed him there was a blast but as he was co-operative with everyone any resentment this might have been expected to cause never disturbed anyone. He was always ready to help others. He liked his stove low and had it about a foot above the ground resting on soil held in by cribbing. In this way the oven kept an even heat and warmed the cook tent well. He had a high narrow side table opposite the stove and the dining table at the inner end of the 10 x 12 x 4 tent. We sat on the fibre cases for meals. This made more room in the tent than when seats were built along each side of the table and also made getting the cook tent arranged and ready a quick job.

Bill and Clarence shared a 7 x 7 wedge tent. There was never a word between them. The first thing one heard in the morning was Bill quietly telling Clarence coffee was ready for him. Clarence was of Norwegian stock, and had moved from the mid-west states to a farm near Fort St. John. Neither Clarence nor Bill were tall. Clarence was an outstanding horseman and breaking wild horses in central British Columbia had been his work some years. He knew horses thoroughly. They had to do what he wanted. At the beginning of the season he did not hesitate to rope those difficult to catch but he was gentle and soon got them out of their bad habits. Freddy who had always been a problem to catch and pack was soon walking up to Clarence who generally had some sugar or salt in his pocket and talked quietly to the horses. Clarence was always watchful of the horses and was very quick. After his coffee on moving days he went for the horses with a bridle in hand and at the run. He rode at the head of the packtrain and picked the route while Bill rode behind and watched the packs. As a packer for our work Clarence had no rival. He was the best packer I have known.

The four assistants were all good company, took things as they came and were co-operative. Bill Bacon having been with me last year and a geology student fitted in well as chief assistant. Fred was not in geology but his experience last year was useful. He was intelligent and liked outdoor life. Jack was a geology student but this was his first year's field experience. He was good with the horses and capable. He was very quiet and a hard worker. Tubby was tall and slim. He was in Arts and had never been in the field before but he took to things readily and became very good with the horses. He was the clown of the party and raised many a laugh when things were tough. He wore thick glasses and if they were misplaced had to ask someone else to find them. To my horror he had only one pair but they lasted the season.

With this party two traverses were nearly always run every day including moving days unless a lot of trail cutting was anticipated. On these occasions at least two assistants went with the packtrain. On reaching the new campsite the place for the cook tent was chosen and then those of the sleeping tents and the horses unloaded where most of their loads were needed. My outfit formed one horse load and was put where my tent was to be. As the party quickly learnt that I like a view my sites were well chosen. The cook tent was put up first, the stove put in and the

two tables erected on pole frames with four legs driven into the ground. Then the sleeping tents were put up. These all had flies which have three advantages. In June and July they kept the tents cooler on the sunny mornings and in wet weather everything drier and when we were caught by a shower as we broke camp they kept the tents dry and so make the loads lighter.

At meals I sat at the end of the table with Bill Bacon on one side and Clarence on the other and the others along the table. Bill Duncan had things down to a system. As soon as the meal was finished he lit his pipe put the dishes together, the dish pans on the table and handed dish cloths to two of the assistants. The dishes were done while we sat around and talked. This party was up to the standard of 1932 to 1934, there was no weak link.

Going back to Jack and I traversing along the top of the Patterson Range. We climbed from below 2500 feet at the river to 6000 feet. We soon found ourselves climbing over rocky summits and wading through patches of wet snow up to our waists. A fresh moose track crossed the very top of the ridge. Travelling was slow. Finally we saw camp across the valley below and descending, waded the Ladue River and reached camp at 1:00 a.m. Bill had left supper for us in the cook tent.

We planned to move again in the morning. About 6:00 a.m. I was awakened by Clarence shouting for help, pulled on my clothes and joined him about 300 yards from camp. Star, our largest and best load carrier was in muskeg and could not get his legs out. He was slowly sinking. In driving the horses into the camp they had run across this muskeg. The other horses being lighter had got over the mat of weed on the surface but Star had gone through. In a few minutes all the assistants were up and cutting poles and brush which were laid first around and under Star where we could and then in a wide path about five yards to the bank of good ground. Following this, under Clarence's direction two pulled on the halter shank and the rest of us on the ends of a long rope Clarence had worked under Star. Then with much encouragement and pulling, Star made a great struggle and got his fore legs out and onto the brush. He seemed to understand what we wanted him to do. The rope under him was moved and with another struggle he got his hind legs up and was led shaking over the brush to the bank. I have never seen a muskeg of pink weed quite like this before or since.

This day we moved to the saddle north of Tiny Island Lake getting traverses on the ridges on both sides of the valley. On the hill on the northeast a herd of caribou of considerable size had recently passed. The next move took us to the southeast end of Tiny Island Lake. So far the packtrain had been moving in the valleys while we traversed on the hills on each side but now the topography lent itself to moving the packtrain on the uplands where there was less brush and the ground had now dried and settled. We moved up and camped near the head of Barren Plateau Creek among the highest trees. Most of the rest of the summer we did this as far as we could. At this camp Bill decided he would give us a meal of baked beans that he had talked of so much and for which he had been packing a heavy cast iron pot. The bean pot had to be heated in the ground all day but when he dug a trench in which to have a fire to heat the ground he found the first was too cold and he gave up the idea. We traversed around the plateau north of Mt. Edwards and took Sunday. The next day the rain came down in torrents and held us there.

From there we moved west some miles the first day and then on the second day down to the lakes near the mouth of Callaghan Creek. This was a memorable day. Coming down off the upland Clarence had spotted two bull moose in the small lakes near where camp was to be. As soon as the packs were off, the horses were left tied up and no sound was made. In a few minutes he had shot one. He always carried the long barrelled Survey 30/30 rifle on his saddle. When I came into camp the others were in too. The meat was boned and all hanging up in the meat tent. The evening was cool and sunny and the night cold and dry while the following day was again dry and sunny. The meat cooled quickly and got a dry crust on it. The party ate the last stew of this meat 21 days later. The effect on the morale of the party when we no longer had to eat bully beef, ham, other canned meats or sausages was always marked but we seldom succeeded in getting fresh meat quite as early as July 3rd other summers.

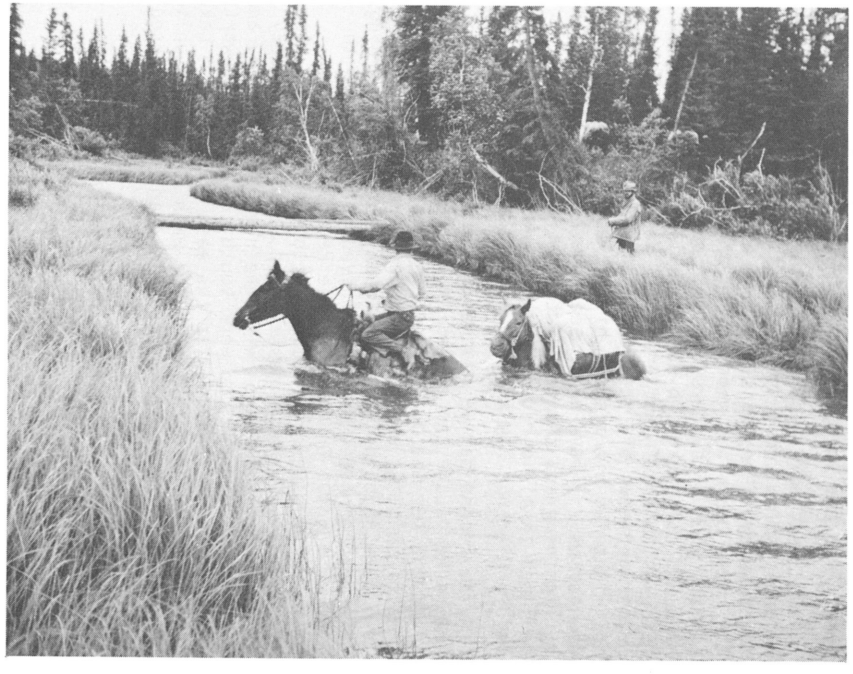
On July 4th we traversed the east face of the Fork Plateau and we came upon the smallest cabin I have ever seen. Its dimensions were less than 10 feet long, 4 feet wide and 4 feet high. It had a flat sod roof and a hole at one end through which one could crawl for a door way. There were spruce boughts on the floor and a stove and stove pipe both made of 4 gallon gas cans. No doubt it was a snug and warm for one night but certainly it would have been awkward.

On July 5th we moved up onto the Nelson Ridge camping that night in the top fringe of balsam fir. It was a lovely spot with the valley of Edwards Creek spread out 2000 feet below us. The following day we moved eastward along this broad, open, gently rolling plateau covering 11 miles by 3:00 p.m. From this ridge I drew in Edwards Lake which Tuttle had noted but omitted plotting as it was in deadground in the views from the topographical camera stations.

Our next move took us onto the east end of the ridge on which Lonely Dome stands. After this we moved westward on two succeeding days. Going along the ridge two of us were on top of one of the rounded summits when a thunderstorm came up. The upland was open and the packtrain was in full view going along below us and half a mile ahead. We decided we had better get down off this top when almost immediately the lightning hit a small hillock about 100 yards from the horses. I have never seen the horses stampeded by lightning and thunder as they were then. They galloped in all directions and it was several minutes before Clarence had them together again.

The second day we reached the end of the south arm of Mayo Lake and camped on a broad sand bar now flooded after the building of the power dam. Our next load of supplies and mail had been brought by plane to George Reynolds at Ledge Creek, and in the morning he and a boy named Stevens arrived in his boat with all our goods. On the 12th the Reynolds came to supper with us and I returned with them to their place to start the mining industry trip. I left the party in charge of Bill Bacon with their general course, and traverses, laid out, to work south, cross the Stewart River and make their way to the east end of Moose Lake where I would meet them by plane with mail and supplies about the 29th, I hoped. The plan had been discussed with the whole party.

I spent the night with the Reynolds, went over their placer workings on Ledge Creek in the morning and then we went in their launch to Steep Creek to



*Crossing creek at the north end of Mist Lake, August 1938. (86916)*

*Lunch stop in a burned over area, 1938. (86848, 86849)*

see old Gagnon. He had recovered 25 ounces of gold the year before. In the afternoon we went to the foot of the lake and then drove in the Reynolds old car to have supper at Van Cleaves roadhouse and afterwards on to the Elsa Mine where I slept. The next day Schelly drove me to Wernecke. I walked up to the Shamrock Mine and then down to Thunder Gulch placer workings where John Backe, and Cecil Poli among others were mining. After spending a little time there, I walked over Galena Hill and saw several lode prospectors on my way to the Elsa.

On the following day the 16th I flew to Dawson and the next day Mr. Jeckell, the Comptroller drove me around the Klonkike. We spent a night in Taddie's roadhouse at Granville and enjoyed Miss Melhauses's cooking and returned to Dawson.

A plane was to fly to Yukon Crossing on the 19th but the day was too hot to get off the water. I slept on one of the steamboats that was in and was up at 4:00 a.m. and the plane took off a few minutes after 5:00 a.m. with Jim McNeil, the road foreman who was also bound for the Crossing as work was to be done on a road into Freegold Mountain.

On July 20th after breakfast with the Edwards, who were running the old Crossing roadhouse, I started to backpack into Freegold Mountain by myself. It was hot, I spent that night in my bedroll under a mosquitoe net and reached Bill Forbes' cabin near the mountain at 1:00 p.m. the next day. I was thoroughly done in and rested until 5:30 p.m. when I went over some of the lode gold prospects. The following three days were spent on visiting prospects in the course of which I called on Guder and packed over to Tinta Hill a few miles northeast of the mountain where Malcolm Ross and Bill Teare were working on a big low grade silver lead vein. I slept with them and went over their workings in the morning of July 25th and after having lunch I left at 2:00 p.m. to pack out the Afe Brown's place at the mouth of Merrice Creek on the Yukon River. Brown had a telephone in his cabin and with it I could ask to have the steamboat to stop for me. It was also a much shorter route to the river than the one I had come in on though there was no trail and I had not actually walked over the route. It led over Granite Mountain and thence down Williams Creek. After I had crossed the mountain it started to rain and poured the rest of the day. However, I had my cape and put it over my pack and myself and kept dry above the waist. It was pitch dark by the time I reached the mouth of Williams Creek but there was a wood road along the bank and I followed this. Finally I saw a light ahead of me. It was from a window in the Brown's cabin. I knocked on the door and was a little surprised to find Mrs. Brown and a man named Israel inside. They were making jam. It was still pouring and I asked if there was a dry place to sleep. Israel disappeared. Mrs. Brown said Afe was down sleeping on their boat at the river and that I could sleep in a back storeroom. There was no furniture in it but it had a clean board floor. I spread out my bedroll and was soon dead to the world. The next morning Mrs. Brown called me to breakfast and we had a friendly family breakfast with Afe and the two boys, Johnny and Allan. I phoned Carmacks and asked Howard MacMillan there to tell the Casca to pick me up. The weather had cleared and the boys went swimming in the river though the temperature of the water was 56°F. by the Casca's engineer yet they enjoyed being in it for half an hour. They had bicycles which they rode along the wood road and trails along the river bank. There was a large and very flourishing vegetable garden in front of the cabin.

The Casca arrived at 3:00 p.m. on the 26th and took me to Dawson where I spent my time visiting, doing accounts and writing letters until there was a plane to take me to Mayo. Finally I got away to Mayo at last after supper on the 31st. I had to take a room in the Chateau Mayo. I worked all that evening collecting, sorting and packing our supplies and equipment besides getting and answering the mail. The storage contract was arranged for the equipment that was to be left in Mayo. Finally all was ready at 2:00 a.m. and I went to bed but was up again at 5:00 a.m. as the pilot said the weather was so hot that we could not get off the river except early in the morning so we must be off before 6:00 a.m. That was August 1st. The only thing I had not been able to get was my suitcase that I had given to Mr. Hall, the manager of the Bank of Montreal. He had put it upstairs in the new frame building of the bank. I was not able to find him anywhere. I was desperate. However, the carpenter, who was working on the building early on account of the hot weather, was there and after some discussion we took the back door off the bank and fetched my suitcase as I expected to leave any minute but finally the plane wasn't ready until 10:00 a.m. I had to tell Mr. Hall when he turned up a little later what I had done. He took it in complete silence. I felt much ashamed as I saw it had hurt Mr. Hall's feelings. I had met him in the Bank in 1921 in Penticton and had a great respect for him.

Mr. Hall was an outstanding citizen and character of Mayo. He was born in England and coming to Canada had joined the Bank of Montreal at the age of 17. He was a bachelor and a Plymouth Brother who took Christianity really earnestly to heart. Throughout his life he supported his invalid sister. He was made manager in Mayo in 1934 a position he held for nine years. He stood up for the underprivileged, particularly the Indians and did many things for them. The White Pass considered the Indians irresponsible and would not give them contracts to cut firewood for the steamboats. Among the many things Mr. Hall did for them was to take the contracts himself and sublet them at no cost to the Indians. This gave the Indians a chance to earn cash instead of only trapping for a living for which they had to deal with the stores generally on a barter basis that kept them in debt much of the time. Mr. Hall's kind acts soon earned him the intense dislike of some of the citizens of Mayo notably the manager of the Northern Commercial Company.

The Bank of Montreal during Mr. Hall's first years in Mayo was a small log building in a low hollow on front street close to the N.C. Co. In 1937 when the river started to rise in the spring to an unusual level after a marked hot spell, Mr. Hall moved the Bank's records, bonds and other valuables and put them in the rafters of the Roman Catholic Church which was on higher ground than the rest of the settlement. The N.C. Co. manager openly jeered at Mr. Hall as he moved the things from the Bank building by wheelbarrow. The N.C. Co. was the General Motors agent and had received a new car on the first steamboat of the season. This car was in the N.C. Co. garage between the store and the Bank. All that the agent had to do to get it to safety was to drive it about 200 yards but he knew this was quite unnecessary, the river would not rise any higher. The water level came up about 3:00 a.m. each morning and remained constant during the days. A day or so after Mr. Hall had moved the Bank's things the water was running along front street. The car still could have

been moved safely but the N.C. Co. manager persisted in his belief that he knew the river had reached its highest possible level. The next morning the car was in six inches of water, the morning after that it was up to the top of the hood and the third morning by looking into the garage from a boat the top of the car could just be seen. When the flood went down it was completely ruined. The high water mark on the Bank building had dried well, it was cleaned of river silt and Mr. Hall moved the Bank's properties back into it without loss. I am glad to say he was commended for his action by his head office.

Another story also shows how Mr. Hall was regarded by some of those who considered themselves leading citizens of Mayo. During World War II when the first War Loan was being organized he was not invited to be a member of the local committee for it. However, when the official in charge of the loan in British Columbia and Yukon visited Mayo a dinner was arranged for him and the local committee had to invite Mr. Hall as he was the only bank manager in town. After dinner the visitor said to Mr. Hall now gratified he was to hear that so small a place as Mayo would give as much as $25,000. to the loan. Mr. Hall answered quietly "Mayo will subscribe at least $200,000.". Mr. Hall of course knew as several of the prospectors with substantial bank accounts had consulted him about the loan. Mayo actually subscribed more than $250,000. when the time came.

Mr. Hall was greatly respected by the rough and ready members of the community, prospectors, wood cutters, and trappers. They confided their problems in him. As a consequence he made some unorthodox loans giving them large sums, at least as much as $100,000. in one case, without security, solely on the basis of his judgement of the borrower's character. Though he told me the Bank inspectors had criticized him for this he had been able to show them that every one of these loans had been paid with interest promptly on the date it was due. The effect of some of these loans was quite apparent to me from year to year as I saw some formerly single-man operations through Hall's unsecured loans develop into well equipped enterprises employing six to a dozen men despite the depression. The price of silver was down and silver-lead mining was at a low ebb but gold had been revalued. The production and payrolls of these small placer gold mines were a main source of cash to the whole community. In this way he was a godsend to everyone and by the time he left Mayo in August 1943, the majority of the people had learnt to appreciate him.

Now getting back to field work as I have said the plane was not ready until 10:00 a.m. We loaded the stuff on board and we finally took off. I had shown the pilot themap and what a short way it was to Moose Lake in a straight line but he insisted on flying down the Stewart to the winter road, thence across to the Pelly and along it and the MacMillan, a route about three times as long. He was afraid of getting lost. However, we landed about noon opposite camp. The party who had reached there on the evening of July 27th had been watching for us every day as their stock of provisions withered away. It was now August 1st. They were indeed glad to see us. We unloaded the plane and the pilot had lunch while the mail was opened and answered. Clarence had again got a moose close to camp the evening they had arrived so at least there was lots of meat. There was also a truly magnificent moose head on a stump near camp. We found out later it was shot by Jared Wilkinson two years before but was so big he could not take it out with his dog team. It was not a record but beautifully symmetrical and had small points like little hooks on the back of each palm.

While I had been away the party had worked their way to the Stewart River in three moves reaching it about eight miles below Wilson's Slough. Here they camped and built a raft from one great dry tree that was lying on the river bank. Cut into pieces more than twenty feet long, it yielded five good logs so that stump and all the tree must originally have been more than 120 feet tall. The building of the raft, swimming the horses and crossing the camp in several trips back and forth had taken three days. On July 19th they moved into the pass to Canoe Lake and then worked their way past Hess River to Moose Lake traversing on both sides of route. While waiting for me they traversed the hills around camp.

August 2nd it rained most of the day. The next two days we moved around the base of the Moose Plateau and onto the northeast end of Clarke Hills. On the east part of the top of the plateau is a pond containing a considerable deposit of peat as well as a pingo-like feature in it. The surface of the plateau seemed to lack evidence of glacial ice overriding it.

The second of these moves was an arduous and memorable one. We planned to cross the valley of Mist Lake and camp high on the hills west of the 4960 foot summit. I was going to traverse northeast and then southwest along the ridge of hills. Bill Bacon and Jack were to traverse directly west from our morning camp and then turning northeast. They started off right after breakfast. Fred was with me and the first thing we ran into was Mist Lake which had been missed by the topographers on the base map and so we had no suspicion of its existence. The packtrain found the valley below the lake too boggy to cross and turned north also to be confronted by Mist Lake. When Fred and I saw the lake we turned back and met the packtrain as I thought we had better stick with them until they had crossed the valley as the ground and brush were bad. We had as yet no idea how large a lake it was and kept travelling north to get around it. We finally came to the end but here we found a deep narrow creek running out of a big muskeg and spruce flat into it. A foot bridge had to be built as there were no big trees around to build a bridge with for the horses. Most of the horses were unpacked, and the packs carried across a foot bridge of 3 logs. Two of the horses were tall enough to ford with their packs on. The operation took 2½ hours. About that time it started to rain so our traverse was dropped and we stayed together and headed west up towards where we were supposed to camp. As soon as we began to get up into the hills we were in fog and the rain changed to snow. Nothing is more wetting than cutting trail through brush laden with wet snow. When the top was reached we turned southwest and about 6:30 p.m. came to a good campsite. Though there was about 4 inches of snow, there was horse feed, good ground, dry wood and water. But it was some miles short of where we had intended to camp. We decided to stop as there seemed little chance in the fog of finding another place as good as this. There seemed practically no prospect of Bill and Jack finding us in the fog. The trees and brush were laden with snow and everyone was soaked and cold.

After I had my tent up and a pile of dry wood for my fire I went around to the other tents and saw that they had the same and that Bill Duncan had lots of wood. Then when all the chopping had been finished I produced

the small bottle of whiskey I had brought along for the first time in my life. Everyone had a drink before supper and it was good. Just before eating I fired two shots in vain hope that Bill and Jack might by chance hear them. We had just finished our meal and it was getting dark when Bill and Jack arrived to my great relief. They had been on the top of the summit and had just decided to turn southwest when they heard the shots. They too were glad of the whiskey.

The next afternoon it cleared and was warm and for the first time we found the red and green slates with the chert over them and they were well exposed. The following week or so we moved southwest along the Clarke Hills and then struck north, crossed Kalzas River and to the summit of the valley of Old Pass Creek. There was a well worn trail along this valley as well as many Indian stumps. We had now found as McConnell's and Keele's maps showed that there was a completely different section along the Macmillan River to that along and north of the Stewart River. August 15th we moved straight east up onto the upland of the Kalzas Plateau and camped on the terminal moraine. On this move Clarence got another moose so we continued to have meat. While eating lunch near the summit at the west end of the Kalzas Plateau I noticed some dandilions in bloom. As this seemed a curious place for them I picked one and found it had none of the serrations on the ends of its petals which, give the common dandilion its name. The specimens I collected here proved to be of a very rare variety. The fresh snow had largely melted except from the tops of the Kalzas Twins. After moving east again we traversed over them but I did not see the silver-lead prospect that was reported to me later as being there. On this pleateau we saw 60 or more caribou in scattered groups of 4 to 8 but no sheep. There was, however, an immense porcupine. I have never seen another that approached it in size.

On the 19th we moved down to about the middle of Big Kalzas Lake northshore and on the next day moved to the west end. This was the day the plane was to come with our last load of supplies and mail of season. We were a day behind schedule. Clarence had two one gallon cans of "Stockade" that he had brought to put on the horses if the flies were bad and this morning he had asked if he should not leave them behind. I told him to tie them on the front of his saddle and if the plane came while we were on the move to use them, they were mainly coal oil, to make a good fire and smoke. The plane arrived rather suddently about noon and passed over us before we could get the fire going. However, the pilot turned back when he reached the east end of the lake and by that time we had a colum of flame and smoke going up. He landed near us. Fred and I waded out to the plane and got in. We flew to what looked like the best campsite near the west end and landed but the water was shallow and there were a lot of boulders in it near the shore so that we had to wade back and forth about 10 yards to carry all the stuff ashore. We could only send off the mail that was ready as the pilot could give us no time to answer the new mail. The pilot told us that war seemed almost certain and left. The packtrain soon arrived and fortunately camp was up when rain started about an hour later. We traversed around this camp for two days using a raft to cross the upper part of Kalzas River where it flows into the lake.

We now began our general course westward and homeward about 100 miles in a straight line. I planned to cross the McArthur Range by a pass shown on our base map at the head of Hotspring Creek. Our first move took us 12 miles up Kalzas River valley nearly to its head. The upper part of this valley is floored by sandy soil and clothed by open grassy park-like areas with here and there thickets of alpine fir and spruce and stands of good sized pines. It is an unusually pretty area and is traversed by many game trails. There were beaver dams forming small lakes at the west end. Here the beaver depended entirely on willows for food. On August 27th we moved over the top of Nogold Plateau and camped on the main head of Avalanche Creek at about 4000 feet. The next day we were in rain and fog and again that ended in bringing 4 inches of snow. Indeed since our move past Mist Lake every time it had rained in the valleys it had snowed on top and each time the snow stayed a little lower down when the weather cleared. The tops of the Kalzas Twins and the McArthurs now looked pretty snowy. Fred was very keen to shoot a moose so as our meat was low he went out to try his luck taking the Survey rifle. He saw two bull moose and hit one but it got away.

On the 30th we moved west into the bottom of the canyon-like valley at the head of Nogold Creek that extends to Sideslip Lake. Two of us starting out ran into some caribou and I got one. By the time we had cut it up the packtrain arrived so the meat was loaded on one of the horses and my rifle on my horse. From this high, rolling, open upland the rim of Nogold valley drops at first steeply and then preciptiously in cliffs and talus slides. The slopes facing southwesterly and lying in the snow shadow of the McArthurs are sunny and dry. When we reached the edge of the steeper part we saw about twenty ewes and lambs. They ran down to the cliffs and stood under them confident of their safety. This was plainly a part of their winter range. I had not seen sheep since 1934 in the Pelly Canyon.

In the last few weeks we had seen quite a lot of game besides moose. They included: on the Clarke Hills seven caribou and a grizzly; on Kalzas Plateau 60 caribou, a grizzly and an enormous porcupine; on Nogold Plateau 60 caribou and the sheep just mentioned. It could be supposed that we saw about half the game actually in the terrain we passed through as we made no particular pains to look for game and had little idea where to look for the different animals. One or more of the horses had bells and the general noise of the packtrain and camp disturbed the wilderness considerably. Also, the sound of our hammers on the outcrops could be expected to disburb any game within a wide radius.

Somehow Clarence found a way for the packtrain to get down into Nogold Creek bottom where we camped among tall spruces but could not see much sky particularly the southwest sky by which I forecast the weather. This proved an important point. We traversed the northeast slopes of Grey Hunter Mountain where we found the granite contact and saw more sheep and caribou as well as finding well worn sheep trails extending from the winter snow shadow to the mountains.

September 1st the sky was clear above us and we decided to move over into Grey Hunter Creek opposite the tributary flowing down from the pass through the McArthurs that we expected to traverse the range by. We started off with two traverses as usual, Bill Bacon on the right of the packtrain and myself on the left.

Two of us followed along the valley towards Sideslip Lake and then began climbing up to westward. The ground was very rough. The sky clouded over and by noon it was drizzling. About 3:00 o'clock we reached 3500 feet and we were in fog with snow falling again. We could only work our way into the pass to Grey Hunter

Creek but the mountainside too proved very rough and travelling was slow. Two deep precipitous gorges cut down the mountain slope from high in the fog. We managed to climb across them but realized they would be quite impassable for the horses. However, when we reached the pass we found the packtrain and the others there making camp though it was three miles short of our objective. Bill had turned from his traverse to follow the packtrain when the fog came down which was right as one could do no geology in the fog and snow. A clear view is so essential in reconnaissance work. When Clarence reached the first gorge on the mountainside undaunted he turned the packtrain up the mountain and switchbacked to above 6000 feet in fog and snow before he could lead the horses around the upper ends. Fortunately, the mountain slope was all sediments and the overburden contained no coarse talus. He then descended to the pass and finding it an excellent campsite with horse feeds, wood and water, decided to stop here as it was already late. The pass was floored by a lovely alpine meadow with a small stream flowing through it and timber on each side that gave shelter for the tents. The meadow was about half a mile long and 200 to 300 yards wide. Soon after we had the tents up a wolf chased some caribou past the camp and then howled for a few minutes in the fog. The snow continued into the next morning when it started to clear up and get warm. We could now see that the route we had planned to use through the McArthurs was impassable for the horses and we would have to go around the southeast end of the range. The next year the pass was found to be 800 feet higher than shown on the map and to be floored by great blocks and walled by cliffs of granite.

On September 4th camp was to move to the second creek entering Grey Hunter Creek from the northeast. Jack and I were to traverse over the ridge on the northeast side of Grey Hunter Creek. The day was fine and all started well. Our traverse was up and down all day and there was a lot of geology so it was slow going. We finally got down to where camp was to be just before dark. We found the horse tracks and they seemed to mill around. We could not find whether they led back upstream or on downstream in the dark and timber. We had to decide to spend the night out. The sky was crystal clear forecasting cold so we went up onto a terrace about 400 feet above the creek. We could see no fire or smoke anywhere and the roar of the creek drowned any sound of shouts or shots. On the terrace it was easy to see the tops of the trees against the stary sky. We snapped off the tops of a lot of small spruces and made a bed and wind shelter for our heads. The pines which had been the original growth after a forest fire had died and there were lots of dry ones we could push over and gather for firewood. We stacked pines up on both sides of our bed. With these we made fires on each side and then we lay back to back with my cape, a sheet of tenting, over us. In this way we were tolerably warm and comfortable. We got up in turn to make up the fires and each of us had about four hours sleep. As soon as dawn came we were up. The ground all around us had frozen hard. We soon found the horse tracks going down the creek and were in camp by 6:00 a.m. There being no tributary creek where the first one was shown on the map Clarence had gone on about three miles to the next creek. They had built a big fire and fired shots but were too far away for us to see or hear them.

After a day's traversing it was decided to move straight up southwest over the end of the McArthur Range. The morning started clear but we could not see the southwest sky. We set out with two traverses as usual. However, by the time we had climbed halfway up the slope it had clouded over and when we reached the top at 5500 feet we were in fog and snow was falling steadily again. This time Fred and I were on the northwest or upper side of the packtrain and Bill and Tubby on the southwest or lower side. Jack was with the packtrain. We heard the packtrain reach the top of the ridge so that was a relief and a fox yapped in the fog. Some caribou came into sight and disappeared into the mist. We went around the small lake in the cirque at the end of the range. It was now freezing hard and we began to climb slowly up on to the summit ridge over great blocks of granite with about six inches of fresh dry powdery snow overlying the same thickness of hard snow underneath. In the cold dry powdery snow our leather boots and socks that had been soaking wet at the lower levels soon dried and our feet became warm. Here and there smooth areas showed for stretches and these were patches of last winter's snow and improved the footing. Visibility was about 150 yards. On the summit of the ridge we were following along above the cirques on each side. We had to refer to the compass as the important thing was to follow the right ridge in the fog. We did not know what kind of a ridge, knife edge or what we were heading along. We knew there were cirques on both sides. About 3:00 p.m. when we had tallied about two miles, slowly along the top, we decided it was time to descent to the southwest though we would only look down into cloud. This should take us down to the creek that camp was to be on. As we climbed down, still over blocks of granite, the slope dropped away more steeply until we were faced with a place where the rock had no lichen on it showing it had been sliding and the granite blocks were loose. Descending this took time. Finally we found ourselves in the floor of the cirque and the compass told us the stream in it flowed in the right direction. This was about three miles east of the 6450 foot summit. The snow was still dry and our feet warm and dry but as we followed down the valley the snow became wet and so did we. On reaching timber near 4500 feet around 4:30 p.m. we stopped for lunch and built a fire. We had just about finished and were wondering where to go next when we heard Clarence shout in the fog across the creek high above us. The packtrain was up on the slope of the mountain opposite. We answered and they were soon with us. We were all greatly cheered but where would Bill and Tubby be? Clarence had again come onto canyon-like gulches cutting down the mountainside and had gone up to 6000 feet in the fog to get around them. This, like the mountain on the former occasion, was made of thinly bedded sediments and except for the gulches was good going. Clarence said "What are we going to do?" I answered "Go on down the creek until we find we are below snow as it was dry above and is wet here." We went on down the creek. There was no trail and we soon found the valley was covered by an old burn where there were big willows and with grass under the snow but no spruce. Farther down, however, was an island of spruce and we decided to camp in this. The willows were bent over and kept the snow off the ground thus the horses could reach the grass underneath readily. The light was beginning to go and before supper I climbed up on the southeast side of the valley and fired three shots in desperate hope that Bill and Tubby might possibly hear them. The climb up the hillside through willows bent over with wet snow soaked me. However, about an hour later at 7:30 they came in. They had been looking for a place to spend the night

when they heard the shots.

It warmed up the next day and a lot of the snow went but it continued to drizzle. The following morning was sunny but cold. However, now we could see the sky far to the south and west over the plateau and it was all clear. It was decided to move into the creek that turned out to be Hotspring Creek though we did not know it as the topographers had not found the springs.

This time I traversed on the left or southwest side of the packtrain and the others went on the right side. We had begun to get the granite contact outlined despite the snow and I wished to trace it as far as we could. After seeing the packtrain off we went down the slope and followed our traverse route, finding a place near a small lake where the Van Bibber family had habitually camped in summers. It was a good place to get moose. This family had spent many of their summers "living off the country" around the McArthur Range. Children's playthings of local origin, curious stones and sticks lay around. Turning up into Hotspring Creek valley we had a dlimb over a large area of granite blocks that the ice had brought out of the cirques at the heads of the creek. We crossed the creek and found a well worn trail on the north side. It led to an open glade in the timber. The steam was rising from the water running past the tents. It was the hotspring. In coming around the mountain above the timber Clarence had seen the glade and the steam rising and knew at once it was the springs.

This was a lovely campsite. The tents were pitched on a grassy slope above the main spring with alpine fir timber and a few spruce on the up valley side while in front there was a clear view down the valley to the west. A game trail led through the trees behind the camp to a good big meadow on a sloping alluvial cone. By the cook tent was the biggest spring and a few yards beyond it was a small stream of cold water.

The main spring, which is not large, rises among blocks of slate and flows away parallel to the cold stream some 30 yards before it turns into the main creek. The area in front of the tents was covered by pieces of slate which were coated with a thin white crusts of siliceous salts. In this area small qunti-ties of warm water ooze up among the stones and the ground is soft and without vegetation. Across the creek, in an open boggy area of moss and other low vegetation, warm water rose in patches. Up the creek about 50 yards gas bubbled up in quiet places suggest-ing that warm water also rises in the creek itself. A sample of water taken in a bottle from the main spring proved to be on analysis exceptionally pure and soft. The temperature was between 127°F and 128°F and tests the following summers showed no variations between June and September. $H_2S$ bubbled up and tarnished a dime hung in the water overnight. The water has a purgative effect when drunk. We washed our clothes without soap in water from it. A sheep trail led down to the area suggesting that they frequented as a lick. The ground for a considerable area around the springs is apparently unfrozen and the vegetation grows luxu-riantly. Of some thirty small plants and ferns etc. collected in this area most were rare and several had not been found so far north before. A pick and shovel hung in a tree behind the camp and had evidently been used to dig out a hollow to bathe in by the Van Bibbers. Also there were logs for setting up a canvas bath.

The next day was fine and we traversed into the range. Fred and I were together again. We climbed the ridge eastward from the south of the springs. Coming to the second summit on the granite we were confronted with a choice of climbing it or cutting across a sloping snow covered area. There seemed no point in climbing the peak so we started across the slope of snow. At first it was fine but about halfway across we found ourselves out on last year's hard snow, on a clear, even, hard slope below which was a precipice. One slip and we would have gone. There was nothing for it but to chip out steps one by one with our geological hammers as to turn around in our tracks seemed as dangerous as going on. It was tedious slow work but finally we reached the end in safety and climbed down the north side of the ridge into Hot-spring Creek valley. We had lunch by a fire among the first willows sticking above the snow. Fred never made any comment but I never should have got us into such dangerous circumstances. Going back to camp the abundance of tracks of all manner of small life, foxes, wolverines, marmots, gophers, track rabbits and mice in the snow amazed us because we did not see anything though it was warm and sunny.

The following morning we moved over to Black Ram Creek. The air was cold and before Clarence left to get the horses I shared the remains of the whiskey with him and Bill Duncan in coffee. They both appreciated it.

The next day, September 11, the tents had been covered by two inches of fresh snow in the night but though it was cold and cloudy the clouds to the south-west were breaking up. I decided we could stay in the mountains one more day as Clarence said the horses were getting good feed under the willows in the valley. We wished to find the granite contact and we also needed meat. Fred was very keen to shoot a sheep so I gave him the choice of where he would go with Tubby and he chose the north fork of Black Ram Creek, which looked like lovely sheep range. Bill, Jack and I started up the spur extending northeastward from camp to find the granite and look for sheep there.

Going up through the timber we came to a small knoll and stopped to view the country. Far up the open, snowy slope there seemed to be a clump of willows all by itself and abnormally high. The glasses showed it to be nine rams standing motionless together. They were in a place that we could stalk them by going down into the small valley to the north of where we were and then coming out above them. We descended into the creek and up the far slope. A snow squall came on as we climbed. On peeking over a rise to see if the rams were still there I found they had gone but then saw two grazing up the slope we were on. We ducked down, took off our packs and started to sneak up towards them but when the falling snow thinned we saw them running away on a level with us. I fired three shots in vain which only scared them. The range was ridicu-lously long and paced off at 650 yards. We returned to our packs with little thought of getting one now that they appeared to be frightened. However, we were heading for the summit to follow them to see what they did. They disappeared over a small summit and when we reached it they were going up the next summit. While we stood in full view however, to our surprise, the leaders lay down and then the others. After studying the terrain around it was apparent that by going down into the gulch on the right we could keep out of sight and get above them if they would only stay where they were.

We did this, ate some lunch at the bottom of the gulch at 5700 feet and started our climb again but

when we were able to peep at where we had last seen them they were gone. We went to it. There was the granite contact and their tracks which we followed up towards the top of the divide which was granite. I was in front with my rifle, Bill about 5 yards behind and Jack about the same distance behind him. The mountainside was a mass of great blocks of granite covered by 6 to 8 inches of snow. The sun was warm and it was a glorious day. The sheep had jumped from the top of one block to another with an instinctive confidence where to us there appeared no secure footing. The climb over these great blocks on the steep slope was laborious and slow. We worked our way up in silence.

I came to a great block sticking out in the slope and searching for a hand hold by which to pull myself up I raised my head above it. To my amazement there were the rams lying down in the sun in a semicircle around me, the farthest was not 10 yards away. I ducked back, slipped my pack off, loaded my rifle and took the safety catch off. I then looked at the muzzle. It was plugged with snow. With the cartridge in the breech and the safety catch off I sucked the snow out. It made a whistling noise. I raised myself up to shoot but the footing was uneven. Rams were dashing in all directions before me. One was stopped for an instant by another jumping in front of him. I shot. He jumped backwards out of sight and I could not tell whether I had hit him. I did not think so. In a moment they were all gone. I raced for the top about 75 feet above. When I reached it nothing was in sight but 25 yards away across the summit 6500 + feet was a small point of rock from where the view extended all around except down under the precipice below on the north side. That was where they had to be. Sitting down I rested my rifle on the highest rock and waited while I got my breath. In a moment or so they ran out on to the flat below me on the north. When they had gone about 200 yards from the base of the cliff the leader stopped and looked back and they gathered in a group. I was motionless. I hated to run the risk of wounding more than one. Just then a large ram with a slate grey saddle turned broadside in the foreground of the group and looked back. Away they went again. But the slate grey ram left them and walked slowly down the slope to the left. After about 20 yards he fell over without a kick. I had hardly been conscious of shooting. Now I saw there were only seven in the group. I hoped I had not shot two. I turned back across the top and met Bill who was carrying my pack and Jack. They were roaring with laughter and said "You went up the mountain like a flash. We never thought you could climb so fast". They had seen the whole performance and said my first shot had missed completely going just over the neck of the ram. It had made a chip fly off the rock beyond him that had made him jump back. They had watched this ram run off alone unharmed. We looked and there was not a drop of blood on the snow along his tracks. We went down to cut up the dead ram. He had been shot through the lungs. From where he lay we could look straight down a long steady slope to camp. With as much meat as the three of us could carry and the head we reached camp by 6:30 p.m. Fred and Tubby were in but had seen nothing. Indeed this had been a thrilling sheep hunt. Everyone, particularly Bill Duncan, was glad to have some meat especially as a number of things were getting short.

Of the nine rams, three appeared to have almost black saddles, four were of blue or slate grey shades and two distinctly lighter. They were wonderfully camouflaged for their life among the rocks and snow. With their curling amber horns, their pure white heads, necks and rumps and their dark saddles from which a stripe extends down the front of each leg they are indeed the most beautiful big game animal of North America. Of all the states, provinces and territories north of Mexico none but the Yukon has so distinctive a big game animal to itself and yet a husky dog appears on the Yukon crest.

The weather had been so stormy and the snow cover had become so general that it was time we started for the Pelly Farm. The next morning we moved down to Woodburn Creek camping at the west edge of the map. Both traversing pairs came in at dark. Though we had come down 2000 feet it snowed again that night on camp and in the morning cloud hung only a hundred feet above the valley floor. The fog and a steady drizzle fell all day and prohibited the traverses planned. On the morning of September 14 we all pulled out heading westward into a valley where we found a trail. Camp that night was pitched on a low terrace beside a little stream west of Summit Lake (McQuesten map sheet). This was a good campsite overlooking a wide meadow with lots of horse feed, wood and shelter. As we went to have supper the clouds had risen and broken. The peaks of the McArthurs, framed between the hills along the valley and now well clothed in snow stood out in shades of blue and pink in the rays of the setting sun, a glorious sight. I called this "Last Glimpse Camp" and used it several times in subsequent years.

Heading out in the morning we made a noise pushing through the brush that was overgrowing the trail. Here we suddenly came upon three of the Van Bibber children with their dogs. They were relieved at seeing us as they had been afraid it was a bear they heard and they had only a .22 rifle. They told us war had been declared and that the rest of the family were at the cabin by the winter road. After a short visit there with the Van Bibbers we went on down the road, crossed Willow Creek at the old bridge and camped by a small lake in the Carmacks map. This was a poor campsite, poor water and little horse feed but it had to do. Again it snowed two or three inches that night though we had descended another 500 feet. The following day we reached the campsite on the Pelly by the big cutbank above Bradens Canyon. Rain had fallen again all day and turned to snow that night. Each of these last succession of campsites had been chosen particularly with a view to holding the horses which were only too ready to step out for the Farm on their own. The next morning we were up at dawn in frost and fog and reached the Farm at 3:30 p.m. on the 17th having come 17 miles that day and we were glad to get there.

September 18th the party washed the blankets and sorted the equipment. I went over to Selkirk and wired the White Pass for a plane. On the 20th the tents and blankets being dry were packed in the cabin and we slept in it. The next morning George Fairclough took us over to Selkirk in his boat and the plane picked us up about 10:15 a.m. the following day on the airstrip behind the settlement. We were in Whitehorse before noon. On the morning of September 24th we boarded the train for Skagway and went on the Princess Louise which left that evening. Bill Duncan and Clarence left us at Prince Rupert and the rest of us went on to Vancouver where the assistants returned to U.B.C. and I returned by C.P.R. to Monte Creek and thence to Ottawa. So ended an outstanding season with an outstanding party.

During the summer Tuttle had a narrow escape from

being shot. He was walking along the old Minto Creek road which was partly overgrown with willows. Harry Webster was walking directly behind him leading Nuts, a packhorse. Looking ahead Tuttle saw a man aiming his rifle at him. He jumped aside he waved and yelled to Harry to get aside. The bullet killed poor Nuts. Old Frank Gillespie who had shot, had seen something coming through the willows and thinking it was probably a wolf had shot without ever really looking to see what he was shooting at. In court, he was made to pay the costs and for Nuts, and his rifle was confiscated for a year.

On September 4th the topographers moved to Stewart leaving Mike on the south side at Crooked Creek to take the six horses alone back to the Farm. On the 7th, the Klondike picked them up at Stewart and Mike at Selkirk on the 8th for Whitehorse. They had caught a boat for the outside at Skagway earlier than ours.

## Section III: 1940, Mayo Area by packtrain; the Wheaton River country.

This year, 1940, my instructions were much the same, to continue the mapping of the Mayo area. After leaving Ottawa on June 2nd and spending the weekend at Monte Creek I caught the Princess Louise at Vancouver the evening of the 8th. The party consisted of Clarence Reinerston and Bill Duncan again. I was glad to have them. The assistants were Alfred Allen, Robert M. Thompson, A.T. Tubby Anderson, of last year and Al Drysdale. Alfie Allen was chief and had spent a summer or more with Dr. H.M.A. Rice in the east Kootenay.

We arrived at Whitehorse on the 12th and left that evening on the Klondike for Selkirk reaching there the next evening in pouring rain. The following day J.C. Wilkinson who had taken over the Pelly Farm from George Fairclough fetched us with our equipment and supplies to the Pelly Farm and we put up camp. The following day, Sunday, I took the three new assistants to Lava Lake while Clarence with Tubby's help got the horses ready. The 17th we went to Selkirk for mail and on the 18th the horses were packed and we were off by 9:20 a.m. for the Mayo map area. We reached the Bradens' Canyon campsite above the big cut bank at 4:30 p.m. we used the campsites at the Willow Creek bridge and Last Glimpse. On the 21st we started traversing and reached the campsite of 1939 on Woodburn Creek where we had first stopped last year after coming down out of the McArthurs.

The next day we moved to the lower part of Black Ram Creek. As usual we were running two traverses. I had lunch on the east side of Woodburn Lake at the foot of the steep bunch-grass covered terrace. A trail had been dug out running diagonally up to Van Bibber's cabin on top of the terrace. I lit my fire about six feet from the foot of the grassy terrace on the shingly lake shore and went to fill my billy from the lake. When I turned around a gust of wind, which was very strong that day, came and blew a spark into the dry grass on the hillside and the fire raced up the hill. Grabbing some willow branches we flogged it out on each side but only the trail stopped the fire from going up the hill into the timber.

When we reached camp at the end of the day Clarence had lit a smoke signal as he didn't think we would find camp but we found him with Bill and the assistant with them desperately fighting a fire that had spread around. However, we soon got it out. This was the nearest we ever came to starting forest fires indeed the only time out of the thousands of fires for camps, smudges and lunch that my parties lit.

The following day we reached the hotsprings and took Sunday and washed there. From here we worked around the northwest end of the McArthurs and thence into the east head of Nogold Creek. On the 28th I shot a caribou on the traverse and Tubby and I each carried about 25 pounds of meat into camp. This was the earliest we ever had fresh meat and it was always a welcome change from ham and canned bully beef. From here we moved over the west end of Nogold Plateau into Nogold Creek and thence to the mouth of the creek on July 3rd. The next day Alfie and Tubby traversed down to Fraser Falls and saw Fred Swanson, a trapper who had a small stock of staple goods to trade and got news that France was still fighting. The rest of us stayed in camp and prepared to raft across Nogold Creek as the lower part of it was deep. The following day two of us went down to see the Falls and bring back some coffee, tea and potatoes from Swanson.

They swam the horses and we took camp across Nogold and the next morning we started eastward along the southside of the Stewart valley traversing both sides of the river. For the north side at this camp we crossed with a raft we had made for Nogold Creek but when, some miles east on our return we built a small raft and tried to use my small rubber mattress to buoy it up. This didn't work. The two of us got a bit wet floating back down the river to camp and we had a hard time keeping our rucksacks dry.

On July 17th we climbed up onto Kalzas Plateau on our way to Big Kalzas Lake where we had arranged to have a load of supplies brought to us at the west end. We camped on Meadowhead Creek. The following day we moved down into Old Pass Creek. On this move, as the packtrain was coming to the southwest edge of the plateau, Clarence saw two bull moose trotting eastward along a well worn trail that followed the contour just in the top of timber. On his horse he raced across a spur and dismounting was in time to shoot one as it approached him along the trail. The packtrain was soon there and again we had meat. The only trouble was that the ride was a bit too hard at the high altitude for his saddle horse and it took him a long time to recover.

On July 12th, the day the plane was to come, we moved around the west end of the lake. This was an unusual move in that the ground around the end of the lake was very wet and soft and anyway the horses would have to be unpacked to swim the mouth, about 30 feet wide, of Kalzas River where it enters the Lake. For crossing the baggage we would have to build a raft or a bridge. There were no good trees on the stream bank. Clarence investigated and found that the whole end of the lake was only two or three feet deep, very flat and firm footing. We built a raft at camp, and towing the baggage on the raft with a saddle horse and driving the others through the water we moved to the other side of Kalzas River. The baggage raft had to be towed back and forth for four times and all the horses had to swim the narrow channel of the river. The first two loads went well but then a little wind got up and some things on the last loads got wet. The horses were just being packed on the far side of the river when the plane came and didn't see us but, as last year, we had a good smoke going when he came back and he landed. I waded out into the lake and flew to a small point about a mile east of the outlet of the lake and put all the supplies and mail ashore, handed the pilot our out going mail and away he went. At this point there is a good campsite and "the two Swedes", trappers, had a

cabin and cache. We found we had more of some things than we wanted to carry so we put our surplus of eggs, bacon and some other supplies in the cache. The next year I met one of the Swedes at Selkirk and he told me they had arrived there about two weeks after we had left and how delighted they were to have the things, especially the eggs. Here we now took it easy for a day. Everything was sorted, and repacked and Clarence and Tubby went over the horses feet and reshod some. Most of the horses only wore front shoes but Clarence always carried an assortment of shoes with his ferriers outfit.

On the 14th we moved into Moose River valley and then on to the bank of Macmillan River a mile east of meridian 134° 30' the day after. The weather had now become scorchingly hot and continued so. We built a raft and used it to cross the river and traverse the south side. The next day we moved east to the west end of Plateau Mountain. The heat that day was particularly exhausting and the valley was a mass of deadfall. On the 18th, traversing east along the mountain, we counted 75 caribou in one herd. The next day it poured with rain and we stayed put. After that we moved to the campsite of last year before we found Mist Lake and were again held up a day by rain. Following this we travelled to the north corner of the east end of Big Kalzas Lake and then spent a day traversing eastward. The weather was hot again and the sandy beach was lovely but oh! the water was cold.

From here we climbed right over the mountain to the north and down to the north end of Narrow Lake. Going up the mountain with the packtrain Clarence shot a bull moose much to our satisfaction. From here we moved northwest and north again to the creek west of Rockfork Creek on the plateau west of Highland Lake and then on the 26th travelled east to camp on the Stewart River. From there we traversed the ridge north of Canoe Lake and moved again up river to about 4 miles east of Wilsons' Slough, where we found a lovely campsite and a good place to build a raft and cross the river.

The following day July 28th was spent in building the raft. It had six big 20 foot logs and a sweep at each end. The day was lovely, mild and sunny. The horses fed well and enjoyed lying peacefully on the sand bar where they were quite free from flies. The next day we crossed the river making three trips with the raft. Each trip began by Clarence towing the raft up stream with his saddle horse along the bar where the current was slack and then the raft was carried down and across by the current to where we wished the new camp to be. Coming back the current swept the raft back to the old campsite. Just before the last load the horses swam across, Judy leading. Judy was a mediocre pack horse but Clarence had picked her for the Yukon when he learnt that she was a ready swimmer. This proved handy many times.

On the other side the horses were tied up until we had things in place and then were let go. Among the older horses there was a dash to get to the river bar which had plants and willows on it. They seized the wild licorice plants in their teeth pulling it up root and all and shaking the sand out of it swallowed it down and rushed for another. The newer horses didn't seem to know what all the excitement was about and stood looking on bewildered. The next day it rained and we had Sunday.

On the following day we sawed the raft in half, three of us floated down river several miles on one half and then traversed back to camp. Drifting silently along close to the north bank that was three or four feet high one of us spoke. Instantly there was a pandemonium. I saw a dry slough running in among the trees carpeted with geese. They flowed out over the bank onto the river to cross the channel to an island. They were at that stage when the old birds have not grown their new feathers and the young birds have not yet learnt to fly. With geese all around us one would have thought it easy to get one but the raft was not a steady place to shoot from and it kept swinging around in the current so that in taking aim it was difficult to keep from pointing the rifle in the direction of the others on the raft. Finally on the third shot I hit one in the neck and after much manoeuvring we managed to pick it up. The next two days we used the remaining half of the raft to get across to the south side and traverse. The next day the packtrain moved east along the north side of the river to point two miles west to meridian 134° and two of us traversed on the south side, built a raft and crossed the river half a mile above camp. The next day we traversed to the east edge of the map area south of the river using the raft to get across the river and back.

August had now come and this was the third. We had to get a move on to fill in the east border of the map area and the northeast corner before I left on the mining industry trip. We moved north for three days despite rain and miserable travelling mainly through low timbered hills. Except the first day the country was forested and there were few outcrops. On the third day we reached Stewart River a mile southwest of where it first enters the map area and camped on the north bank.

The next day while the others traversed northwest of camp, and Tubby across the Stewart River, I proposed to fill in the northeast corner across Beaver River. I chose Al to come with me as it would be a long day and he rose to adventure. The plan was to walk north over the hill to the Beaver, build a raft to cross that river and float back on it in the evening and around down the Stewart. As far as I had been able to find out there were no rapids. We took an axe, two light ropes and 14 nails. We reached the Beaver about 11:00 a.m. built the raft, crossed and had lunch. Then we traversed into the corner of the map area. When sitting writing notes there with brush around us we heard a whine behind us the same as when I had shot at the wolf last year when returning from McKim Creek. We had been stalked by wolves before they knew we were men. We were back at the raft about 7:00 p.m. ate an extra sandwich and pushed off. Al handled the oars while I sat in front to pick out the way.

The beauty of the evening light was wonderful. The sky was cloudless and intense stillness of the Yukon was upon us. We sat in silence gliding swiftly over the gravel bottom. The water was blue and crystal clear in contrast to the Stewart which is cloudy and malachite greeny blue from the glaciers at its head. The driftwood on the banks of the Beaver showed that the high-water of 1937 had not been more than six feet above the level of that evening. We judged the Beaver fordable for horses in two or three places below where we crossed. There were a number of geese along it here and there. Passing close to a low bank clothed with willows there was a loud sniff. I stood up and there about 30 feet away two cow moose were browsing. They dashed off at the sight of me. Later in two other places we heard similar deep sniffs and in another the whine of a wolf but the animals were not visible. In

one place on the right limit about a mile west of the 134th meridian there were two comparatively new, well built cabins but no one there. These were the only sign of man.

The Beaver flows peacefully until about a mile above its junction with the Stewart where it becomes swifter and rough. At the junction in the fading light it was hard to see where to go as rocks were sticking up all across the river. However by standing up I was able to guide Al and we kept to a narrow but clear channel. It was here that James Bond, the big game hunter, floating down in a skin boat with his trophies and his Indian guide, tells in his book that they were nearly wrecked. From here on for a couple of miles there were large rocks sticking up in the Stewart River and occasionally farther down we had to be watchful and this was difficult as now a thunder-storm came up from the west and it became pitch dark. Then the rain poured down in sheets as we sat huddled on the raft. After the rain the western sky cleared a bit giving some light and our fear of passing camp which was in the trees was dispelled. We saw the cook tent and Bill had left supper on the stove. It was about midnight. One thing showed very clearly in comparing the river bank of the Stewart here and down where we had crossed it below the mouth of Hess River, namely that the bulk of the water in the big floods of 1937 and 1938 had come out of the Hess River. Across the Stewart Tubby had found some things that looked like belemites but turned out to be concretions.

So far so good but time was pressing and the next day we moved seven miles up the Ladue River and on the 8th Tubby and I traversed the ridge to the northeast as far as the 64th parallel while the others moved camp to the fork of the valley north of Tiny Island Lake. On the ridge the fall colours were starting to be apparent above timberline. We returned to the deserted campsite to pick up the horse tracks. Nothing seems so desolate as an abandoned campsite. This was a long day. It was already late and we had about nine miles ahead of us. As it got darker Tubby began to loose faith in my sense of knowing where we were going. I said we were following the horse tracks. "I can't see a sign of them" said he. A few yards on there was a pile of manure where the horses had gone over a log. I told him to put his head down and smell that. He was reassured. After another mile or so we saw a speck of light and soon we were in.

The following day, August 9th, we moved through the Tiny Island Lake pass and camped on a fork of Roop Creek. Three bush pilots complimented me on giving the name Tiny Island Lake as they said the moment they saw it they knew it though they had never seen it before. There was a trail and the route proved better than we had hoped. After this there was no traversing now except the route. The next day, the 10th, we reached an excellent campsite on a terrace about a mile west of Wilson's cabin and took Sunday to give the horses a rest and good feed. We then moved along the north shore of Mayo Lake and down to the Duncan Creek bridge arriving here on the afternoon of August 13th. Schelly arrived with his car that evening and took me to the Elsa Camp. He said he thought I should be arriving about that day. The following day the party moved to the Minto Bridge campsite.

From Schelly we got some news of the war and the next day, August 14th, our first mail for 33 days was brought to the bridge. I rejoined the party that evening. New instructions had arrived from Dr. Young, Chief Geologist. We were to drop mapping and look over the tungsten, antimony and tin prospects. At last some one in the cabinet had realized what a Geological Survey could do in war but this work should have started when war first became imminent. Now not much of the season was left. A crash program was needed to make something of it.

We moved to the river bank just above Mayo, got supplies and repacked. I had only a vague overall plan at this moment but decided to send Alfie, with Bill, Al and Tubby who had become very good with the horses and packing to fill in the hole in the map on each side of Talbot Creek and then come to the river bank at 17 mile meadow which is a lovely campsite. They were to have most of the packtrain including the easiest horses to handle. Clarence, Bob and I were to have the rest of the horses and look over the tungsten prospects on Dublin Gulch and the antimony around the head of Highet Creek.

Alfie and party crossed the river and moved off on the 17th. Clarence and Bob left Mayo for the Lookout (Mt. Haldane) road summit, the horses carrying only their saddlery. I followed later with a truck rented from Bud Fisher with the equipment and supplies. In all this as usual we got the whole hearted co-operation from the inhabitants. The next day we moved up to Dublin Gulch. We left the truck at the South McQuesten Crossing, packed the horses, crossed the river on the corduroy road already mentioned in 1938 and followed the old road up Haggart Creek to the Gulch.

Bob and I went up Dublin Gulch and around the top looking over the placer workings and lode prospects and talking to the miners notably Fred Taylor who was working in the Gulch and Ed. H. Barker who was working on Haggart Creek. Clarence looked after the horses and cooked for us. This was all a new job for Bob and I and we had no gold pans.

On the 21st I traversed by myself down Haggart Creek and Clarence and Bob moved camp to the lovely site mentioned in 1938 at the old cabin and stable on the northside of the log jam. This campsite has every-thing but bathing. Good horsefeed, wood, a crystal clear spring and a glorious view of Mt. Haldane or Lookout Mountain as it was called by the inhabitants.

The next day putting all but the saddlery in the truck we returned to Minto Bridge and then drove up Highet Creek where we went over the antimony silver veins at the Johnson Creek summit and the head of Rudolph Pup with Rudolph Rasmussen, an old timer. He and Hyatt had staked Highet Creek in 1900 about where the ruined dredges were later left. However, the real pioneer prospectors of the district, the Gustavu-sons, were on the northwest side of the summit in 1894. On the 26th while I went out with Rasmussen again Clarence and Bob took camp and the horses back to Minto Bridge and I followed them.

The next day we rode into Mayo and swam the horses across the river, borrowed a boat and camped on the other side. We were invited to supper on the Keno and didn't refuse.

The following morning the 28th we stored the surplus equipment in the White Pass shed and Clarence and I took the horses down the old winter road to 17 miles to join the others leaving Bob in camp across from Mayo with the boat. Alfie, Bill, Tubby and Al had a tough trip but had done well. I knew what to do now for the rest of the season. Alfie, Clarence and Tubby were to return to the Pelly Farm with the horses. Then

*Placer mining at Haggart Creek. Gold-bearing gravel is being dumped into silver box. (88544)*

taking a light outfit and the horses they needed they were to go down to Britannia Creek by steamboat and up Canadian Creek to look at the tungsten placers. Afterwards they would come back by steamboat up to Selkirk and the Farm, store the equipment, leave the horses for the winter and take the steamboat back to Whitehorse. Bill, Bob, Al and I would fly from Mayo to Whitehorse and go into the Wheaton River antimony prospecting country. When I proposed this after supper Bill who was 56 blew his top. He was going to quit. Knowing Bill I left him to Clarence as I had already discussed the plan with him and Bob. Bill soon calmed down and gave his support.

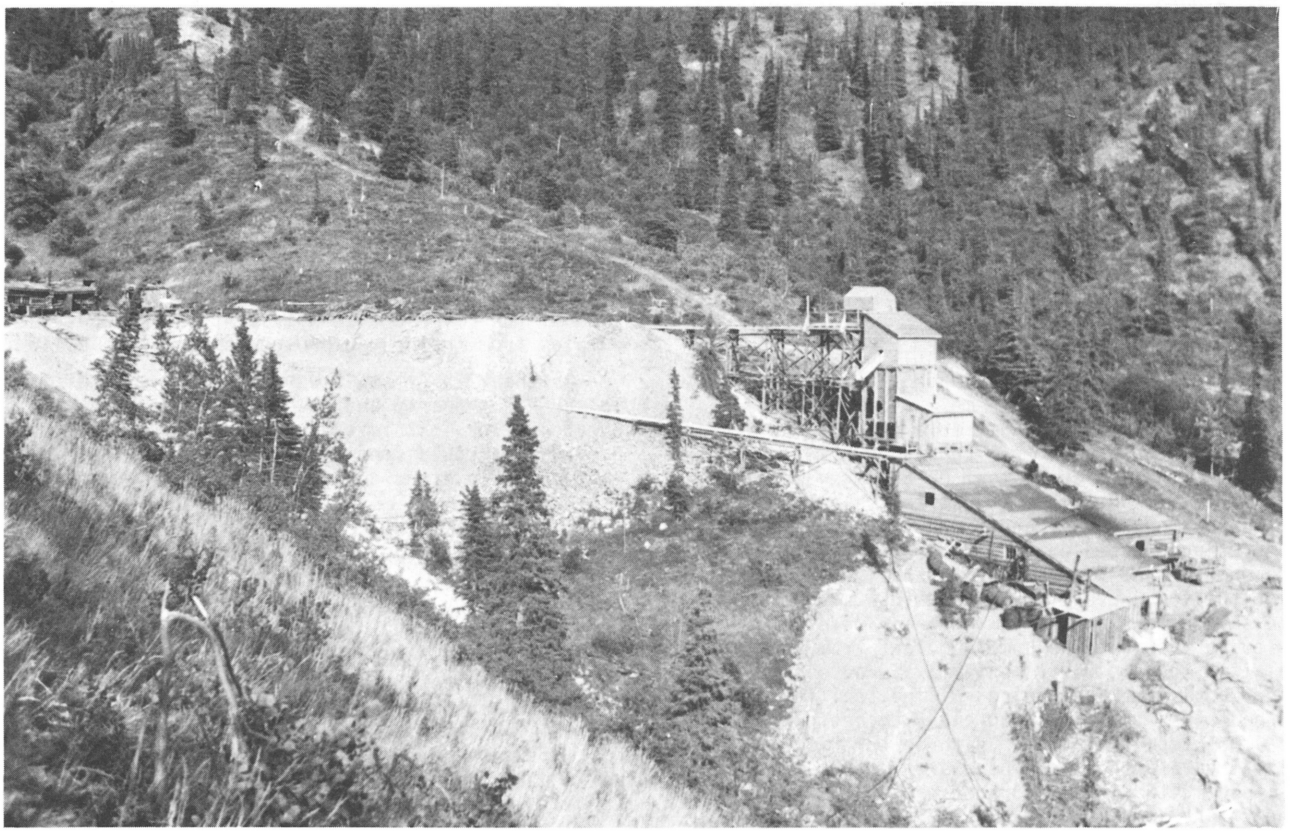
They next day August 29th David Hager from the Indian village below Mayo arrived at 8:00 a.m. with his boat. We saw the packtrain off and the three of us returned with Hager to Mayo. It rained all day. As soon as I reached Mayo I went to the Royal Canadian Signals Corps radio office and sent all the necessary orders to Carcross and Selkirk so that everything would be ready when needed. These also spread the news of what we planned to do which was an advantage. The White Pass Curtis-Condor biplane came in about noon with 11 passengers in spite of the rain and took us on its return journey. We arrived in Whitehorse that evening and caught the train to Robinson, the station for the Wheaton River country in the morning.

Charles McConnell, owner of the ranch there where the packtrain had wintered so many years in the days of D.D. Cairnes, Cockfield and Lees, was haying. It still rankled him that the horses had been moved down river to the Pelly Farm for wintering since 1932. Our order of supplies arrived from Matthew Watson's store at Carcross by the afternoon train. We made our camp opposite McConnell's ranch. The night was clear and frosty. To us this was a new, beautiful, dry-belt, high plateau and mountain country.

September 1st McConnell took us and our outfit in his ancient Ford car to below the old bridge over the Wheaton River, making two trips. On the first trip I was with him. A tree lay across the road. Though more than 70 years old he sprang over the side of the open car, axe in hand, never bothering to open the door, cut the tree and threw it to one side. The next day a prospector, McAllister, arrived with three horses to pack us up the Wheaton valley to the foot of Carbon Hill. In the morning we were up at 6:00 but McAllister was about earlier. In spite of that we didn't get off until 10:30 as first he could not find his horses and then we found he didn't know how to pack a horse. We waded the Wheaton and followed the old road along the south bank as far as it went. From there we continued up stream until we reached a pine grove close to the river about a mile above Fenwick Creek. There we camped at 5:30 p.m. The elevation was 3200 feet. As the day wore on McAllister became grumpier and grumpier. However, when we stopped I gave him a drink of whiskey and he found life brighter.

The following morning McAllister left taking the horses and a man he had brought with him for the Becker-Cochrane property that he was cleaning out. We took Sunday, fixed camp and got settled. We pitched our two 7 x 7 wedge tents facing each other and about 12 feet apart. There was a fly over each tent and a third fly was stretched between making a living area where we built a table. The side of this area facing the mountain from where a cold draft came down in the evenings we walled thickly with brush. The other side facing the river was open and Bill made himself a fine fireplace. The pine grove gave us wood and general shelter from the wind. We were very comfortable.

Close to Fenwick Creek there was a very old cabin and at the foot of Antimony Creek some more cabins and a stable.



*The La Forma mine and small mill, Freegold Mountain, 1940. A substantial amount of gold was obtained from high-grade ore. (86906)*

September 5th we went up and into the tunnel of the Porter property. It was difficult to see what the tunnel, which curved around, was driven for. The rock was largely clean and bare of dust and there were only a few scattered veinlets here and there. Surprisingly little ice and permafrost showed in it. Some picks and shovels were leaning against the wall of the tunnel. Their handles looked good but were rotten.

The following day we waded the icy Wheaton River and went over Stampede John's (Stenbraten) claims at the foot of Mt. Reid and saw a small flock of sheep. The day after Bob and Al fetched the pick and shovel we had seen outside the Porter tunnel. I went across the river and over the old prospects of Chieftain Hill and saw more sheep in little groups of 4 to 10. After that Bob and I visited the Goddell prospect.

On the 9th Al and I climbed over the top of Carbon Hill which is 5900 feet a.s.l. and exhibits a rolling, relatively smooth surface on top. The view was magnificent, the snow covered Coast Mountains to the south and west and the high uplands of the Yukon Plateau separated into rolling hills by the deep, broad, valleys stretching away to the northeast. The trail was carpeted with alpine plants in seed and the whole surface must have been a glorious sight in early July. The morning was fine and we saw several small bands of sheep and three big rams lying on the alpine meadow not far from us. When we reached the Becker-Cochrane prospect McAllister was up at the workings and his three men were in camp. We went over his tunnel, took samples and told him we had seen three rams on the top of the hill. He said "If I bring you rifles will you shoot one for us on your way back? I'll come over tomorrow with my dogs and get the meat". We needed meat too but were reluctant to shoot more than one ram. However, after some discussion we agreed to shoot two as we had seen so many sheep. He went down to camp and brought up two rifles, a Ross and a Lee-Enfield which had had its muzzle and foresight sawn off and a lead foresight patched on. We each took two shots at tin cans at about 30 yards. We didn't hit them but came close. Then we had six cartridges each.

The sky had now clouded over and a light but steady drizzle set in as we started back over Carbon Hill. When we arrived near where we had seen the rams they were gone. However, it seemed likely that they were down among the precipitous gulches and cliffs that form the north face of Carbon Hill. Looking down from above I spotted them about 1000 feet below us in Goddell Gulch. It was about 4:00 o'clock. Al was to stay on the rim of the hill at the top while I stalked them, because if they were distrubed we thought they were sure to go up. Climbing around to the east I finally reached a buttress of rock that commanded their position. I saw no way of getting nearer without going in full sight. The rams were on the opposite face across a gulch. The angle down to them was about 20 degrees. Resting the rifle and trying to allow for this angle and the distance, I fired but the bullet struck some feet below where the nearest one was lying. They stood up. Trying to make adjustments for my strikes each time I missed with all remaining five cartridges. This would have been easy shooting with my own rifle but this one seemed to shoot all over the place. There was nothing for it but to drive them up to Al. I started

climbing around the head of the gulch on a level somewhat above the rams.

As I went slowly along a narrow, steep slope of fine loose talus with cliffs above and below, they came up towards me. Soon they were on the same slope and coming to meet me. They were all three big rams with their necks bulging with muscle and fat and at least three quarters of a circle on their horns. They were a grand sight in their prime condition. They shook their heads and stamped their feet in defiance at me. Finally the leader was only about three yards from me pawing the rocks and threatening me. He seemed to know all he had to do to bowl me over the cliff was charge me. I picked up a small rock and hit him on the neck. He jumped back and I had won the moral advantage and kept slowly driving them ahead of me but every few yards they turned to threaten me. Finally we reached the end of the cliffs and came to a steep talus scree extending all the way to the top of the hill. I went around below them to drive them up but they were reluctant to go. However, I just kept slowly on and every 20 feet or so they continued to turn and threaten me. As we progressed upward the distance between us became greater and they seemed to realize they had to go over the top. Every now and again I saw Al's head on the skyline. When the rams finally made up their minds to go faster I was some 400 feet from the top. It was time to take cover behind a pinnacle of rock. Another Bang! Then something rolling, rolling, rolling down the talus. Another Bang and ricochet. I waited several minutes. He still had three cartridges. Finally I gave a shout and he answered coming down the slope. With his second shot he had cut the throat of the ram he had aimed at and it had rolled down the scree quite a long way. The other two had gone over the top and away unscathed. We were just as glad we had only got one.

It had continued to drizzle all the time and now the light was fading. We butched the ram taking the meat we needed and Al his trophy. Put the rest in as sheltered place as we could find and found our way slowly down to the bottom of the rocky gulch and thence to camp. Bob and Bill both let out a blast when we came out of the darkness before they saw what we had. "Did you hear those damn Indians massacring the sheep on the mountain?". We had to explain who the Indians were.

The next day Bob and Al took the rifles, picked up the rest of the meat and took them over to McAllister. The latter part of the night had cleared and it was crisp and cold so the meat had cooled well. McAllister apparently had made no attempt to come for the meat so we were the more relieved we had only shot one ram. I stayed in to go over and to mark the samples and specimens. Bill decided to make bread. For this he dug a trench in front of camp and kept a fire in it all day. He put his dough in a large "Trumilk" can about eight inches in diameter and 15 inches long. Then scraping out the coals he buried the can in the hot gravel and left it for an hour or so. When he dug it out the bread had filled the whole can and lifted the top a scrap. In spite of this it had baked beautifully with a ligth brown zone about an inch and a half thick all around it. It was delicious.

After supper in the dark there was a cry down by the river about 30 yards away. Bob and Al ran down with a flashlight and found old Ernie Johnson struggling in the water. We had seen him at Robinson. He said he had a prospect in this area and he wanted us to look at but he was at least 70 and had suffered a stroke that had left one side partially paralyzed. We never dreamt he would come out by himself. However here he was. Without Bob and Al he never would have got out of the river. He was lying in the icy water when they reached him. They brought him to the fire, got his wet clothes off and dry clothes on him. While Bill got him some hot supper, a little whiskey soon revived him. He had ridden his horse from Robinson following the far bank of the Wheaton River where he knew the trail well. When he saw our fire he rode across the river but in climbing the bank his horse had stumbled and he had fallen off. We got him to bed and in the morning he was fully recovered. We found his horse on the other side of the river and then I spent the day getting more samples from the nearer prospects on Carbon Hill.

On the 12th Al and I went with Ernie on his horse to see his property the Mascot mine near the head of Wheaton River. Ernie could get on his quiet horse provided he could find a suitable steep slope or boulder that he could stand on and that his horse would stand beside.

We set off with three days food but no bedding. Ernie lead us up Berney Creek to its head where there is a pass over into a fork of the Watson River. The pass was filled with huge granite boulders and it didn't seem possible that a horse could get over it but Ernie confidently led us a little way up on the north side and following a tortuous course he rode through a narrow passage between the boulders most of which stood several feet high. From there we went about four miles north into the Watson River valley to his cabin. It was a good one as he had said and bunks and bedding for us all. It was a 4476 feet a.s.l.

In the morning we went up to his prospect, Ernie on his horse. The prospect was in the headwall of a cirque where the vein could be seen extending diagonally up the cliffs. A number of tunnels had been put into it. The floor of the cirque was filled by what appeared to be a rock glacier with a small lake at the lower end. However, at the upper end of the lake a wall of about 30 feet of blue ice showed under 30 feet or more of rock rubble. At the entrance of the cirque was a large cabin built of local stone except the front and the upper parts of the walls and roof which were of wood. An old road extended from it down the Watson River to Robinson. Here the miners who worked on the tunnels in the vein had lived. We inspected what workings we could but the ropes that had been used to get up to the higher tunnels were rotten and we did not want to take any chances. We had lunch at the stone cabin and returned to the other cabin for the night. The vein has yielded some fair assays of silver-lead ore and is of a workable width. Ernie said he and Matthew Watson, storekeeper of Carcross who grubstaked him, owned it. Livingston Wernecke had looked it over and made an offer but when it came to signing the option Watson wanted more than he had formerly said and Wernecke walked out.

On the 14th we started back to our camp but instead of heading for Berney Creek, Ernie led us from his stone cabin up a steep slope over a high saddle at 6600 feet into the head of Skookum Creek valley. On reaching the summit of the ridge he turned north until he was about 250 feet higher. From here he headed diagonally down to the northeast towards what looked like an impassible bluff rising from the steep slope. There was a large drift of last winter's snow below the bluff, but as Ernie said there would be, there was a strip of bare slope about 10 feet wide between the snow and the bluff where a horse could pass. Once beyond this all was plain sailing right down into Skookum Creek valley and

back to camp. Today from the stone cabin all the travelling was over soil or fine slate slide. Coming up and coming down it was the same material but coarse and loose so that it was alright to come down on but would have been very hard to go up. The head of the cirque where the vein outcrops and Berney Creek are all granite.

In the morning we saw Ernie onto his horse and he rode back to Robinson safely.

The next two days we did more sampling of the nearer antimony prospects and I went over the trenches that Bob and Bill had dug but they had not found any continuation to the Empire vein as we had hoped. The day after we prepared to move and as arranged in the afternoon a young man, Robert Austin of Carcross, arrived with three horses. We broke camp, packed the horses and went to where Austin had left a buckboard. Here he harnessed one of the horses to the buggy and drove us to half a mile beyond Becker Creek where we camped for the night in a high wind and drizzle. The next day, the 18th we looked at some more prospects but they didn't have any antimony to speak of. Then we moved with the buggy to Stevens cabins. The following day we started for Robinson with the buggy and met McConnell with his car 2½ miles north of Annie Lake. Austin told us that his father had earned his living in winter shooting sheep up the Wheaton for meat to sell in Whitehorse. He employed two men with dog teams and sleighs all winter to take the carcasses to Carcross. In this work he shot more than 100 sheep some winters. He may have been exaggerating but even so there undoubtedly was a good deal of truth in it as mutton was always available in Whitehorse in the early 1930s as well as moose and certainly the country is a wonderful area for sheep.

No train had passed in the morning and in the afternoon we drove with McConnell to Cowley where we phoned the White Pass at Whitehorse and a motor car equipped with railway wheels came on the railway to pick us and our staff up. The driver took us back to Whitehorse as hard as he could go, the car rocking from side to side on the rails. We were thankful to get in safely. Alfie and the others had arrived and had a good trip. Jack Meloy who owned the Canadian Creek claims was up there to show them around. On the 20th we visited the Copper King and Pueblo copper mines of the Whitehorse copper belt to see if we could see any sign of tungsten there. The morning train took us to Skagway on the 22nd and we left on the steamer that evening. I spent a day in Vancouver and the weekend in Monte Creek on my way back to Ottawa.

# CHAPTER 5: THE SEASONS 1941 to 1943, STRATEGIC MINERALS

## Section I: 1941, Canadian Creek and Dublin Gulch by Packtrain

In the fall of 1940 as soon as possible a report on the tungsten and antimony prospects was assembled to be forwarded to the Metals Controller. The antimony prospects were disappointing as the assays in every case showed too many impurities in the way of other metals to make the antimony concentrates competitive with those still available from other countries. Alfie Allen had written a glowing account of the Canadian Creek tungsten placers, claiming more than 2000 tons of concentrates $WO_3$ were readily mineable. He had taken some samples he regarded as representative. I carefully panned the samples and could find no tungsten in them. The positiveness of his work was modified and as it was all we had on that property it was included in my report that was forwarded to the Metal Controller. I told Dr. Young, however, that I did not believe it to be a proper evaluation and that the first thing that must be done in 1941 was to test this placer thoroughly.

Accordingly for the summer, this was our first objective. Then we were to do more tungsten scouting around Dublin Gulch and Highet Creek. Also as we had to use the packtrain to travel by we should continue the mapping on our way to and from the Mayo.

Leaving Ottawa May 30th and spending a day at Monte Creek, I joined the assistants in Vancouver and we left on the Princess Louise in the evening of June 4th. Bill Duncan and Clarence Reinertson boarded at Prince Rupert as they had each year. The assistants were Bob Thompson as chief, David Burns and Ed Parry. The latter two were quite green. We reached Whitehorse on the 8th and left the next evening on the Aksala, but transferred to the Whitehorse in the early afternoon at Bayers Woodcamp below Big Salmon. We arrived at Selkirk about 1:10 the following morning.

It was a crisp, clear morning with the sun just coming up at Selkirk and after the steamboat left we moved our gear to where Wilkinson could easily pick it up and went up to wait outside the Hudson's Bay store. We had no sooner sat down on the steps than the window opened above us and the head of Mr. John Gregg, the manager, appeared. He said "Do you want your order now?" This was about 2 a.m. on Sunday morning. Such was the spirit of fellowship in the Yukon in those days. The list of goods had been sent to him by mail some weeks beforehand so that he would have time to order anything that he did not have in stock. I also told him our general plan for the summer, as I had found it a considerable advantage that everyone interested should know it.

Gregg came down, opened the door, and gave us coffee. The order was ready, piled in the front of the store. Wilkinson arrived with his boat, the Owl and we loaded everything on it and were at our campsite at the lower end of the Pelly Farm by 6 a.m. The following afternoon, while the others finished shoeing the horses and sorting equipment, I went to Selkirk and made arrangements for our trip down to Britannia Creek.

On the 13th Clarence, Bill and Bob brought the 15 horses around the Pelly River bank to where the steamboat could load them opposite Selkirk and take them down to Britannia Creek while the rest of us paddled down in a canoe. The Aksala landed the horse party at Britannia Creek at 7:30 p.m. that evening. We paddled over to Selkirk and spent the night with Corporal G.I. Cameron, R.C.M.P., and reached Britannia Creek at 7:00 p.m. the following evening with about 750 pounds of supplies and equipment. The next day we moved up Britannia Creek and to Canadian Creek, its tributary and then over into the highest patch of spruce in the head of Casino Creek to camp.

We set to work on the Canadian Creek placer. For this we had both standard and prospectors' pans and a large enamel pail whose volume we carefully measured. Mr. G.D. Barrowman, Custodian of Instruments at the Survey had obtained a scale for me. It was a sturdy but accurate slide balance with no weights to lose. Also the frame came to pieces for packing.

We dug lines of shallow pits across the middle part of Canadian Creek and across the pup on the right limit where there had been a placer working. From the pits the pail was filled evenly with dirt each time and a concentrate panned from it. Each concentrate was carefully wrapped in toilet paper, dried, shaken out, and weighed in the evenings. The wolframite (proved to be ferberite by Bob) which was largely lodestone, was picked out with a magnet. It soon became apparent that there was a narrow strip of rich ground extending down the pup into the creek where a good deal of mining had been done, but there was nothing anywhere else. The total yardage of all the rich ground was not large but two or three shrewd placer miners working together during wet summers could make a living for a few years. There was gold with the tungsten and that had led to the staking of the creek in the first place. Also there was a small mineral vein showing on the hill at the head of the pup that had been prospected by Wernecke's men. It was clear that naturally Meloy had taken Alfie around to all the good spots and Alfie had assumed that as the surrounding ground looked the same it all carried the same values. We mapped the area with our lines of holes and made a reconnaissance traverse around the head of Canadian Creek.

In the winter, Alfie, full of enthusiasm, had formed a company among his friends, optioned Meloy's claims and brought in an old farm tractor. With two or three of his friends he had now arrived at the mouth of Britannia Creek with his equipment and supplies. They had a lot of stuff to pack up from the river. Alfie asked me if they could use the packtrain to which I agreed as it was our policy to help prospectors when we could. While we were up there the horses were not doing anything and Clarence would be the only one affected. So when Alfie discussed it again with me I said that it was alright with me provided Clarence was willing and I made it clear that I did not wish to know what passed between them. The packtrain made two return trips down to the river

bringing up most of their stuff and this gave them a good start. Alfie asked me no questions about the property.

The steamboats were all up river now and there would not be a boat coming up from Dawson to take us to Selkirk for ten days. Though there was no map or trail overland to Selkirk it was decided to go that way. In this we would have to find a passable gap in the Dawson Range to get the horses through and we would make a map as we went. On the 24th we started moving going around the head of Casino Creek, down the long ridge on its east side into Dip Creek and thence followed up a wet trail to the fork of Rude Creek above Discovery claim to camp. The high rolling upland surface was all open and the trees were on the sides and floors of the valleys. Along Rude Creek there were the ruins of cabins and a large bison skull lay outside one about a mile below Discovery.

Leslie and Stevenson, two fine old Scotchmen who had come to the area sometime in the later 1920s were living in the old Discovery cabin about a quarter of a mile below the junction of Rude and Ray creeks. Their placer workings were about 200 yards upstream from their cabin. Here they had diverted the creek against a low terrace so that in flood it washed about 3 feet off the steep terrace front each year. At the end of the season they put in their boxes, shovelled in the washed gravel from the terrace and cleaned up, recovering $800.00 to $2500.00 for a season's work. They said only about $2000.00 had been taken out of Rude Creek before they came though the stream had been prospected all the way down to Dip Creek. They were doing alright with their gold mining, trapping, hunting and exploring with their dog team. Once each summer they went to Dawson to turn in their gold and buy supplies. On this excursion in 1938, I was told, they were sold a large, expensive battery radio. The first broadcast they received when they turned it on was a Nazi propaganda speech in English deriding Britain. Without trying another station they smashed the radio with an axe and threw it out of the cabin. They told the salesman the next summer that they weren't going to have anything like that around. This seemed unbelievable but on the east side of the cabin lay the smashed cabinet of a large radio and when I made a few discreet remarks about it their response confirmed the story.

We spent a day seeing their placer and the silver-lead prospect tunnel farther up the creek. Then on the 26th we moved over to a fork of Colorado Creek. This day Bob and I traversed southwesterly along the flank of the Mount Cockfield ridge. The course of the packtrain and where we should camp were, as usual, left entirely to Clarence. To the south and west the unglaciated plateau stretched away into the haze. Long, open, broad-topped promontories of the upland extended like fingers from the mountain ridge and their rounded summits dropped in ever steepening curves on their sides into the tributaries of the Klotassin River. To travel eastward it was necessary to keep going up and down over the heads of the ridges and streams. We were able to keep an eye on the progress of the packtrain below us most of the day but about four o'clock we lost track of them except that we knew they were well ahead of us. By chance I happened to look with my glasses farther eastward than we thought they could possibly be and just saw the last two of the horses disappearing over a ridge. If it had not been for this we would have had a long hunt for their tracks.

During these days traversing, I made a sketch contour map and put in the geology. The following day we did not move but traversed and found there was a pass in the summits to the east of us. This day a good collection of upland plants was made from this unglaciated area. The next day we moved through the pass. Two of us were some way ahead and as soon as we were on the east side we ran into scattered groups of caribou which approached us with curiosity and then dashed off. They too were moving eastward. Soon we heard two rifle shots and looking back with the glasses saw that Clarence had shot one. This was June 28th, the same day as I had shot a caribou last year. There were a thousand or more head of caribou in sight, presumably forerunners of the main herd. This was the last time I saw the migratory caribou. To eastward below us now was the head of Selwyn River as it flowed down from Apex Mountain. We camped on a hillside that night to be among the trees but as there was no water in the gulch beside us we had to carry it up 100 feet from the Selwyn. Sheep were visible with glasses on the nearest spur of the mountain. The following day we moved around a great open stretch of soggy upland moor two or three miles wide forming a plateau about 5000 feet a.s.l. Numerous marsh birds including golden plovers were flying over it. From here we went down the ridge south of Butterfield Creek into Hayes Creek valley and camped a quarter mile southeast of Klines Gulch.

The day after, it rained and Bob and I spent most of our time finishing the weighing of the tungsten concentrates and then went down to the gulch. Here in the early days some 270 ounces of crude gold had been mined from a low area of terrace about 20 feet square on the southeast side of the mouth. The last man to prospect there had apparently died in bed when his cabin burnt down, as the police found his skull in the ashes where the head of his bed had been. This had been two or three years ago but the vegetation had not yet covered the cabin site.

The next day two of us went in search of Sonora Gulch and George Devore who was working there. After finding an empty cabin overlooking Hayes Creek valley from the south we followed a trail which led us to Devore's cabin and then to his workings in the Gulch. A large area of terrace about 400 feet above the floor of Hayes Creek valley stands on the south side. Klines and Sonora gulches are the deep narrow courses of little streams that have cut down into this terrace. The base of the terrace is bedrock but the upper part is a thick section of surficial deposits. Devore had his placer cut in the east side of Sonora Gulch and had found a pay streak lying on a hard sandy layer in the overburden. He claimed he was getting $65.00 to $90.00 per week, 1¼ ounces per box length. The gold was well worn and somewhat flattened but fairly coarse. It would appear that there may be a gold bearing channel extending between the gulches. One or more deep prospect shafts had been sunk in this terrace some way up Klines Gulch apparently with this in view. There is some gold all along Hayes Creek or the east fork of Selwyn River as it was formerly called. As a result much of the wide part of the valley below Sonora Gulch had been drilled with a view to the possibility of dredging it but the values were too low. Devore trapped in the winter. He was a widower and had his little son who was about four years old with him. The child was lifeless and clearly needed fresh food.

On July 2nd we moved up Selkirk Creek and northward over the ridge to the Wolverine Creek valley to one of our old campsites on our way into Selkirk. The next day I reached the settlement at about one o'clock and at once phoned about a steamboat to cross the river as it was too high for the horses to swim. The operator at Carmacks said the Keno was on her way down with a barge. This was just what we wanted. She reached Steamboat slough above Selkirk about 2:30 and there we were able to get the horses into the shed which covered the barge. They were landed with Clarence and one assistant opposite Selkirk below the mouth of the Pelly some hours later and brought up to camp by the trail used on June 13th. I left Selkirk for the Farm about 4:30 p.m. with an order of supplies and the mail in Gun Erichson's boat with F.O. Adami who had been with his bride on the Klondike when she was wrecked in 1936. My party were all in camp by 12:30 a.m. that night.

July 4th was Sunday. The following day I arranged for Wilkinson to take me with the mail over to Selkirk, picked up some sundries and returned. On the 6th we moved with the packtrain to the big cutbank campsite of former years above Bradens Canyon. Going along the terraces up the river the pentstemon was in full bloom. The slopes were wonderful sheets of colour. Only fireweed in a big burn could compare with it. The great majority of the flowers were of blue and mauve shades but about one plant in a hundred was pink and one in some thousand pure white. The weather was very hot and we were glad to reach the cutbank campsite as it was not only a good place to hold the horses from going back to the Farm but a cool draft came down on to it from the dry gulch to the north. From here we followed our trail to the Willow Creek bridge on the winter road and then the next day turned eastward around the northwest end of Diamain Lake and camped on a creek flowing into the lake. This proved a tougher move than we anticipated, through dense timber and we didn't reach the place we wished to camp until 7:30 p.m. The following day it poured with rain and we stayed put.

Then we moved again and started traversing though we were in the McQuesten map area as we now had the new topographic base of the area. Camp that night was on the southwest head of Woodburn Creek. The following day Dave and I traversed into the southwest corner of the Mayo map area. When we were about 500 feet above timberline on a wide, open slope the rain came down in torrents without appreciable wind. We stood side by side with our backs to it, facing down the slope. When we had been like this for a couple of minutes a grizzly came loping up the slope diagonally towards us. I whispered to Dave, "Don't move. Don't blink or move your eyes, I mean it." The grizzly stopped below us about 15 yards away, stood up and looked us over turning his head from side to side and sniffing for about 30 anxious seconds while the rain continued to stream down. He did not smell us on account of the heavy rain. He then continued loping on his way passing within 10 yards of us while we stood motionless, not daring to turn our head until we felt sure he was well around the slope out of sight. Bob and Ed saw a ram, two ewes and two lambs on the ridge north of camp that day.

After a day of rain in camp we went up to the hotsprings trying a new route. We went along the Tintina Trench towards Little Kalzas Lake until we reached Hotspring Creek and then followed it upstream through its narrow gap into the hills in the front of the McArthurs to the mouth of Black Ram Creek. This route was alright for the horses and riders but those on foot had to wade the creek four times where it meanders against the cliffs on each side of the gap. The trail up from Black Ram Creek was good and led to the nearest place where pack horses could cross the northwest fork of Hotspring Creek which flows among the great mass of granite block where there is only one place that the horses can cross. From this creek it leads eastward around the fork to opposite the hotsprings.

We now took an easy day to enjoy the springs and dug out a bath two of us could lie in at one time. We arranged the water coming in so that while lying in the bath we could reach a stone and by moving it from one side of the inlet to the other we could turn in hot or cold water as we desired. Having a bath here was most relaxing and luxuriant after a long day.

The following day Ed and I rode with Clarence up the northwest fork of the creek to the foot of Black Ram Peak. Here we dismounted and gave the horses to Clarence to take back to camp. We had climbed up about 300 feet when looking back we saw Clarence still below us with the horses and a grizzly approaching them concealed by a low esker. We called to Clarence. He got on his horse and drew the 30/30 rifle from beneath his leg but at that instant the grizzly came around the esker into his view about 30 yards from him. It turned and bolted up the valley. This was just as well as Clarence was not ready for it and a 30/30 is not much of a rifle to tackle a grizzly with anyway.

It was a long wary traverse climbing up the Peak, 6990 feet and down and along the ragged granite ridge around the head of the creek valley. We met one large ram on the saddle east of the peak. A well worn sheep trail was a help but even to follow this we actually had to use our hands in places to climb up some of the places the sheep went. Finally we came down into the basin of the centre fork of Hotspring Creek which is the head of a very pretty valley with two or three small tarns in it. We were in some time after 9 p.m.

On July 17th we moved southeast to camp on the southeast of Mt. Van Bibber 6450. Dave and I went up over the saddle behind camp and thence to the saddle north of this mountain to get over into the wide spreading basin of the creek that camp was to be on. Going up we passed through a marmots paradise. The basin in the upper part was floored by huge granite block embedded in soil covered by a rich grass turf. The blocks were too big to be turned over by grizzlies so the marmots' homes were secure. There seemed to be dozens of them.

We climbed the ridge at the head which looks down over the large basin near the foot of which camp was to be. The ridge was nearly a knife edge of granite and when we reached the top at 6000 feet we thought at first we would not be able to get down on the other side. We sat and filled in the contact on the map and searched the area below and opposite us for grizzlies and rams. I had brought my rifle with me this day as we needed meat. Soon I spotted eight rams on the nearer part of the slope that Fred Pearse and I had groped our way along in the snow, fog and storm in 1939. The rams seemed to be in an unstalkable place, they had a clear view in all directions, but if Dave went slowly down the valley below them and then started coming up towards them they would watch him

and probably move up higher on the ridge where I could get a shot at them if I were up there first. This plan was decided on. Dave was to give me lots of time. We found our way down into the cirque below over huge granite blocks. Dave went down the creek and I started to climb up the opposite face to get above the rams. After going along the top of the ridge a mile or so I started going cautiously down among the boulders towards where we had seen the rams. Presently I spotted Dave walking along the open glassy slope at the bottom and then saw the rams watching him about half way between us. I stalked on down from boulder to boulder until I was about 150 yards from the sheep and in such a position that I would not be shooting towards Dave. One shot knocked one over. He got up, walked a few yards and then dropped dead. The others, not knowing where I was, walked slowly up past me about 30 yards away. They were a beautiful sight and I always hated shooting anything, particularly sheep, but it had to be done. This was a grand day and the area the rams were on was perfect range for them. On the lower part was an expanse of lovely grassy turf slope which gave way upward to a steepening slope with scattered granite blocks and crags above. We could see camp from where the ram lay. He was 9 years old. I sent Dave down to ask Clarence to come up with a pack horse. Soon Clarence rode up leading a pack horse. He was able to bring the horses within 25 yards of where the ram lay. It was 2:30 p.m. The journey down to camp took 40 minutes.

Clarence was very worried. He said some of the horses were ill and that their coats showed they had high temperatures. Two of them had had to be unloaded and their packs put on the saddle horses. Camp was on an excellent site, a sloping grassy meadow. The horses were all close by and we went over them. The sick ones were not eating. None of us knew for certain what was wrong with them but we suspected it was distemper and they they had picked it up by crossing at Selkirk in the closed barge. Indeed we heard in the fall that a dog team with distemper had been taken up to Whitehorse in that barge on the trip before. The only thing to do was to keep the horses rested. Four horses were in bad condition. The disease started with the high temperature then a green discharge from their nostrils and still a temperature. Later their throats swelled up and they found it hard to breathe. The following day six had the disease. The sick ones including most of the best pack horses, Yukon Freddy, Hazelton Freddy, Star and George and two more. The horses like Old Buck and one or two of the others that had been on the pack train when I first came to the Yukon in 1931 seemed to be immune and grazed away enjoying themselves. Perhaps they had already had it. It rained again and the mountains were in fog the first day keeping us in anyway but the next two days we traversed. By this time some of the other new horses including Judy had begun the discharge from the nostrils and the first six infected now had developed defined lumps under their skin on the neck and shoulders. These were larger than tennis balls. They finally burst and showed great yellow masses of pus which discharged. As soon as this happened the horses began to feed again and the lustre started to return to their coats. In a few days their skin had healed over and one would never have known they had such sores. Other horses infected were not as bad but continued to have some discharge from the nostrils and two in whom this did not end before the fall died during the winter. But what a fix we would have been in had we lost some of the horses where we were.

On the 22nd the fifth day at Sick Horses Creek we decided to move on, though six horses were still coughing, and went down around the south end of the range to the mouth of Grey Hunter Creek. Hazelton Freddy was the worst now but had begun to discharge on the side of his throat. George and some of the others still had lumps but the whole pack train was better for the rest and good feed. Up until now the grass had not grown much. Barney's near foreleg had been sweenied but this was better too. Though nearly all down hill, this moved proved a tough one and we made camp at 7:30 p.m. in a poor campsite on Big Kalzas river near Grey Hunter Creek.

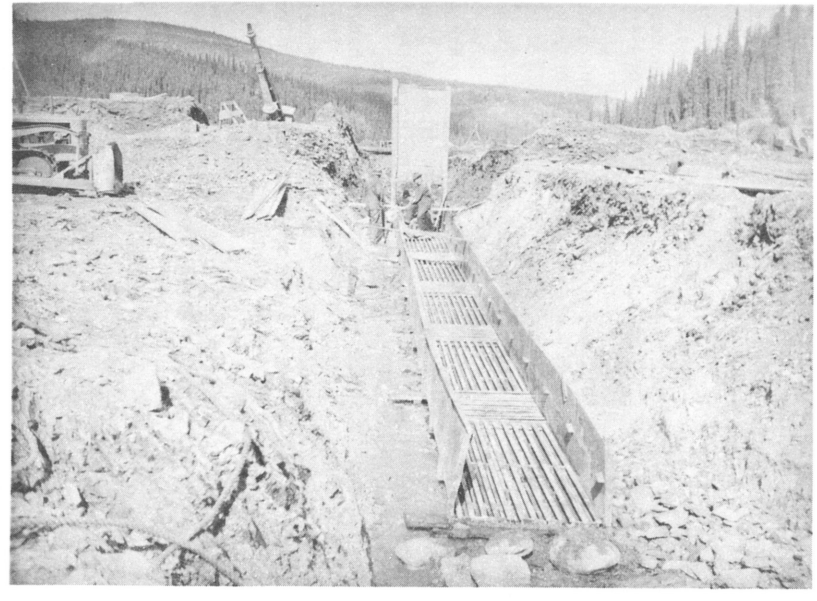
The following morning we moved east into the valley south of Clarke's Peak. The Kalzas River above Grey Hunter Creek meanders in a deep channel with soft, forested banks. Clarence found a place with a gravel bottom, however, where the horses could ford with the water just up to their bellies. The day was hot and in spite of the rain and fog we had had in the McArthurs the ground here was very dry. The horses stepped in three or four ground wasps' nests and these, as usual, caused minor stampedes. Travelling east of the river was bad, the ground being soft and a bridge had to be built for the horses to cross the main westward flowing creek in the valley. Soon after this we camped for the horses' sake.

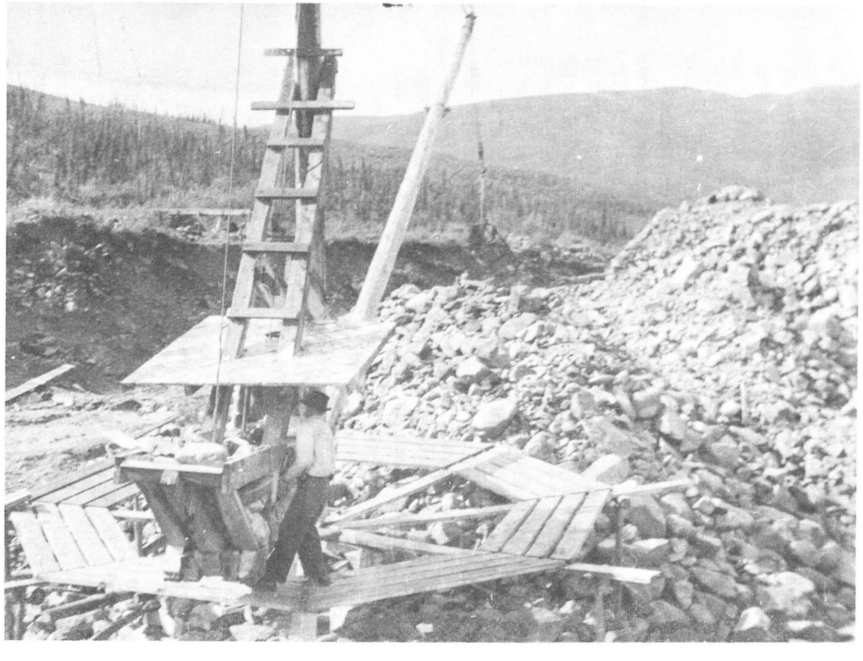
The route ahead now looked better so the next day Bob and I climbed up onto the west shoulder of Clarke's Peak 7270 feet a.s.l. and then traversed eastward over the top. When we started down on the far side we had doubts whether the pack train could have come so far but were soon reassured as first a bull moose came up out of the valley where we were heading, then a cow and two calves followed by another bull. This showed how much the pack train disturbed the game.

The following day it rained. That evening Bob chopped his left foot giving it a nasty long deep cut. We stuck adhesive tape in loops on the skin about three-quarters of an inch back from the cut on each side, put lots of ointment in the cut and a dressing on it and then drew the two sides together with string through the loops. We had bacon in cans about 15 inches long and 4 inches square. Bill took an end off one of these and opened it down the length. He removed the bacon and washed out the can. A flat piece of dry spruce was nailed on the uncut bottom end and the whole made an excellent L-shaped splint. This was then fitted on Bob's leg. The flat wood on the bottom held his foot from moving and protected it. When the dressing was removed ten days later the cut had closed all the way along except for about an inch at the upper end but in a week or so more this too had healed.

On the 27th I sent Dave and Ed on a traverse along the valley to the eastward while I crossed the valley southward and, in the timber, stumbled on some outcrops that contained a good fossil locality. This was the first new fossil locality I had seen since 1931. The following day was spent collecting fossils, Bob coming over on a horse.

The 30th we moved west and around Clarke's Peak up Kalzas River and the day after to Sideslip Lake. This name was given the lake by Wernecke's pilot, Everett Wasson, as walled in by the hills on each side the only way to fly down onto it is to sideslip to land on it. A good trail ran northeast along the river valley and in one place beside it a new 30/30 Winchester rifle hung muzzle down in a tree. As





*Bridge over South McQuesten River. The inclined logs, designed to divert the spring ice were supported entirely separately from the main piers. (92300)*

*Steel sluice boxes with iron rail used for riffles in the days before rubber came into general use for this purpose. Clear Creek area, 1941 (91299)*

*Derrick used to hoist rocks out of cut; Fred Taylor's workings, Dublin Gulch, 1941 (92291)*

always we left it untouched. The valley floor east of the lake contains some pretty park-like areas with big pines. The horses had now recovered except that some had a slight discharge from their nostrils. From this camp we had two good days traversing on one of which we saw a flock of 14 ewes with 14 lambs southwest of the lake. Then after I had made bad forecasts of the weather which delayed us two days we moved over Nogold Plateau, across Nogold Creek valley and thence on into Mayo, moving camp on alternate days. Frank Cascallen had, at some time, made a small placer cut in the creek coming down into the valley below Francis Lake from the north. On the 10th of August we reached Mayo.

I laid out the work that the party was to do under Bob in my absence around Highet, Johnson and Seattle creeks and thence to meet me at the mouth of Haggart Creek. By the 12th all was ready; they had their supplies and I expected to fly to Dawson that morning but the plane was grounded all day at Skagway. I reached Dawson the following morning, however, and saw Mr. Jeckell in the afternoon. We drove to Sixty-mile the next day and inspected the road as far as the International Boundary as it was being used a lot by placer miners along Walker's Fork and Jack Wade Creek, both in Alaska. They had found it cheaper to bring supplies and equipment in through the Yukon than through Alaska and this meant business for Whitehorse, the White Pass and Dawson. We visited the Stewarts on Miller Creek and spent the night at the dredge camp on Sixtymile River where W.A. Williams was now manager. The day after we returned to Dawson. The Jeckells, whom I had come to know well now, kindly asked me to stay with them at Rock Creek in their summer cottage. Here Mr. Jeckell and I caught grayling in the Klondike River on which the cottage faced. The evenings were spent in listening to their reminiscenes of early Klondike days and the problems of being controller. Mrs. Jeckell, in her younger days, had been an extremely active lady. Strong-willed and quick-minded, social and orthodox customs meant little to her. She told of days in the first decade of the century when she had often saddled and gone off on her horse along with a shotgun and two sacks returning from up Hunker Creek or on the ridges with the sacks filled with grouse. No doubt the abundance of grouse at that time was due to the clearing of so much of the forest around the Klondike.

On the days at the cottage Mr. Jeckell drove me to visit the power station and out to the South Fork intake, up Hunker and around Dominion and Sulphur creeks. On that trip we stayed the night at Taddies Road house at Granville and enjoyed the rich and delicious meals with fresh milk and cream prepared by Miss Gertrude Melhause, the cook.

On August 20th I flew from Dawson to the McQuesten airstrip and was picked up by Mr. Bruce I. Thomas, manager of Clear Creek Placers Ltd. operation who drove me by the new road up over the ridge from Barlow and thence down to the camp at Barney Pup on Clear Creek. This road follows along the ridge above timberline for some miles and is as scenic as the Sixtymile road. The next two days were spent going over the Clear Creek placer workings. At this time the company was just starting there and they were digging the gravels with a dragline shovel and dumping them at the head of the iron boxes. A diesel shovel disposed of the tailings. At camp at the mouth of Barney Pup they had laid an iron pipe up the small, steep stream to where they gained a good head of water. This ran a pelton wheel and generator that gave enough power to light the camp, saving thousands of gallons of diesel oil.

On the 23rd Thomas drove me back to the airstrip where I caught the plane to Mayo at 10 a.m. There Bud Fisher took me to his placer working on Duncan Creek on the left limit about half way between Parent Creek and the Mayo River. Here he had small detached patches of pay gravels mixed with glacial till with the trunks in it. There were patches carrying gold alright but no sign of a continuous pay streak.

The next day he drove me to the log jam on the South McQuesten and I settled by myself for the night in Robby Burns' cabin at the campsite on the northside. The party arrived at noon the next day from Seattle Creek. The day was terribly hot. After Sunday we moved up Haggart Creek to camp on the right limit of Dublin Gulch about half a mile from the mouth. We had used this campsite in 1938 and again in subsequent years. I called on Ed Barker and had a good talk with him about the possibilities of mining placer scheelite for the war munitions and how much might be available. I called on Fred Taylor and discussed the same subject. It was easy to see that these two were among the most capable and shrewdest placer miners in the country. It transpired that Barker had been working as chief mechanic at the Elsa Mine. When gold was revalued or soon after, he and Taylor came over to Haggart Creek and Dublin Gulch, panned the stream gravels and examined the old workings and shaft dumps. They judged the ground was well worth mining at the new price and Barker staked much of Haggart Creek below Dublin Gulch and Taylor on the Gulch. By 1938 when I first visited the area Taylor had already been putting in a long bedrock drain to carry off the tailings. Barker was not present on Haggart Creek at that time. Some others, as is usually the way, had followed them in and some claims may have already been held by old timers when Barker and Taylor first staked. Now both Barker and Taylor had successful workings and owned most of the claims. In getting started Barker anyway had borrowed heavily from the Bank of Montreal through Mr. Hall; but as already said, Mr. Hall told me every cent of his loans had been paid off at the end of each season. This happened for two or three successive years while Barker, who was in his sixties, was getting equipped with a bulldozer, front loader, dragline scraper, steel sluice boxes and sundry service repair equipment including a welder. The loans were not only necessary to pay for these things but also for the wages of his men. Barker had virtually no capital or property to start with.

Miss Kay Broadfoot was cooking for Barker and his men. She was not only an excellent cook but very good looking and educated. She remained Barker's cook for several summers on Haggart Creek. In subsequent years it was always a great pleasure to renew acquaintances with these three.

On the 28th with the assistants I walked up to the Cascallen cabin at the mouth of Cascallen Pup at the head of Dublin Gulch where we met Schelly who was directing two men, Herb Richmond and Joe Winters, prospecting for lode scheelite. We had our mineral light with us and went over their trenches. They were digging pits with picks and shovels deep into weathered, crumbly, unfrozen granite. Whereas down in the valley floors, below the surface, ground was frozen solid with permafrost, up here above timberline where the snow came early each fall, became deep and stayed late in the spring apparently there was hardly any frost in the ground at all. The next day we

traversed up Haggart Creek to the summit between Ironrust Creek and the North McQuesten River valley. The day after I visited Fred Taylor again and then followed the party down to camp at the log jam. This was a delightful walk on a sunny afternoon along the old winter road in the peaceful silence of the Yukon. There were ruins of several old cabins and a large steam boiler and remains of a sawmill a mile or so above Secret Creek.

In the morning after arranging for the party to move to Minto Bridge and then on to Mayo I crossed the log jam and was met by Schelly with his car on the north side of the Lookout summit. We then drove to Keno and visited Billy Sime, the Territorial Government assayer and went on to the Calumet mine cook house for supper. From there we went up in the evening to see Bermingham on the top of Galena Hill and finally to the Elsa camp for the night. The following day Schelly drove me up Highet Creek to see Middlecoff and then to Mayo. It would have been impossible for me to make this round of activities so quickly without Schelly volunteering to take me, and it would have taken me weeks otherwise to get an idea where the placer mines were yielding scheelite, the calcium tungstate needed for the war munitions.

The party had reached Mayo before noon and swam the horses across the river. In the morning, September 2nd, Clarence, Bill and Ed took the horses down to Seventeen Mile meadow campsite, where Ed Burnell's cabin still stood. Burnell was a retired member of the Mounted Police who had spent a good many years of his tour of duty in Mayo. He had been tremendously respected and liked. A story was told of him in which he found one winter someone was stealing wood at night from his pile outside the police post. He waited up and when the thief came again with his wheel barrow Burnell went quietly out and said, "Here let me help you". No more wood was taken.

The remaining three of us collected our last order of supplies for the return to the Pelly Farm and waited for the plane to bring the mail. It arrived at 2:45 and we left Mayo about 3:30 p.m. with our stuff in a White Pass lifeboat which we borrowed and rowed down to Seventeen Mile arriving at 8:30 p.m. The next day was taken as Sunday at this lovely campsite so Bill could bake bread and get the grub sorted and packed. Also so that the horses could get a good feed here. They needed it.

The second night was beautifully still, crystal clear, moonlit and cold. The frost was settling on the meadow below the terrace camp was pitched on. The fog was rising on the river and fall was in the air. Clarence had blocked the horses only route to escape homeward to the Pelly Farm by building bars across the bridge by which the winter road crossed the deep little creek that meandered through the meadow. The horses could not cross this creek with their hobbles on holding their front feet together though they could go along a road or even ground when hobbled at an awkward gallop. About 2 a.m. I awoke with a start, pulled on my trousers, stuck my feet in my moccasin rubbers and was running to wake Clarence when he went tearing past me bridle in hand. We both had known instinctively what had aroused us. Old Buck had pulled the bars down with his teeth and they had fallen with a crash. He was off to the Farm. It was more than two hours before Clarence was back with all the horses. They had gone galloping down the road and were well strung out with Old Buck some miles ahead. Though the oldest of the packtrain he was still much the fastest. As on many other occasions during these three years (1939-41) I was thankful to have a man of Clarence's calibre as packer.

On September 4th we moved through the Ethel Lake gap and camped at 2625 feet on the southside. From here we traversed the ridges east and west of the gap. This was in the McQuesten map area. The next move was into the valley of the head of Ethel Creek and then moving on alternate days we camped in the upper part of Crooked Creek valley and thence to Van Bibber's cabins on Woodburn Creek on the 15th in sleet and drizzle. Fresh snow was all over the upper levels now. During this time on one traverse we saw some wolves around Crystal Lake and on the final move to Woodburn Creek, when Dave and I were traversing up in the fog and snow, we experienced that optical illusion described in several books including "The Land of Feast or Famine" by Helge Ingstad. We came out of the timber onto a grassy snow sprinkled slope in the fog. Both of us stopped dead in our tracks. Up the slope was a big animal digging with its back to us. We both thought a grizzly. However, before we could decide what to do a slight gust of wind wafted some of the fog away. It was a ground squirrel.

From Van Bibber's cabins we moved past Last Glimpse campsite with some regret at not stopping but the temperature was +18°F and we thought it as well to go as far as we could. We reached the winter road and camped at the first little creek and bridge. It was a good place to hold the horses. The morning after we were up in the dawn. Clarence had the horses all saddled and two packed before breakfast. It was cold, period. There was more fresh snow but now it was melting everywhere above 3000 feet. We reached Bradens Canyon campsite that afternoon and the Farm by 2 p.m. the next day, having made another early start in the frost and fog.

The next morning while the others started preparing the equipment for the winter and taking the shoes off the horses, I went over to Selkirk, wired for a plane to pick us up on the 22nd and collected the mail. The weather was now lovely and sunny but continued very cold at night. That morning as the sun was coming up and shining full on the slopes of the open hills on the north side of the Farm the clouds stood above them like a wall of great masses of lovely white cotton batting. Quite abruptly flocks of cranes started coming out of the lower clouds. As soon as they were over the sunny slopes where the warmth of the sun caused a rising air current they all began to croak and breaking their long V-formation that are the same as those of the geese they circled in a disordered crowd rising higher and higher until they were just specks in the sky where they reformed their long V's and continued southeast. There were thousands of them and they continued coming for at least half an hour. It is difficult sometimes when they are at great height to tell V's of cranes from those of geese unless one knows that all the geese beat their wings steadily whereas only the leading five or six in a crane V beat steadily, those behind them beating and gliding for a few beats and then beating again five or six times and gliding again.

The next two days were spent in washing and drying the horse blankets, listing everything and packing it away a good four feet above the floor in the old homestead cabin. Wilkinson and I signed the winter contract as usual, $60.00 for wintering each horse. George Fairclough had kept the horses in the stable and fed them hay all through the cold weather

just letting them out each day for a little exercise and to go to the water hole which was cut every day in the ice on the river. Wilkinson let them run out on the range north of the Farm all winter. Every day he put out hay for them on the meadow near the house and opened the water hole. Even when the thermometer was below -80°F the horses were treated the same. Their routine was that each day they came in down from the range directly on the north side of the meadows about noon and had their hay and drink and after about an hour returned to the upper part of the hills north of the Farm where they were in thick spruce forest. Here they were a good thousand feet above the meadow on the valley flat and had the benefit of considerably more sunshine than in the valley. When we arrived in June the horses were always in better condition after Wilkinson had charge of them than when they had been kept in through the colder part of the winter or than they had been when kept at Robinson. True we did lose one horse, Star, who was a good one, through this treatment but this could hardly be blamed on it. The trail the horses used coming down the hill side in one place followed along the steep slope above some cliffs. There were some mild sunny days in the spring and the snow on the open hill face started to melt and then froze into a sheet of ice. Star was much the biggest horse and inclined to be a little clumsy with his feet. On the icy slope he slipped, fell down the cliffs and broke his neck.

Wilkinson took us over to Selkirk early on the 22nd but the weather had closed in again and the cloud was too low for the plane to come. We slept that night in the Hudson's Bay store. Despite the cloud continuing the plane arrived the next day. I sat beside the pilot. The ceiling was still pretty low but all seemed well and we passed Carmacks and flew on up the Nordenskoild valley. When we started to cross the hills along the present Klondike Highway route north of the Miners Range we found the ceiling down in the tree tops and had to turn back and try the Ogilvie Valley to get through to Lake Laberge. There was just room in the valley to turn the plane back under the clouds. The pilot was white as a sheet. However, we reached Lake Laberge alright but saw that the ceiling descended slowly southward. A few minutes after landing, the Whitehorse airport was all in fog and closed.

On the 25th we took the train as usual to Skagway and boarded the Princess Norah in the evening. The Hon. George and Mrs. Black, Judge and Mrs. MacCaulay and several other interesting people were on board. Mr. Johnson the C.P.R. agent at Skagway had given us good cabins as usual. The Norah, though smaller and slower boat than the Princess Louise was newer, better designed and roomier and so more comfortable.

We called at Ketchikan in rain after dark and I stayed in my cabin. As I sat on my berth my door was flung open and a drunken stranger demanded if I was Bostock. On being told so he drew back his right arm to strike me but a man behind him caught and held his arm. They both came in. The second man was sober. We discussed my report on the Becker-Cochrane prospect, the assays published in my report showed as mentioned before too much lead, zinc, etc. with the antimony. The second man explained that his drunken companion was McAlister's younger brother. He was a married man with children and he had given all his savings and $10,000.00 from a mortgage on his house to McAlister to enable him to open up the Becker-Cochrane prospect. Now he was broke. After a frank conversation they left peacefully. McAlister had told him that the reason he could not sell the claims and pay him back was because of my report.

Bill Bacon was on board and was one of Alfie's backers and he had been at Canadian Creek in September. They had not made their fortunes.

## Section II: 1942, Dublin Gulch and beyond by packtrain

In the fall of 1941 Alfie and his backers had abandoned Canadian Creek. Early in the winter, however, after Pearl Harbour, the pressure came on again from the Metals Controller's office to look for tungsten. That office had now read my report of 1940 and without consulting the Survey further persuaded a group of mining companies to drill Canadian Creek. I heard of this indirectly later when it was too late to do anything about it. Charlie Coleman, well known mining geologist came into my office in the spring. His group had flown a drill, camp and crew into the creek, landing on the snow during late winter and drilled the area. He was disgusted with the results after all the expense, hardships and risks he and his men had gone through. He wanted to know just what my report on Canadian Creek was based on. I told him the whole story and of the results of my own examination. He produced his plan on the drillholes and results and I showed him my map and panning figures. Our values were almost identical. He exclaimed "If only I had come to see you before we started". Indeed the similarity between the panning and drilling values gave me a new confidence in what could be done even by an amateur like myself with a pan.

Later in the spring I attended a meeting in the Metals Controller's office. I was asked what could be done to bring the scheelite out from Dublin Gulch. I was ready for this as I had gone into the matter with Barker and Taylor as well as Mr. Jeckell. I also had a rough idea of how much it would cost to build a truck road into the Gulch from talking to Neil Keobke, the road foreman at Mayo. I answered at once that several tons of scheelite could be exported by this fall with the placer equipment on the spot but that it would require the construction of some 14 miles of road and a bridge over the South McQuesten River. The cost of the whole operation could probably be covered by $20,000. Also I pointed out that last fall Mr. Jeckell had assembled all the necessary road equipment in the Mayo district but the funds had to be available at once as it was vital to start the bridge while the country was well frozen. This was done. Keobke got Jim Gibson and some other old timers, all excellent axe men, to the site of the bridge as soon as he received the radio message from Mr. Jeckell and had them cutting trees for piles and timbers for the bridge right at the site. He moved his two dump trucks, two bulldozers, a grader and an old steam shovel over the Lookout summit road and everything was assembled at the Bridge site. Board cabins on skids were pulled to the site by the bulldozers.

The bridge, with a 40 foot centre span, was strong enough to carry any load that could be expected and was finished by breakup. The steam shovel had been used as a pile driver. When we arrived on June 22 a well graded and drained road had been completed up Haggart Creek on the right limit to beyond Secret Creek. By midsummer it had reached Dublin Gulch for a cost, bridge and all of $17,000. Great credit was due

Keobke for the design of the bridge, choosing the route and indeed for the whole operation. The remaining $3,000 he used to recondition the road equipment for next season.

Another thing that happened during the winter was that Bill Lunde, a Norwegian, tinsmith and general handyman who was prospecting on Dublin Gulch where he had staked some placer claims on the right limit below Taylor and was starting mining, sent me five heavy dirty looking pebbles with a note saying that he could not think what they could be unless they were cassiterite, the ore mineral of tin. Sure enough they were. Five geologists of the Geological Survey including myself had seen such pebbles in the heavy placer tailings on the creeks in the Mayo district and ignored them. This cassiterite was crystalline like very coarse brown sugar and mixed with green tourmaline. In appearance it is quite unlike that in the Klondike and Alaska which is mainly "wood tin", botryoidal with lighter and darker concentric rings. This revelation opened a new interest and possibility for the area. As soon as this was mentioned several old timers said that of course they knew all the time that there was tin in Dublin Gulch but when they were shown some mixed pebbles from the Gulch they all picked out the hematite as tin.

The instructions for this year were to estimate the quantity of scheelite available in the Dublin Gulch area and to explore for other areas. The first part involved detailed mapping and prospecting. The second part raised some thoughts about the association of the scheelite and the small granite stocks around which the placer creeks carrying it occurred. The scheelite was associated with gold but not uniformly. Some gold creeks had practically no scheelite. If circumstances were reversed we would not hear of a rich scheelite creek which had little or no gold as no mining would have been done on it. The small stocks seemed to be scattered along a northwest trend. Could there be some northwest of Dublin Gulch in the Ogilvie Mountains? After all there was the stock of Tombstone Mountain north of Dawson in the Ogilvies. Our knowledge of these mountains was almost blank. Accordingly, it was planned to explore in that direction in the latter part of the season and for the whole season three experienced prospectors from the Mayo district were to be included in my party.

I left Ottawa on May 20th, had the long weekend with my sisters Jean and Nan at Monte Creek, (Mother had died in January) called on Cockfield at the Vancouver office as usual and with my three assistants caught the Princess Louise at Vancouver on the evening of May 26th. The Princess was painted battleship grey. The assistants were Bob M. Thompson, chief again, Jack M. Wallace, a civil engineering student and Basil McDonnell, all from U.B.C. Bill Duncan was cook and Robert Bradley packer. The last two joined us at Prince Rupert.

We arrived in Skagway on the afternoon of May 30th. The town was filled with the U.S. Army Engineer Corps. There was no train until the next morning. We spent the night in the Pullen House, a well known old time hotel. Brigadier General W.A. Hogue and some of his staff were there and also Mr. J.B. Mertie of the U.S.G.S. Merte and I met the General on the train in the morning and had a short talk with him on the location of the Alaska Highway through the Yukon. He was now virtually "Dictator" of the whole region.

We reached Whitehorse at 5 p.m., had supper and caught the steamboat Whitehorse two hours later. The town was filled with the U.S. Engineer Corps. The faces of many of them were those of educated men. Their military police patrols were apparent on the streets and General Hogue maintained the strictest order. He was determined to win the utmost co-operation from the Canadians.

We arrived at Selkirk at seven in the evening of June 1st, got our supplies from the Hudson's Bay and reached our campsite at the Pelly Farm about 11 p.m., put up camp and to bed about 1 a.m. All through the twilight of the still June night the singing of the thrushes in the brush around my tent in the stillness of the Yukon was something never to be forgotten.

The next three days were spent getting sorted, packed and shoeing the horses. Bill and I missed Clarence Reinertson. On June 4th we fetched the mail from Selkirk and started for Mayo the next morning. The packtrain didn't get going until 11. We reached the cutbank campsite at six p.m. The following day we were off a little earlier and camped at the ruined Willow Creek bridge. The horses were driven across the creek and hobbled there so that they could not get back. Two fresh moose tracks were seen as well as several rabbits and ground squirrels, things that had been absent last year. We made Last Glimpse camp the next day but the weather turned bad and we stayed. Then we moved to Woodburn Creek above the lake and on to the Hotsprings on June 10th.

The next day Bob and I traversed up the east branch of Hotspring Creek and through the pass down into the branch of Grey Hunter Creek that heads there. A trail for horses could easily be made in this pass to get through the range by using a little dynamite and some crow bar work. This was a long traverse for so early in the season but the warm bath in the hotsprings afterwards took our weariness away.

Jack was to have come with me this day but he had refused to carry the things including my lunch which I had asked him by saying that he had been taught on Vancouver Island that every man must carry his own equipment and lunch. This was a good rule no doubt in that heavily timbered country but here circumstances were different. However, he was adamant. I told him if he wasn't going to do what I asked him to he was no use to me. He would come with us to Mayo and be paid to that place but then he would have to leave the party. I was sorry as he seemed a promising assistant, energetic and generally used common sense. When I came back in the evening old Bill had given him a blast. He came to my tent contrite. I was only too glad the matter had blown over.

As we were leaving the Hotsprings two Indian men and a boy about 14 arrived. The boy had injured his back and they thought that if he could soak in the hot water for extended periods his back would get better. We didn't know we were leaving the hotsprings for the last time. It was a lovely spot but I have heard that in the late 1960s a lot of trees were cut down to make room for a helicopter to land, the place was generally messed up and that much of the forest around has been burnt.

On the 15th we moved to Van Bibber's cabins on Woodburn Creek and then continued north on three

consecutive days using our former campsite to 17 Mile meadow where we gave the horses a day's rest as the feed in the hills had hardly begun to grow. The weather was very hot with frequent heavy hail storms. On the 19th we followed the winter road to Mayo, swam the horses and camped at Johnny Vinegar's. On the next day, we got our supplies and Bradley took the horses nine miles north on the road leaving them beyond Minto Bridge so as to shorten their journey to Haggart Creek and give them better feed. But during the night they returned to our camp.

Cecil Poli, a prospector came into camp and talked of Arizona Creek, a tributary of Hobo Creek. He said the creek carried 100 pounds of tinstone to the box length and gave me a sketch map of how to get there. We had to find out if this were true before the season ended.

On the 22nd, we moved by truck to the end of the new road on Haggart Creek, the whole distance was 32 miles, and the horses followed with Bradley and Bob.

In the meantime, I had engaged three experienced prospectors, Joe Winters, Henry LeBlanc and Bill Hare. All were fine, intelligent and companionable men who had been in the country a good many years. Also a call was paid on Simon Mason-Wood, generally known as Sam Wood. He was territorial agent, liquor vendor and had the powers of two Justices of the Peace as well as being Mining Recorder. I always enjoyed a visit with him and Mrs. Wood in their home. Sam gave me a lot of valuable information and it was he who told me what prospectors to hire.

A mineral light had been brought from Ottawa for the prospectors. The other equipment assembled for them in May included shovels, picks, standard and also prospectors' pans. They were also supplied with food, cooking utensils and a 7 x 7 wedge tent. Henry had his own little prospector's tent designed and given him by Wernecke. The shovels were also Wernecke's design and had been made to order for him for his prospectors. They were small, light and extraordinarily strong. The first objective was to find out how much scheelite there was readily available in the placers around Dublin Gulch and arrange how it was to be mined if needed.

At our camp on Haggart Creek we sorted the things, discussed the work with Joe and Bill Hare and told them what I wanted them to do. Then we moved with the horses to our former campsite near the mouth of Dublin Gulch. The weather continued very hot and dry. The creeks were falling fast, very poor conditions for placer mining. One rather funny thing happened that morning. Bill Hare had driven over in his old convertible Dodge car with open sides. He had left it a quarter of a mile back by the side of the road. On going back to the car there was a small black bear coiled up asleep on the back seat, but before he could get his camera out it was gone.

The assistants started making a map of the large terrace on the left limit of Haggart Creek below the Dublin Gulch. Jack, being a civil engineering student, was put in charge of this. It gave him an altogether new interest in the work. The old wagon road crossed this bench and rusty gravels were exposed in many places along it. We found on the surface that even a two-egg frying pan which I always carried now one invariably recovered fine gold colours and scheelite that looked like table salt from these gravels.

I went up Dublin Gulch to see what was going on. As I passed Jim Gibson's old cabin there were cupcakes placed on every projection of the logs and some on the roof. On the opposite side of the road was a large new cabin. The door was open and a squirrel ran out with another cupcake as I approached. On the table a dozen or so freshly cooked cupcakes had been laid out to cool. No one was around and shutting the door I went on up the Gulch. At Fred Taylor's I walked into a ladies' tea party. Besides Mrs. Taylor there were Mrs. Bob Swanson, Mrs. Hugo Seaholm and Mrs. Irving Ray all of whose husbands worked in the Gulch or on Haggart Creek. The cakes were Mrs. Swanson's who was an expert cook and whose husband was a partner of Bill Lunde. The story raised a big laugh. We came to know Dublin Gulch - Haggart Creek as a very happy community. The men were making money and the ladies besides their teas had berry picking picnics and evening badminton parties on the court Irving Ray had made. It was always a happy place in later years too.

Henry LeBlanc arrived at 3 a.m. having backpacked in. The next day the prospectors with Bradley and the horses to carry their equipment went to Upper Haggart valley to test the ground there for scheelite as its head like that of Dublin Gulch was in the Potato Hills granite stock and little or no prospecting for anything but gold had been done there. I rode down to the road camp at the McQuesten bridge with the mail and to get meat and vegetables. On my way I tied up my horse at Barker's to have a talk with him. The following evening all the claim owners were invited to supper and we discussed the quantity of scheelite available and how it might be recovered in a minimum of time. Though all were very independent in character the gathering was more like a family group than any I had expected. They were happy and congenial. One had to remember that they could only mine in summer and all the scheelite had to be on the river bank at Mayo before the fall.

The day after, Sunday, the assistants had finished and plotted the map of the bench and were now started on Dublin Gulch itself. Jack had done a good job. His three miles of level circuit done with an Abney hand level and a tape tacked on a pole had closed within three feet, a degree of accuracy much greater than I expected or needed.

Monday I walked up the Gulch and over into upper Haggart to see what the prospectors were finding. I wrote to the Chief Geologist telling him that there was probably more placer scheelite in the gulch than had been anticipated and that there was equipment in the district to mine it more quickly than was the case at present. Also that the miners were ready to co-operate provided they were fairly paid, for the scheelite. How was this to be arranged?

July 2nd two of us took some grub over to the prospectors and met Don Cameron a well known eastern prospector on the way. He had been with Harold Wilson when they found the ill fated Hornby party in the N.W.T. My knowledge of the area and placer mining increased daily and I learnt more still from Cameron. The prospectors had found there was no scheelite in Upper Haggart and Bradley took the horses and brought them out. They would now work around the head of Dublin Gulch and try to determine the distribution of the scheelite there.

The weather continued very hot and the creeks were unusually low. Again I rode to the bridge for mail and meat. Andison, the butcher in Mayo had sent

us a fine big roast. We hung it in the meat tent for the next day but in the morning the meat was torn and the roast was gone. Going up the Gulch I met Mrs. Taylor. She was very disgusted and said "Someone has been feeding my dog. He came home this morning with a big bone and so full he could hardly walk". We had suspected her big fat husky that she let run loose. I didn't enlighten her.

After our usual Sunday washings we all went to supper with the Taylors and this was a happy change. We also collected heavy specimens from Taylor's concentrates both of scheelite and cassiterite. There was a great deal of hematite, iron ore, in them too in smooth often facetted pebbles. Bob was very keen to collect some specimens for U.B.C. and we shared the best specimens. I took the biggest and best cassiterite pebble and he took the second best and so on. Bob had become an expert field mineralogist and spotted many unusual pseudomorphs among the large scheelite grains. Basil too proved a good assistant.

The assistants had finished the map of the Gulch and now under Bob's direction panned the tail races of the old Cantin workings on the right limit of Haggart below the Gulch. Jack and Basil also did some more testing on the main Gulch and lower levels of the pups while Bob and I went over Bleilers workings in Haggart Creek and tested the stream bed all the way down to below the mouth of Lynx Creek. The name Lynx is an interesting example of the way names are often distorted. The original name was Lick Creek referring to the moose lick up the creek. This had been corrupted into Link, slang for Lynx so on the new maps it was given this last name. The trail of scheelite came down the Gulch and continued down Haggart for some miles below Lynx, diminishing in coarseness and richness as the distance from the Gulch increased.

By July 9th, the prospectors had come in and we had finished all we had planned to do around Dublin Gulch and Haggart Creek. Camp was moved a couple of miles up Secret Creek and the party scouted for scheelite in the area around but without luck. We were all sorry to leave the friendly community of the Gulch and Haggart.

From the beginning Henry had brought Pal, the leader of his dog team, with him. Pal was some sort of a mixture between hound and husky and was a powerful dog. He would obey no one but Henry and eat nothing but what Henry gave him. Pal quickly became a favourite in the camp. His original owner when he was a young dog could do nothing with him and offered him to Henry warning that Pal was very savage. Henry, however, thought he would make a good sled dog. Pal was chained up and when Henry approached within the length of the chain with a snarl Pal sprang at his throat. But Henry was prepared and struck him with the pick handle he was holding behind his back knocking Pal unconscious. As Pal started coming to Henry stroked and patted him and gave him some food. From that time on he had been Henry's gentle and inseparable companion.

On July 11th I walked down to the bridge. A wire had arrived from the Chief Geologist acknowledging my letter and telling me to stay at Mayo until otherwise instructed. This required some changes in plan for the party. Bob would have to take charge for the next five weeks.

That night we went over the plans for the rest of the season. The party was to work up Lynx Creek thence north and northwest into the North McQuesten River country that was quite unexplored as far as we were concerned. They were to see if there were other creeks carrying scheelite in that region. Then they were to come down the North McQuesten valley to George Potter's cabin at Sprague Creek and camp. From there the packtrain was to come back to the McQuesten bridge on or about August 18th. In the meantime I was to employ myself as best I could. Henry told me to use the cabin just north of Mayo that belonged to him and his trapping partner Dick McClure. They were two fine gentlemen. It was a large one room cabin. The key was in the hole under the third peg on the log saw horse. I was delighted as I hated the Chateau Mayo.

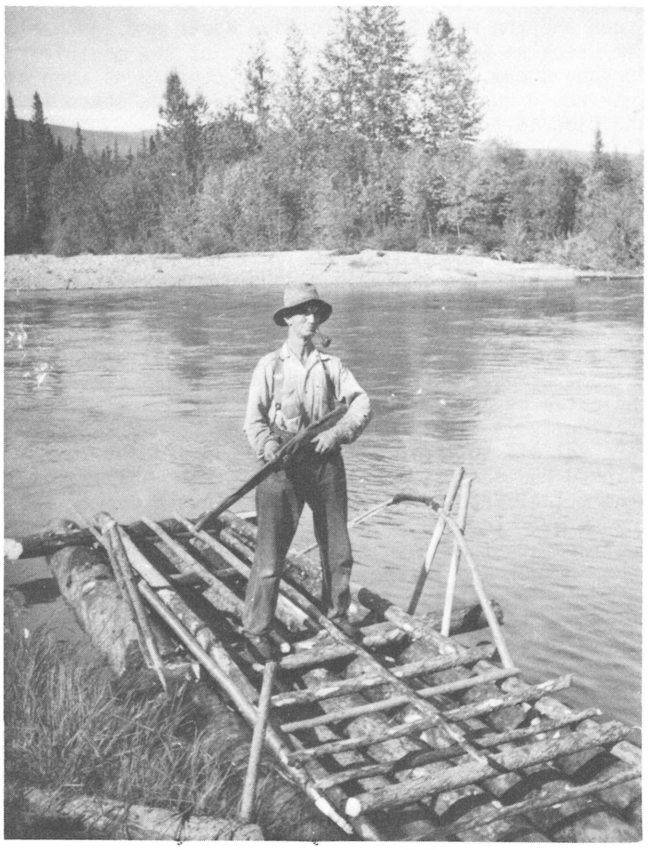
On the 12th I walked to the road camp and was given a ride to Mayo settling myself in Henry's cabin. The cabin was spotless, roomy, with bunks, tables, chairs, stove, washing facilities including a large galvanized wash tub for giving oneself a bath. It also had a good well.

By the 15th I had completed draughting the map of Dublin Gulch and adjoining area on Haggart Creek and sent it to Ottawa. The next eight days were spent on the report and letters to those placer operators in the Yukon who had equipment that could, if things became urgent, be used to mine the scheelite on Dublin Gulch and Haggart Creek.

In the evenings I visited my friends in Mayo including Joe Longton, referred to as the "Mayor of Mayo". Joe was a curious old character who lived with dozens of cats in his cabin. It was hardly bearable inside even with the door wide open. As he could not bring himself to dispose of the kittens they had increased astronomically. He had a hole 8 x 8 inches in the top of the cabin wall over his bed. A swinging door in it allowed the cats to push it open from either side and cat stairways both on the inside and outside let them reach it. But Joe was best known as the owner of Eli. As most houses in Mayo did not have wells they were supplied by Joe's waterwagon drawn by Eli. When I first saw Eli his teeth protruded as old horse's do and there was no saying how old he was. As a result of his teeth he could not eat properly. I am sure they had never been floated and he was thin. Joe didn't like to touch Eli with a whip and if Eli didn't feel like pulling the wagon that was that. The long suffering metropolis had no fresh water, sometimes for two days in succession. This went on some years. Then one summer Eli failed to shed his winter coat and died in the fall.

On July 21st Bud Fisher took me in his mail truck to the Elsa where I left my bedroll and then visited other properties on Galena Hill. In the afternoon I was given a lift over to Keno City. It had now started raining. I called on Vic Grant, the Mining Recorder there who was 83. In the evening I walked back around Galena Hill to the Elsa in the rain and darkness. The next day the rain continued and I returned to Mayo.

On the 26th Mr. Jeckell arrived and Sam Wood drove us over to the road camp on Haggart Creek. We had supper with Barker and Kay Broadfoot and slept in Barker's new board guest cabin. The next day we went over the workings on Haggart Creek and Dublin Gulch and had supper with the Irving Rays who were living in an old log cabin. Irving was manager of the machine shop, and welding for the Barker and Ray partnership. He had built a 6 x 6 x 6 foot



*Bill Duncan, party cook for many years, on raft used to cross McQuesten River at Ortell's Crossing, 1942. (92306).*

greenhouse in which there was a tiny stove and just room to stand. The greenhouse contained an excellent crop of vegetables of all kinds including a new variety of green celery, tomatoes, red and green peppers, etc. The soil was that dug on the spot. Outside was a large rhubarb patch as usual with so many of the old cabins in the Yukon. Whoever brought rhubarb in the country had started with a good variety that had become widely distributed as it was to be found at many old cabins. There is a small wild rhubarb native in the Yukon. Only raspberry bushes seemed to choke it out.

In the evening I went over my estimate of the scheelite content of the various areas of ground and then with Barker over the plan I had made of how mining could be done using only the equipment already in the country. On the 28th after lunch we returned to Mayo and I sent my summary off to the Chief Geologist by radio that night. It had been found by the Signal Corps that radio transmission was better from Mayo across the Selwyn and Mackenzie mountains to Norman Wells than from Whitehorse to Fort Nelson. As a result the Mayo station was tremendously over-worked and the small staff was up till all hours sending messages for the U.S. Army yet they were always loyal to the Yukoners and fitted our telegrams in somehow.

The following day I received a letter from the Chief Geologist which released me from staying at Mayo. The next week in Mayo I continued working on the plans I had made for mining the scheelite so as to have everything ready, in case a real emergency should arise.

On August 7th, I returned to Haggart Creek and made my headquarters in Barker's new cabin. Harvey Ray, elder brother of Irving had recently discovered some skarn with good values in scheelite on a pup of Lynx Creek which has since been called Ray Gulch after him. Indeed some hundred feet or more of skarn with scheelite scattered through it formed the cliffs on the west side of the gulch. It could be a larger low grade deposit. Harvey, though not a well trained prospector in the sense of education, was one of those who could not pass a rock without examining it thoroughly and in this way had found the skarn. We went over Ray Gulch together the next day and spent most of two days there. To save taking my heavy eiderdown, I took a cotton bag to sleep in and planned to try the system mentioned by Burnham in "Scouting on Two Continents". All evening I warmed a strip of ground to lie on. Burnham however, referred to the dry semi-arid ground of the southwestern United States not Yukon permafrost. By early morning I was cold and damp. The next day we went over Harvey's discovery and found there was also scheelite scattered here and there along the rock west wall of the gulch. We never did find the source of the rich boulder of skarn that Harvey had first found. It was a glacial erratic and its source must be within a couple of miles northeast. It was lighter in colour and coarses in grain than all the rest. The following day we walked over the plateau passed the base of Potato Hills and down Dublin Gulch.

A day was then taken to get thoroughly familiar with the area where Barker was working on Haggart Creek. The following morning Fred Taylor joined me and we went up Dublin Gulch, passed Potato Hills, around the head of Upper Haggart Creek and ate our lunch on the slope of Lynx Dome. After lunch Taylor went back and I continued along the summits westward and came down to the mouth of Ironrust Creek and back to Barkers at 10:30 p.m. It was a long day, but I had had some good views of the country to the north and northwest where the party had gone and I saw where the pack horses had crossed the ridge.

Irving Ray had made me a very serviceable mortar from a worn bulldozer bearing ring and a piece of steel welded onto it and also gave ma a worn track pin as pestle. With these I could crush any rock samples, cut them into parts, so that the scheelite from them could be panned and weighed and the percentage calculated by me and the other sent to Ottawa. This gave us values which later proved to be within one-half percent of assays.

On the 14th I went over the list of equipment needed for an emergency crash mining of Dublin Gulch again with Barker and discussed how it could be brought in from Clear Creek, and the Klondike in winter if the pressure for scheelite should arise then. The day after I walked down to the road camp a mile on Haggart Creek below the mouth of Lynx Creek had lunch there and Keobke drove me down to the cabin on the north side of McQuesten bridge where the mail and supplies for our next trip had been left in the care of Charlie Hodinott.

When I arrived Charlie invited me to stay with him and I told him to help himself to our supplies as he was doing the cooking. That night it started to rain and continued for the next three days. During that time I sat on my bunk going through the letters and papers. Charlie was a first rate cook and everything was clean and organized in the cabin. He hunted for grouse each day in the rain while I

enjoyed the leisure. How he managed with his left hand which had grown at an odd angle after it had been badly broken and improperly set was a mystery. The second day when he came in, I was still on the bunk reading. He said "You're the damnest lazy man I ever saw". I roared with laughter and he was a little annoyed at me. Up to this time little conversation has passed between us. I said "You're mentioned in Colonel N.A.D. Armstrong's book "After Big Game in the Upper Yukon". This really broke the ice between us. He told me all about Ernest and Bertie that summer on Russell Creek described in the book.

On the 19th it began to clear. Bob and Bradley arrived with the horses in the evening. The next day was spent sorting and packing. We gave Charlie all the grub we could spare as our talks had revealed that he had only a mere pittance of a pension to live on and I knew he would be insulted if I offered to pay him.

On the next day, the three of us rode over the hills the 16 miles to camp which was about a quarter of a mile below Sprague Creek. Then more rain and we stayed. This was just as well as it gave Bill a chance to bake and Bradley could dry the horse blankets as things had become damp and wet.

On the trip into the North McQuesten country the party had accomplished what was needed in spite of the wet weather which had been worse for them than for me as they were closer to the mountains. After working up Lynx Creek, where they had found traces of scheelite almost everywhere, they moved over the ridge west of Lynx Dome into the east head of the North McQuesten River. There they explored as far as Steamboat Lake, named for the resemblance to a steamboat the small island in it has from the air. Then they worked westward into the valley of the main head of the North Fork. The travelling in the valleys for the packtrain had been terrible as not only were the streams brimful after the rain but the North Fork valley and its branches were flooded by numerous and extensive beaver dams. On Eagle Creek Bill Hare shot a moose and that helped the grub situation as well as the morale of the party. Finally they turned down the main valley of the North Fork and reached Sprague Creek on the evening of August 15th. There was no sign of any granite stocks in the region and the streams carried nothing but marcasite, pyrite and magnetite as heavy minerals. On reaching Sprague Creek they had had three days of rain.

On the 23rd we started for Arizona Creek guided by Cecil Poli's sketch map from which I was able to mark the creek on the topographical map. Poli was about 30. He had been one of a partnership of three. George Potter and Jack Alverstone being the other two and older than he was. In the mid 1930s they had gone to Arizona Creek with their dog teams and supplies. There they repaired the large cabin built by the original prospectors in the early days and settled down to make that their headquarters for three or four years. One could hardly pick a more lonely place. They brought the necessary equipment of hand tools from Mayo with their dog teams in winter when the travelling was good and then explored the country around and prospected the creeks including Josephine Creek on the Little South Klondike River and Gem Creek, a pup of Sprague Creek. Their main work, however, was mining Arizona. Also during these years they built cabins, one near the big moose salt lick on the northeast of the summit between the head of Hobo Creek and the main South Klondike River and another on Gem Creek as well as Potter's cabin at the mouth of Sprague Creek. They lived off the country as much as they could hunting moose, caribou and some sheep in addition to trapping.

It was not without some feeling of exhilaration that we started up Sprague Creek into new country. There were two or more old ruined cabins along the north side of the creek suggesting early placer prospecting. We stopped to camp at a meadow in the windgap at the foot of Red Mountain. Here too there was a cabin from which a trail led up the mountain to a lode prospect high on the steep slope that had been worked by some of Wernecke's men. The position of Arizona Creek on the topographical map was clearly indicated by Poli's sketch so that there seemed no difficulty in finding it the next day. Bob and Bill Hare set off to traverse on the south side of the planned route for the packtrain and with one of the others I climbed up to look at the lode prospect and thence over the top of Red Mountain which is an east-west ridge rather than a peak. At the west end we sat down to look and listen. Around us were scattered ten or more empty brass cartridge cases of a 50/80. What a cannon! About 200 feet below us the upland sloped gently westward from the foot of the ridge to the entrenched and hidden valleys of the Little South Klondike River and its tributaries beyond which the smooth surface rose steadily to the foot of the ragged Syenite Range in the west and to other mountain ridges to the south and southwest. The profiles of the tops of the hills of the upland were broad and rounded, their surfaces clothed by an almost unbroken mantle of dwarf birch, among which stunted, bushy spruces were speckled on the lower levels. The absolute Yukon stillness and silence reigned supreme. The whole scene of this wide saucer-like area several miles across before us in the late afternoon light of early fall presented an atmosphere of intense and sinister loneliness.

The two of us dropped down off the ridge heading for the small valley we took for that of Arizona Creek. We shortly found a trail, evidently one of those shown on Poli's sketch, and followed it through the birch. Soon we heard a shot and saw smoke rising about half a mile ahead of us in the creek valley. We were then sure that the packtrain was there. A bull moose ran across the trail in front of us and believing we would soon be back with the horses to fetch the meat I shot it and went on. Only Bob and Bill Hare were there. Bill had fired the shot as a signal and they had made a fire by the old cabin. There was no sign of the packtrain. We decided to forget the moose and head south up the creek and into the windgap that led from Sprague Creek to the Little South Klondike River. Here we found the horse tracks and followed them on to the river into camp reaching it in the gathering darkness. Only the cook tent was up. I was foot sore from new boots. There was not much horse feed and all were tired. Fetching the moose meat was out of the question in the dark. The next day everything was late and we did not move.

The following day, however dawned better. Bob went with the packtrain to guide it up Hobo Creek and thence to find a campsite on its tributary Drapeau Creek near the mouth of Arizona Creek which runs into it. The rest of us went back to Arizona the way we had come two nights before. When we reached the cabin the packtrain was coming up the valley to it. They had found no place to camp and a steady rain had started. Everyone looked like drowned rats. It was

decided to go back to a good meadowy campsite we had seen on Sprague Creek a mile and half below Gem Creek its tributary. I asked if anyone wanted to stay with me and go over the placer in Arizona. There were no volunteers so I stayed by myself in this extremely lonely place. The ghosts of the past seemed to be around me in the silence.

The rain continued to stream down. The cabin was old and dark, damp and mossy. The door had been taken off to keep bears from smashing it. Its grey spruce logs were thick, tapering, knotted with a twisted grain a sign of the very slow growth of trees growing near timber line. There were small paneless windows at each end and the back wall had been dug into the wet valley side. Bunks lined this wall and it was still equipped with shovels, picks, crowbars, and other tools but no food and the stove had been taken away.

The workings were right in front in the creek bottom. Poli had said that Potter who had panned their clean up had done this up on the bank leaving a heap of heavy concentrates at the head of their pile of sluice boxes. This was done so that he could pan in a wash tub of warm water. Generally this was done in the creek and all except the gold was dumped back in the stream. All was as Poli had said and the pile of heavies was just what I wanted.

Going down into the creek, the workings had consisted in widening the narrow course down to bedrock by lifting out the rounded boulders and piling them in dry stone walls on each side. Then the fine, shallow gravel left in the bottom had been washen in the sluice boxes. The walls involved a lot of hard manual work. Several hundred feet of creek had been mined in this way, providing the three partners with a living. Panning the gravel in the creek yielded nothing but where the fine tailings from the workings spread out in a fan in Drapeau Creek valley my first prospector's pan of dirt gave a 10 cent piece of gold and the next pan two large flat colours judged to be 2 cents together.

Returning to the cabin I brought out a wash tub and using a bucket filled it with water from the creek. Then I fetched buckets of heavies from the pile, sat on a stool in the doorway of the cabin out of the rain and panned them into the tub. To my surprise, they contained a considerable amount of gold in large flat flakes. When I had some 15 to 20 pounds of relatively clean heavies recovered by panning I put them in a large provision bag and in my pack. The great bulk of the pile was made of white looking pebbles of barite and some of these were formed of rounded crystals, so clear as to be almost invisible in water whose refractive index is not far from that of barite. Poli had thought that the barite was cassiterite. The tub and stool were replaced and I set up the train in the pouring rain. The moose carcass was bloated and two foxes were eating it. Where the trail forked I followed the branch that led down a pretty little valley west of that of Gem Creek and thence along Sprague Creek to camp.

Rain continued to pour down the next morning. Panning the heavies over again in the dining tent caused quite a stir when the others saw the gold but its flaky form made it appear heavier than it was. About three-quarters of an ounce of gold was present. Besides barite there were cassiterite, lodestone, hematite, limonite, maracasite and scheelite. The gold and heavy minerals, except perhaps the barite which may have come from the small veins in the upper part of Arizona Creek, appear to have been derived from the rewashing by the stream of the old gravel deposits that lie on each side of its valley.

In the afternoon it cleared and we went up to the cabin and small placer that had been washed out with a boom gate on Gem Creek. Here we panned a few colours of gold and some scheelite. The cabin was fairly new and contained some tools and equipment. Potter had told me that they had recovered 42 ounces of gold from Arizona Creek and 9½ ounces from Gem Creek.

The three partners had used the big moose lick in the timber on the terrace on the east side of the pass from Hobo Creek to the main South Klondike River. They had built the cabin on the edge of the terrace that is visible from Hobo Creek valley. The lick lies about half a mile north of it. In 1947 I visited the lick and describe it later.

On August 28th we moved back to our campsite near Potter's cabin traversing as we went. On the 30th we all moved down the North McQuesten to Ortell's Crossing but the horses had not been found until nearly noon and we were late starting. It rained all afternoon. The river was too deep for the horses to cross with their packs on so we had to camp in a poor place on the north side. The following day we built a small raft and the horses swam across the river. On September 1st after a search upstream we found some good dead spruce for a raft big enough to carry the equipment and ourselves across in three trips the next morning. Then we all moved several miles up Johnson Creek. Ortell had been well known as a member of Joseph Keele's party during 1904 and 1905 in the Mayo district as well as when Keele made his famous crossing of the Mackenzie Mountains. Ortell had a large well built cabin at the Crossing. It was lavishly stocked with all manner of wood working tools and placer and trapping equipment. No doubt he had been a versatile, skilled and accomplished worker. At the time he was living in a small cabin some miles up Johnson Creek on the left limit. We tried to talk to him but he refused to have anything to do with us. Laska lived about half a mile above him on the same limit. Ortell would not speak to him either though Laska was a good neighbour to him. Both men were placer mining. Ortell after whom J. Keele had named a fine isolated peak, died at Mayo tragically in 1943.

Now it was necessary to see what had been going on on Haggart Creek and Dublin Gulch before going to Dawson on my way outside. The party was directed to explore and prospect for scheelite around the granite stock on the north side of the summit between Johnson and Highet Creeks and then to move to Mayo on September 6th.

I walked up the old wagon road that extended up Johnson Creek, over the pass to Highet Creek and down that creek. On the way I had lunch with Middlecoffs. From there I was given a lift on a truck to Mayo. After early supper I left Mayo driving a large dump truck with two girls and two men. This was a new experience. "Double clutching" every time gears were shifted was a little difficult to get on to at first. One had to be quick on the hills. All went well until the newest section of road about two miles below Barkers on Haggart Creek was reached. It was dark now and I got stuck in a hole where the permafrost was melting. As we would have to wade Haggart

Creek to reach Barkers we decided to spend the night around a fire where we were. Luckily the night was clear but it was very cold and when daylight came we walked to Barkers. He then went with his cat and pulled the truck out of the hole. After lunch I went up Dublin Gulch. The next two days were spent around the area and on the 8th Bud Fisher drove me back to Mayo.

In the meantime on September 3rd while traversing Bob had found some skarn very rich in fine grained scheelite and the following day the others all went up to see it. Although the outcrop was small Joe Winters staked it after he was no longer on government pay. On the 6th they moved over the pass and reached the old Highet Creek roadhouse, 2 miles below the old boiler. The following day they moved to the campsite at Johnny Vinegar's. On the 8th when I arrived they had their supplies and were prepared for the trip to the Pelly Farm. I paid off the prospectors. The next day Bob and I went over his samples and crushed and panned some. On the 10th the party crossed the river and started for the Farm leaving me in Mayo.

A man named Adcock whom I had met had written to me asking me to go down the main river below Dawson to see his stibnite (antimony) prospect. I had gone on a wild goose chase for Adcock before and answered with a noncommittal letter. He wrote to the Hon. George Black, however, and I had to go. According to Adcock he had a fine big vein and had some men working on it.

No plane that would take me to Dawson came until the 12th and as the next day was Sunday and wet that was a bad start. I had a good talk with Mr. Jeckell and got the general news. Among other things he was full of praises for General Hoge calling him a cooperative gentleman. For instance the General had taken over the matter of licenses for his troops to shoot big game and laid down the rule that only 24 men were to get them. The lucky ones were to be those of any rank who were especially commended by their senior officers for good work on the Highway. Also no loaded firearms of any kind might be carried on the Highway and no shot fired within a mile of it. Remember this after General Hoge had left.

Tuesday, Adcock took me 25 miles down the river in an open boat with two other men to see his prospect. The men who had been working on it had now left and been paid off. One of them had given Adcock a sketch of what they had done. On arriving where Adcock thought the property was, we found some small silver lead veins near the river bank but no sign of fresh workings. Adcock had never been there before and had no idea where the prospect was. We never found it. After sleeping in a ruined cabin we returned to Dawson.

After calls on Mr. Jeckell, the Mining Recorder and officials of Y.C.G.C. I hired a car and went around the loop of Hunker, Dominion and Sulphur creeks calling at the dredge camps and then flew to Whitehorse on September 19.

Here again I heard nothing but praise for the General and indeed the whole U.S. Corps of Engineers working on the Highway. Many instances of General Hoge's thoughtfulness were told such as when an Indian's cabin was to be moved off the Highway right-of-way he had visited the Indian owner himself to make sure that the new location was satisfactory.

On their way to the Pelly Farm, in the meantime, the party had camped at 17 Mile meadow the day they left Mayo. Here it rained heavily the next day and they were forced to stay there. The day after, however, they moved on and reached the Pelly Farm on the 15th in the snow having travelled on four consecutive days using our old campsites. Three days were then spent cleaning, drying, listing and packing the equipment in the old homestead cabin. On the morning of the 19th they went over to Selkirk in Wilkinson's boat and Bob wired for a plane to take them to Whitehorse. The plane however, did not arrive until the following day, the 20th, so they slept the night in Adami's cabin.

In Whitehorse on the 20th I called on a number of people including Capt. Palfreyman, U.S. Army adjutant. The following two days were spent with the assistants on the old mine dumps of the Whitehorse Copper Belt, trying to see if we could find any scheelite by using the mineral lights which we had not had last year. On the 23rd we washed up, changed and packed expecting to leave the next morning but the Princess Louise did not arrive in Skagway until 5 p.m. so we had to stay in Whitehorse.

On the 25th we left on the train at 8:30 a.m. and reaching Skagway at 7:30 in the evening boarded the boat at 9:30. The following day was spent on board as the Louise continued unloading freight until late that night. Finally she sailed at 1 a.m. on the morning of the 27th. This was my last trip down the inside passage of Alaska and British Columbia on my way to Vancouver, Monte Creek and Ottawa.

## Section III: 1943, Scheelite Creek and Upper Dublin Gulch

During the winter 1942-43 a number of prospectors visited my office to discuss prospecting in the Yukon. Among these was a man of wide experience and well known in eastern Canada, F. Reginald Sheppard. We talked about conditions in the Yukon and he looked at the mineral specimens I had laid out on a side table including the large pebble of cassiterite from Fred Taylor's workings in Dublin Gulch. He didn't seem particularly interested but for some reason returned a few days later talking about prospecting expeditions he had been on including one to Hamilton (Churchill) Falls where he was among the first two dozen to write his name on the sheet of paper left at the head of the falls by A.P. Low many years before. He looked over my specimens casually and left.

With some financial support from the Metals Controller, Hugo Seaholm who owned the ground on Dublin Gulch above Fred Taylor was encouraged to work it with a view to testing the scheelite content. Seaholm agreed to do this and was provided with a gasoline hoist and some other placer equipment as he was low in funds.

This summer the instructions for my party were to prospect and map the areas around the granite bodies at the heads of Highet and Sabbath (a tributary of Johnson Creek) creeks where Bob had found the rich lode scheelite last fall, and also at the head of Dublin Gulch. If the war demanded it we would then have a good appraisal of the scheelite in these areas. My assistants were Bob Thompson and Jack Wallace again, Arthur Patterson and Richard D. Hughes. The first three left Vancouver on May 26 with two of Dr. Clifford S. Lord's assistants to drive up the Alaska Highway that was now connected through but not finished.

I left Ottawa on May 31st, visited Monte Creek and boarded the Princess Louise on the evening of June 5th. Dick Hughes and Joe Oakley, our cook, were on the boat too. On the 9th we reached Skagway and boarded the train at 4 p.m. arriving at Whitehorse at 4 the next morning.

Whitehorse was changed. On the Highway being connected through, General Hoge, his staff and the U.S. Engineer Corp had been recalled. Other U.S. Army units had been sent to look after the completion of the Highway and the airports, all under a new general. When the news of General Hoge's impending departure was known in Whitehorse the citizens proposed a farewell dinner for him but he declined the idea saying that when peace was signed it would be the time for celebrations.

On arrival in Whitehorse the new general's first suggestion was to have a party but there was no liquor in the store there. He was told, however, that as Mayo had become depopulated the liquor store there was well stocked. Accordingly he sent three bombers to Mayo to bring all the stock to Whitehorse. The "Yukon Telegraph" had already warned Mayo of their coming and when the pilots entered the Mayo liquor store Sam Wood, the vendor, and the Mounted Police were ready for them. The senior of the pilots announced that they had come to take the stock to Whitehorse. At this Sam told him he had no such instructions from Mr. Jeckell, the Controller. Some argument followed which was ended by Sam asking how many were in the party with the bombers. The answer was six, a pilot and co-pilot for each bomber. Sam said "I can sell you one bottle each" and so the bombers returned to Whitehorse with six bottles. This kind of incident became common and soon the spirit of cooperation General Hoge and his staff had worked to develop wilted.

On June 11th Dick, Joe and I flew to Mayo. Bob, Jack and Art had gone ahead on a steamboat with Tuttle's topographic party that was to take over the equipment and horses. Bob was to pick out the items we needed. The Keno with a barge arrived at Mayo with Bob and the others, the same day as we did. This was the first boat of the season. We pitched camp at Johnny Vinegars and purchased our supplies the next day. I was surprised to see Reg Sheppard at the White Pass freight shed. When I asked what had brought him to Mayo he said that when he saw that big tin pebble in my office he had to find out where it came from and that was what he intended to do.

The Mayo district was in a very depressed state. The previous November it had suffered a great set back in the death of Livingston Wernecke, the manager of the Treadwell Yukon Corporation who was killed in a plane accident. He had been the main spring of the mining camp for more than twenty years. The directors of the Treadwell Yukon Corporation that operated the silver-lead mines had decided to close down their properties. This was indeed a great blow for the whole Territory as these mines were the major producers after the Klondike and provided the bulk of the up river freight as well as that going south on the railway. A few independent silver-lead prospectors stayed on and some shipped a few tons of hand picked ore from their veins but otherwise there was no source of wealth in the district except the scattered placer miners amongst whom those of Haggart Creek and Dublin Gulch had become outstanding. Here two factors were important, first was the policy of Mr. Hall, Manager of the Bank of Montreal by which he had advanced loans without security to the placer miners to equip their operations and second was the construction of the road to Dublin Gulch. These factors now paid off in supporting the district and the various services with a small but vital amount of new money and trade.

On June 14th Bud Fisher drove us up Highet Creek as far as he could and we camped there 200 yards below the mouth of Rudolph Pup. The following day leaving Joe at camp the five of us packed over into the fork of Sabbath and Scheelite gulches, chose a place to put the tents, left our packs and returned to camp. The next three days were spent in back packing things over to the new campsite. Both ways this involved a steep climb of more than 1000 feet. On the 19th some of us returned to our base camp on Highet and found Middlecoff had left three horses there for us to use in packing over the larger and heavier items such as the stove. We used the horses for two days and returned them. In the meantime some scouting around had been done and I now laid out the plan of work for the assistants in planetable mapping and prospecting. The planetable topography was made Jack's responsibility.

On the 21st I left them and walked to the base camp changed and then went down to Middlecoffs in time to get a lift into Mayo with Sam Wood who was there as mining recorder. After an enjoyable supper with the Woods I rented a small cabin as a store house and headquarters for my stops in Mayo at $12.00 for the season from Churchward, the tinsmith. Also I ordered a new stove and pipe from him. He did excellent work though his stove was a little heavier than those we usually bought in Vancouver.

On the 23rd Sam Wood and I drove to Barkers on Haggart Creek. On the way we
a mud hole near the Lookout summit and then called on Charlie Hodinott at the bridge. The next morning we were able to drive right up to Seaholm's cabin just below Olive Pup. That day was spent going over the ground around Bawn Boy Gulch that I thought should be tested thoroughly and looking for a camp site for the party when they came up. Sam and I had our meals that day with Hugo and Mrs. Seaholm. Hugo's cut was started well and down below Fred Taylor, Swanson and Bill Lunde all had their operations going saving scheelite. Sheppard had taken on Harvey Ray as his helper and they were busy in their search for the source of Taylor's tin. We returned to Barker's guest cabin for the night and after breakfast and lunch with him and Kay Broadfoot drove back to Mayo fishing for grayling for an hour in Secret Creek on the way.

The following day, Sunday, I was so occupied by visitors at my cabin and I could not get away. The next morning, however, I picked up Ernest J. Corp, a well known citizen of Keno City and prospector of Keno Hill whom I had engaged for the rest of the summer. Corp had entered the Yukon in the rush of '98 coming down the Mackenzie, ascending the Gravel (Keele) River, crossing the summit and thence by boat down the Hess and Stewar rivers. He had been successful placer mining in the Klondike before he came to Keno where he was unlucky lode prospecting. Now he was 70 years old. We found he was an efficient, hard worker and well read gentleman.

We drove in Bud Fisher's truck after lunch to our base camp up Highet. Leaving the truck there we packed over to Sabbath Creek arriving before 6. Despite his age Corp carried a pack at least as heavy

as mine. (The account for our work and the maps we made during 1942 and 1943 were published in: Little, H.W., Tungsten Deposits of Canada, Econ. Geol. Ser. No. 17 Geol. Surv. Canada 1959). We went over the work the party had been doing the next day and found Bob had discovered another outcrop on the Cement Creek side of the ridge, near last year's prospect that carried scheelite. Crushing pieces from this to -20 mesh we wieghed 200 grams, screened it into two lots +40 mesh and -40 mesh and then panned them finding the rock carried at least 4% scheelite. There was, however, very little of this rich ore in place but besides the scheelite which was very fine it carried chalcopyrite and pyrrhotite Later it assayed well in copper and gold.

July 2nd while the others continued mapping and prospecting I went over to the base camp for some odds and returned by the old road through the pass as far as where it crossed Sabbath Creek and thence up the creek to camp. There was the ruins of an old cabin in Scheelite Gulch and above it a small area where the soil was very rich in scheelite.

On the 5th I went down Sabbath Creek and thence on the road to Johnson Creek that it runs into. There was no sign of workings below the road in Sabbath but there were some cabins in ruins along the road. Below the creeks' junction a ditch crossed the road and then there were more ruins followed by two cabins in good repair. In the creek bottom below there were Pete Minton's workings. These included a flume and large sluice boxes on trestles arranged for operation with a dragline. According to Laska who had been on the creek since 1901 this work was done in 1916 and 1917 and 400 ounces of gold was recovered for an expenditure of $37,000. He also said he owned the four claims below Discovery and they were the only ones that carried a definite paystreak. Ortell had frozen to death on his way into Mayo last winter so Laska was alone now.

Above all things I was interested in finding out if there was any tin of Johnson Creek too. A little was recovered by Middlecoff on Highet. Going across to the workings I climbed up to the head of Minton's boxes which were about 5 feet above the gravel piled under them. The head box was three boards wide and two deep where the gravel had been dumped in. Farther down the boxes slowly narrowed. The riffles had all been taken out and a thorough job done in cleaning up. The seams between the floor boards were a quarter of an inch wide and underneath strips of burlap had been tacked supported by lengths of narrow boards nailed to hold the burlap tight against the seams. With an old file I scratched out some of the dirt in the seams and found it consisted of grains of heavy minerals and some gold. Then spreading my cape 4 x 7 feet on the gravel underneath the boxes I pried off the narrow boards and pulled the burlap down. The heavies fell on my cape. I soon had a good sample of heavy minerals representative of the creek. Panning it, some cassiterite as well as scheelite showed up.

After two days of rain two of us traversed down the upper part of Seattle Creek. We did not find any gold or scheelite but some one evidently had panned colours as there were the remains of a large dam built of poles driven into the ground on an angle sloping upstream, preparations for a big boom gate, and a cabin. This may have been built by Middlecoff. Another day we traversed across Cement Creek and along the ridge northeast. The bottom of this creek should carry scheelite and gold placer deposits but the course was filled with very hard mud for which it was given its name. We channel-sampled the lode strike but this yielded very little scheelite. The good ore was only in small patches in the skarn. The plane-table work was then checked and more rain followed.

On the 13th and 14th two of us traversed along the top of the ridge west from the pass to a point overlooking the junction of Bear Creek and the McQuesten River. We slept at the top of timber in a nice little grove by a spring and were awakened early in the morning by the loud sniff of a moose right behind our little shelter. It did not make another sound. These traverses not only scouted for other granite stocks but extended mapping to the McQuesten map area for which we now had Tuttle's topographical map.

After a final look at the strike we arranged to get everything over to the base camp of Highet Creek with Middlecoff's three horses. I walked to Minto Bridge and obtained a lift into Mayo. After collecting the mail and putting in the new orders to the stores for supplies, I visited the Mining Recorder and collected all the information he had on the creeks along the McQuesten valley. After Sunday I drove to our base camp with Bud Fisher's light truck. The whole party was there.

On the 20th several of us went with Alec Berry to Minto Lake to see Frank Gillespie (who had shot Tuttle's horse "Nuts"). Gillespie had some small placer diggings a few feet deep where he was getting a little gold quite close to his cabin on the lake. There was an extra cabin on the west of Gillespie's where we slept. The next day we went over the bull-dozer work Alec had had done preparatory to placer mining and looked at the old workings in Jarvis and McIntyre Gulches. To our surprise the old sluice boxes were rotting there as they had been left years before, the riffles in them and heavy concentrates with some gold were still there. A little gold seemed to be widely scattered on the left limit of Minto Creek.

On the 22nd, the day Fisher was to move us to Haggart Creek, it rained but we left after lunch. With the whole party, supplies and equipment there was too much for one truck load and some of the things were left at Minto Bridge in a cabin. Finally we pitched camp that evening about a mile below Barkers and had supper about 10 p.m. More rain the next morning but Fisher arrived with the second load in the afternoon.

On the 24th after starting the assistants on the planetable mapping of the whole placer area around Dublin Gulch I visited the workings. Hugo Seaholm had recovered 300 pounds of clean, coarse scheelite sand out of 1000 cubic yards. It had no cassiterite mixed with it but did have quite a lot of ferberite in it. He had less gold than expected. It was light coloured, sharp, wiry and finer than Taylor's. Moving boulders made the ground slow and laborious to work and reduced the value Seaholm had estimated per cubic yard from panning the fine gravel among the boulders.

The next day Corp and I tried separating the heavy minerals in the concentrates that came from different workings. Taylor, Barker and Lunde had considerable quantities. The cassiterite and scheelite were particularly hard to separate by panning or in the hand worked jig that Lunde had built as their specific gravities are so nearly the same. Taylor did not have much cassiterite but what he had of it

was largely as pebbles that could be picked out. Barker had a surprising quantity of cassiterite in small crystals. He also had a lot of hematite grains, pebbles and some larger pieces. Two were about 18 inch cubes in volume and so heavy that to get them out of the way he dug pits in the soft bedrock and rolled the boulders into them. He also gave me two very nice water worn pieces of hematite. At that time large quantities hematite were known to be in Bonnet Plume River country and Wernecke had reported finding its lode source in strata of typical Lake Superior iron formation beds but it was not until years later that it was rediscovered as the Crest iron deposit. When I found the samples I had collected held a little fine gold I treated them with mercury and roasted the amalgam over an open fire in my gold pan. One should not breathe the mercury vapour. I found the fumes have a distinctive smell.

On the 29th three of us went on a long reconnaissance. We were given a ride down to Secret Creek and then went up it and onto the long ridge between it and Red Creek and thence back by Ironrust and Haggart creeks getting back to camp very late. The next day after Jack and Art had gone off to work, their tent suddenly burst into flames about noon and nearly all their belongs were burnt. The night before they had had a small fire in front of their tent and not noticed that the rotten roots of an old stump near their tent were still smoldering in the morning. One root reached to the tent and during the night and morning the fire slowly travelled along it. This was the only fire that burnt equipment my parties ever had.

On the 31st Barker and I made a trip to Mayo for mail. At this camp on fine days when he was not baking Joe enjoyed fishing for grayling in Lynx Creek and on two or three nights we had all we could ear for supper. They were excellent.

After the nearer part of the plateau between Lynx and Haggart creeks was mapped, on August 5th, Barker came with the Territorial Government bulldozer and a "go-devil" (a heavy sleigh made out of thick poles). The bulldozer had been left in Barker's charge for the summer as there was no road work and this was regarded as a crucial area. We piled the outfit on the go-devil and he pulled it up Dublin Gulch close to Bawn Boy Gulch where we camped. Barker then dug a ditch and small basin for us with which to prospect the terrace on the left limit of Dublin Gulch between Bawn Boy and Olive Pup. The bulldozer operation took two hours and cost the Survey $5.00 per hour for which I paid Barker. The rate and arrangement had been set by Mr. Jeckell. Hugo Seaholm lent us some sluice boxes and gave us a few boards with which Corp built a boom gate for the basin dam. This was so we could put in placer cuts in the terrace. One could pan fine gold and scheelite from the soil all over the surface of the terrace and the question was whether as was the general rule there was more at depth. This placer prospecting was done by Corp with the help of one or more assistants while the rest of us continued the mapping which included looking for scheelite in the skarn in Ray Gulch and to eastward. Actually we found scheelite in many places in Ray Gulch.

On the 8th it rained and this helped the placer prospecting as we had not much water until then in our ditch and basin but by the next afternoon we had had seven splashes from our boom gate. Soon the cut was about 12 feet deep though only wide enough for a man to walk down. To our disgust when we had cut through about a foot of soil the walls were only old glacial till and carried no scheelite or gold. There was no permafrost. Corp then diverted the water to a point farther along the ditch and made another cut with the same result. Barker was asked to bring the bulldozer up again and he dug another ditch and basin on the right limit of Olive Pup. We moved the boom gate and boxes there and put in a third cut recovering about three pounds of scheelite and a very little gold from a considerable yardage. The whole terrace was now shown to be virtually all till and devoid of scheelite for practical purposes.

Before this, however, on the evening of the 13th Reg Sheppard came to my tent and said that Harvey Ray and he believed they had found the source of Taylor's cassiterite. This was indeed exciting. He had with him a sketch map showing a zone in which they could pan cassiterite from the soil stretching from the top of the hill on the northeast of the mouth of Dublin Gulch and thence southeastward across Ann Pup. He wished to keep it secret till they had finished staking. The next day I went over the zone with them and they demonstrated the presence of the tin. In this they scooped up some soil, panned it and tested the heavy residue by placing the grains on a little piece of zinc foil in dilute hydrochloric acid on a watch glass. Sure enough after a minute or so the brown, sugar-like grains developed a tin coating. We had all been using this test on pebbles but they had become expert at it to such a degree that if there were three or four grains in the residue they could find them. Actually Reg said it was Harvey who had made the initial discovery. At the beginning of the season Harvey had followed a game trail up Ann Pup, when he came to a puddle of water large enough to wash out a small pan of soil. As usual he could never resist a chance to examine a rock or try a pan of dirt and he found a few grains of cassiterite in the soil. Reg, however, had been a bit skeptical as this seemed an unlikely place and at that time Harvey had done very few tests for cassiterite. The following weeks they had scoured the country far and wide from the south side of Lynx Creek to upper Haggart Creek but without success and Harvey, now more experienced, returned to this spot and showed Reg that there was cassiterite in the soil there.

Two days later when Reg and Harvey had finished their staking I sent Bob and Dick to help them hunt for some sign of where they should dig for the vein in place. The rest of us continued with the mapping and the placer prospecting. Bob was intensely interested in the tin discovery and spent several days on it. He and I also went on a long traverse to see if we could find any sign of the tin in Upper Haggart Creek valley but all we discovered was some float of brilliant red garnet, we took at first sight for cinnabar.

Joe had enjoyed this camp. In his spare time he picked blueberries and made us the best pies I ever had. We had now done all we could. We had mapped the scheelite prospecting area and shown that the terrace contained very little scheelite. Jack had done a good job in mapping the topography with the planetable. On August 28th Barker brought the bulldozer and go-devil up and towed our outfit down to where it could be loaded on a truck and we moved to our former campsite at Johnny Vinegars outside Mayo. In the meantime I told Reg that I planned to take Bob, Corp and Joe up Mayo Lake to Wilson's cabin to see if we could find any scheelite around the granite stock there and invited him to join us.

He said he would gladly come after he had seen what Barker could expose with bulldozer trenches across the tin bearing zone on the hillside. This suited me well as I needed a few days to see the junior assistants off and visit Keno Hill. Also Corp wanted to visit his partner Dave Ryan at Keno to see that he was alright before going up the lake.

On the 31st after seeing the three assistants off Bob and I went to supper with the Woods. We also met Mr. and Mrs. Parke Hodges of Climax Molybdenum Limited. Hodges was looking for tungsten in Alaska and Yukon. We had some good talks together. The next day I hired an old car of Fisher's and drove with Bob to Keno where we had been invited to stay with Corp and Ryan. When we entered their cabin there was quite a row going on. Corp and Ryan, both over 70, were hurling everything and anything they could lay their hands on at each other, as well as calling each other doddering old fools, and worse names. We stood in the doorway quietly watching for about thirty seconds before they saw us. Both said together "Don't take any notice of us. We do this frequently to let off steam." A few last books were thrown and then they greeted us and started clearing up the mess they had made. They each had a small pension that they lived on so the wages Corp was earning with the Survey meant a lot to them. Their diet ordinarily consisted of such staples as beans, oatmeal, flour, sugar and a few rabbits when they could snare them. They picked great quantities of berries each fall and put them in barrels, a thick layer of berries then sugar and so on to the tops of the barrels which were stored in the cellar under their cabin. From time to time someone brought them in some meat. They had become partners in the Klondike where they had obtained and worked a good claim on lower Hunker Creek. Here they both made fortunes of $100,000 or more. Then after the silver-lead strike on Keno Hill they had moved here and bought worthless lode claims at high prices. All their fortunes had been sunk in these. While working in a shaft on one of their claims Ryan's back had been broken and after that he could not do any hard work. Corp looked after Ryan until the latter died at Keno. Then Corp moved to a home at White Rock, B.C. where he died about 1958. For several years they had had a little income from running the Keno Post Office. Also when Corp was elected representative on the Yukon Council for the Mayo District he received a few hundred dollars a year. He made a little money too from writing articles and verses. They had a lot of good books. Corp was a thoroughly capable man in every trade, blacksmith, carpenter and cook as well as the inventor of a number of little ingenious things that made their lives easier, such as a berry picker and a hatchet with a peculiar little hook on it that made it a perfect tool for clearing small brush. After supper we settled down to a very interesting evening with them.

The next morning Bob and I went up Lightning Creek to see the John Baches who were placer mining on Thunder Gulch. They had a lot of hematite but no scheelite or cassiterite. From there we climbed up Charity Gulch to the Hope Gulch property on the south face of Keno Hill. We had our lunch up there and after collecting specimens went over to the Keno mine, to the Shamrock and down to the Lucky Queen and thence down to Wernecke. It was now about 5:30 p.m. and to our surprise we saw smoke coming out of a large cabin. We had been told there was no one in Wernecke. On going to the door we were invited in. Before us spread on a large table was a mass of enticing smelling and lovely looking tarts, cakes, pies and biscuits. We introduced ourselves and the owner said he was Billy Williamson and that he had just finished his weekly bake and to help ourselves. The tarts and cup cakes were delicious.

We said what we had been doing, that tin had been found at Dublin Gulch and that now we were going up Mayo Lake to see if we could find any scheelite or perhaps tin around the granite stock there. "Tin" said Billy Williamson. "I'll show you some tin from there." He went into his sleeping quarters at the back of the cabin and brought out a suitcase from which he took a large piece of white vein quartz with two lovely big crystals of cassiterite in it. "I'll tell you where I got this. Wernecke sent two of us over there in 1922 to prospect east of Mount Hinton and we found this in a vein on the ridge between McKim and Granite creeks, at the only place where you can see down Keystone Creek". Taking out our maps it was easy to locate and mark the place. The wind was completely taken out of our sails as Bob and I thought that the idea of tin being there was something quite new.

Soon after Bob and I left. It was getting dark and we walked down the road to Keno for late supper with Corp and Ryan. When we told them this story they told us not to believe a word Billy Williamson says and that he was an awful liar and had been in Nevada last winter where there were some tin veins and probably got the specimen from some friend there. Still we had to find out what foundation this could have.

The next day after seeing Tom McKay who had been prospecting Bob's discovery above Cement Creek, Bob Corp and I drove to Mayo Lake reaching there at noon. Fisher with Reg and Joe arrived soon after with his truck carrying our 20 foot canoe that had been stored in Mayo, camp equipment, supplies and his two and a half horse power Johnson outboard motor which he was lending us. We travelled the length of the lake in three and a half hours that afternoon and the motor took us up the first riffle in Edwards Creek but then there was not enough water and we had to pole. In poling Reg was the only one who had any experience and took the stern with myself in the bow. The others walked. The difficult stretch was only about half a mile and Reg did virtually all the poling. I was a nonentity. Roop Creek was very low but as soon as we were well into its deep sluggish course we were able to run the motor and reached Wilson's cabin about 9 p.m. Corp and Joe slept in the cabin and the rest of us in tents. At supper Corp said "I've been in the Yukon all these years and I would not have believed there was such a creek as Roop in the Territory." We told Geg about Billy Williamson's story and it was agreed that he and Bob would look for the quartz vein and prospect it for three or four days. I would help them pack their things up onto the ridge and return in the afternoon. The next day was taken as Sunday as we had been busy every day for sometime.

The following day September 5th Bob, Reg and I packed up Granite Creek to the top of timber below where we had marked the vein on our maps. The trail up Granite Creek was poor and led us into deadfall so that we did not reach our objective until late. We had lunch where they were going to camp about 4 o'clock and then I started back. I took a direct route back to camp that was much better than the one we had followed going up. The sun was already behind the peaks of the Gustavus Range and the shadows were

creeping out over the wide valley of Roop Creek. I had gone about half way when the voice of the wilderness broke the silence of the crisp, frosty, fall evening. It rose, swelled and died away behind me laying emphasis on the solitude and complete stillness. Despite its defiant loneliness it was not without a thrill of pleasure that I listened to it once again. I had not heard a wolf on my trail for some years. It followed me all the way in the gathering darkness and then sat on the terrace about 100 yards behind the cabin and howled off and on all night.

The next four days Corp and I spent on the granite contact to the northeast and found a little scheelite where there were some limy beds. The wolf accompanied us the first morning and howled at intervals. From where we were on the mountain side we could see it, a large very light grey one in the flat, open burn below us. It left about noon. There were some coarse pegmatitic patches along the contact zone with tourmaline and masses of a mineral which Bob afterwards at U.B.C. determined as a rare variety of allanite.

The third day I left Corp at the lower exposure of the contact, which was the best place, and climbed up around the face of the mountain to see what more I could find. This proved fruitless except that as I came down on the Edwards Creek slope I stopped to pan some soil by a tiny stream and was surprised to get some scheelite in it. Cutting diagonally across the lower part of the mountain to camp and going down through trees growing in deep moss covered rocks on a steep slope I came upon a fairly fresh moose track. Then I noticed that the moose had started to run down the hill, further on the tracks showed it had been plunging from side to side and then the ground was torn up. A few yards farther were the lower parts of two moose forelegs. A little farther on was a narrow trail worn by padded feet to a hole in the rocks which had clearly been a wolf den during the summer. Reaching the lake shore a few hundred yards from the cabin the sandy beach was covered with wolf tracks.

On the 9th Bob and Reg came back. They had found a large vein of the same kind of quartz that was in Billy Williamson's specimen but no tin. Some one had prospected and blasted it. The question still remained open whether Billy Williamson had really found the cassiterite crystals there. In 1964, however, the Survey made a goechemical study of the streams in the Keno Hill area and found a high tin content in the water of the pup of Granite Creek below the saddle in the ridge where the vein occurs. This almost certainly verified the truth of Billy Williamson's story.

On the 11th we left Wilson's Cabin and went down into the lake and up the Nelson Arm to Ledge Creek to see the Reynolds who still spent their summers in solitude there and had not yet moved into Mayo for the winter. Roop Creek had dropped 3 inches while we were at the cabin. We went over Reynold's placer cut. It was in old rusty gravels and he was recovering a little very coarse gold and a small amount of heavy minerals, almost entirely pyrite and cassiterite, both in unusually coarse crystals. Bob and I traversed on the plateau above Ledge Creek. There was a sprinkling of fresh snow that showed the tracks of an old grizzly and two cubs. We found some small veins with perfectly clear but small quartz cystals in them. Clear quartz crystals were also something wanted for the war effort. A prospector had brought one into Mayo from somewhere up in the Wind River country. It was said to weigh a pound or more and was perfectly clear. He had no idea of its value. He smashed it up and gave fragments to his friends one of whom gave me a piece more than an inch across that looked like optical glass, it was so clear.

On the 14th the wind got up in the morning but in the afternoon we were able to go down the lake and reached the foot about 4:45 p.m., had some tea while we waited for Fisher who soon arrived. We reached Mayo about 9 o'clock and stayed in my cabin.

The next day Bob and I went back to Dublin Gulch with Reg and reached Swansons at noon where we slept. We went over the cassiterite vein that Barker had exposed with the bulldozer. The rock was deeply weathered and the vein consisted of a zone about 36 inches wide of fine loose green tourmaline with "nests" here and there of brown cassiterite and a few scattered solid lumps containing hard tourmaline, cassiterite and a few large spots of pyrite. By panning channel samples we obtained values between 1.5% and 3.0% cassiterite. In the morning Bob and I walked up to the Seaholms, had breakfast with them and went over Hugo's workings. The results were most disappointing. Huge granite boulders were the trouble. The deeper he went down in his cut the more closely they were packed. The sand and small gravel around them yielded a fair amount of scheelite but was so small in volume compared to that of the boulders that the ground was virtually worthless.

Hugo had been trained as a cabinet maker and the small cabin was a work of art inside. It consisted of a living room-kitchen and a bedroom and was on skids so that it could be moved along the road by a tractor. The kitchen cupboards were all nicely fitted with curves to save space.

Later we walked back to Swansons and Lundes and went over their workings and then continued down to Barkers for lunch. Afterwards we drove with Barker back to Mayo in three hours which was about the record. We were sorry to leave this friendly little community where we were so hospitably treated. The next day we packed, stored our equipment in Joe Longtin's barn, paid the bills and caught the plane at 5 p.m. It took us to Selkirk and then on to Whitehorse.

The next five days were spent in Whitehorse. One day Bob and I lunched with Mr. and Mrs. Robert Porsild.

On September 20th Cliff Lord arrived in town with some of his party. He had been working along the Alaska Highway and now invited me to drive down the Highway with him in his truck to Edmonton. On the 22nd Bob and Joe left on the train for Skagway and Cliff and I left the following afternoon in his truck. I was never to sail on the coast route again.

We stayed in Cliff's camp near Logjam Creek the next day while he and his party packed up. On the 25th we started our trip reaching Watson Lake for supper where we stayed in the C.M.S. camp. On leaving Whitehorse I had given Cliff a 10 pound provision bag packed full of matches left over from the summer as I did not like to leave them with the equipment. On reaching Watson Lake he went into a store. I said "What do you want here?" "Matches" he said. "But you have all those I gave you." "Oh! I've used them up." It was always a question to me whether he really smoked tobacco or mainly matches in his pipe. We went into the airport to see it and stopped at the U.S. Army control station. There were lines of new fighter planes with red stars painted on their sides and wings already for Russia.

A large transport plane came in and landed. A crowd of young U.S. Army officers got out. One of them asked us what country they were in. They had not the least idea. We stopped at the Lower Post, Hudson's Bay Co. store that afternoon and spent the night farther on at Camp 17E between Lions Creek and Coal River. Cliff knew all the ropes and we registered everywhere as truck drivers. We signed slips for our meals and beds and so on down the Highway stopping at construction camps, choosing the American ones for meals and the Canadian ones to sleep in.

On the 28th we reached the Fort Nelson airport. In the men's lavatory high on the wall over the urinals was a life size picture of a great buxom, husky, rosy faced girl with a rivetter tucked under one arm, entitled "Rosy the rivetter". She was standing at a man's urinal saying "Well I do men's work". It was not only a remarkable caricature but all in colour was very artistically done. It had been painted over when I next visited Fort Nelson. We left the airport at 7:10 a.m. and reached the Melville Smith Co. camp at 2 p.m. outside Fort St. John where Cliff knew some of the staff and we were royally treated. They were delighted to see some Canadians.

We spent the night of the 30th in a roadhouse at High Prairie. The following morning we were up at 3 a.m. to reach Edmonton in good time to catch the train to Ottawa. While we sat in the front room waiting for the host to bring us cups of coffee which he had promised us, a big husky girl came in from the train that had just arrived from the east. She was in kakhi W.A.C. uniform and sat down beside us. She had no inhibitions, indeed she had no reason to be shy. No one would tackle such an amazon. She started talking at once. What were we doing? She had four weeks leave to help Dad get the harvest in and just looked the part.

At the Athabasca River we had to wait in line for the ferry and while we were waiting we pulled a missionary's car out of the ditch. He was going up the Alaska Highway and had gone off the road at about the first place he had a chance to. This meant we lost our place in line as some big U.S. Army trucks had taken ours. It looked as though we would have to wait for the next ferry but when the time came the soldiers waved us on ahead of them.

At Edmonton we walked into the MacDonald Hotel suitcases in hand, dusty and dirty as we were and asked if we could have a room to change in with a bathroom attached. Despite our appearance the clerk unhesitatingly gave us what we asked for $2.00 each. After supper I left Cliff who had some things to do in Edmonton and caught the C.N.R. train reaching Ottawa on October 4th.

## CHAPTER 6: THE SEASON, 1945, THE KLUANE COUNTRY BY TRUCK AND CANOE; THE ALASKA HIGHWAY WEST OF KLUANE AND THE HAINES ROAD

In 1944 I was allowed my first summer at home since starting field work in 1924, despite my marriage in 1930. In the fall of 1943 we had acquired a piece of land at Kingsmere adjoining the home of Violet's sister and in the summer of 1944 we had a cottage built on it into which we moved in August. The place was a great success and we became more and more fond of it as years went by. Violet and the children loved it.

The Yukon packtrain and equipment had been taken over by topographical parties. This caused a little complication. From the first years in the Yukon I had learnt there was always some uncertainty that the new equipment would not arrive with us when we needed it. Accordingly I had kept in storage in Yukon essential items that still had some wear in them but could not be depended upon for a whole summer and these I had listed as discarded. The advantage of this was illustrated in 1943 when our new stove did not arrive and we were able to start the season with the old one that had a large hole in it. Normally these items would be shipped in to Ottawa and discarded there but in the Yukon the packing and freight would have cost a good deal more than they were worth. Unfortunately the member of the staff who took over my equipment did not see me first and in the fall relisted all the old stuff, with the new. This caused trouble with the equipment officer but I told him just what I had done and what items should not have been listed pointing out how valuable the old times had been to us especially in 1935 and 1943.

The season of 1945 brought a change for me in the region and method of field work. First I was to work in the Kluane country which I had always wanted to see and second I was to have a truck and canoe. My instructions were to fill in with reconnaissance mapping those areas traversed by and accessible by reason of the Alaska Highway west of the 138th meridian that had not already been covered by geological maps. In addition, I was to make the usual tour of mining activities.

No topographical base maps were available but some mapping of the drainage had recently been done along the Highway and some levels run. There also was Talbot's map of 1898. With these I put together a 2 mile base map. Besides this we had several flights of trimetrogon airphotographs and one or two short lines of vertical photographs.

The canoe we were provided with was a 20 foot freighter like those I was accustomed to and the truck was an ammunition wagon similar to that used by Cliff Lord and others of the Geological Survey and National Museum parties during the last two years. They were usable. They had small wheels, very low clearance and small boxes, but they had four wheel drive and low gears.

Bob Thompson was coming with me again as chief assistant. The other assistants were John O. Wheeler, Jim H.C. Hughes and Erle H. Stinson. Joe Oakley was cook again. In addition Dr. Douglas L. Leechman, archaeologist of the National Museum was to be a guest on the party.

Bob who was now a graduate mineralogy student at the University of Toronto came up to Ottawa on May 27th and spent three days helping me assemble the base maps. On the evening of June 1st he and Dr. Ed. D. Kindle left Ottawa by C.N.R. Bob went straight on by train up to Dawson Creek from Edmonton on June 5th. Erle met him at Dawson Creek where their rooms in the Empress Hotel cost $2.50 per night, each. The next day Bob obtained from the RCAF the release of the truck that was to be ours, bought a new battery and picked up the freight and express. The following day after he had bought 150 lb. of salt for the packtrains of the topographical parties of A.C. Tuttle and R.J. Parlee who were to work west of Whitehorse, he and Erle drove to Fort St. John where Ed joined them on June 8th. They spent the night there and the three of them drove in the truck up the Alaska Highway reaching Whitehorse at 7:30 p.m. June 11th.

In the meantime I left Ottawa the evening of June 4th by C.N.R. and after spending two days at Monte Creek went on to Vancouver, visited Cockfield at the Survey office and then flew to Edmonton where Douglas joined me. From here we flew to Fort St. John where we were grounded all day. We were given beds and meals in the airport building, but finally got off at 10:30 p.m. and arrived in Whitehorse at 2:30 a.m. on the 12th. Here we found Ed, Bob and Erle. John, Jim and Joe arrived on the train at 10:00 p.m. from the coast boat.

The next day Bob, Erle and I drove in the truck to Carcross and back to fetch our canoe. Ed and I called on Rex Jackson who was a sort of "jack of all trades" as far as the civil administration went for the Yukon in Whitehorse. Officially he was in charge of the Forestry and Fire fighting. He also had charge of the storage of our equipment. We found we had to see the U.S. Army for permits to travel on the Alaska Highway. Later we called on The Hon. George and Mrs. Black. We had hoped to move off to our field areas the following morning but this turned out to be impossible. This morning was spent getting permits for everyone to travel on the Highway and being fingerprinted by the U.S. Army. They refused to let Ed and his party on the Canol Road at all. We decided to move out of Whitehorse to Champagne and camp. In the meantime Ed wired Ottawa re the U.S. Army while our assistants collected 10-gallon gas drums and washed them out, some for Ed and 18 for me. The good old days of case gas were gone.

Finally we left Whitehorse at 11:30 a.m. on June 15th and camped a mile south of Champagne on the bank of the Dezadeash River. On the way we had lunch with Tuttle and his Topographical Survey party who were at Mile 940. (The miles used here are those in vogue during 1945 that are about 1 to 5 miles more than the revised figures.) We left them their horse salt and arrived at our campsite at 4:00 p.m. in the truck. Bob fetched my second load including Douglas, John and Jim and was back in camp 10:00 p.m.

The 16th was spent in sorting out everything and equipping the assistants. The next day, Sunday, Ed and I traversed together up to the southeast to have a

view of the country around us. The day after the assistants were sent on traverses and Ed and I drove to the "Aisheack" Airport. (I use this spelling in place of that distorted one, "Aishihik" as I heard it from Chief Isaac as will be told later.) When we were a few miles up the Aisheack road we met some U.S. soldiers wandering about with their rifles in search of something to shoot. They asked if we had seen any animals or birds. We had not. There were not even any moose tracks crossing the road. Their kind had exterminated everything. How different from the days of General Hoge.

When we reached the airport there were about a dozen sloppy looking RCAF men including a sergeant loafing.

On calling at the control tower we were met by a young Pilot Officer in uniform except for his moccasins. On asking who was in command he said he was and introduced himself as Pilot Officer Patience. He was obviously not of the character to maintain discipline there alone in an isolated station where quite evidently unwanted personnel were sent. Also the garrison had nothing to do. It is the driest, most cloudless spot in the Yukon and so had been chosen for an emergency airport. I heard of only one plane ever having to land there and that was Lord Alexander's when as Governor General he was making a tour of the Yukon. His plane left Whitehorse for Dawson, but Dawson became clouded over and so was Whitehorse when his plane tried to return and it finally landed at Aisheack. But this was some years later. Ed and I felt sorry for Patience. We talked to him for quite a while. He asked intelligent questions and expressed an interest in the country. There were 48 Indians in the village and they were the only people he saw besides his men.

On the 19th Ed and I drove in to Whitehorse and had supper with Tuttle and Ruff Parlee on the way back. They were starting the 4 mile contour maps of the Whitehorse and Dezadeash areas. The next day it rained. This was as well as there was really no traversing to do. The following day Bob and I brought a truck load of oil and gas from Whitehorse. Ed had now got the matter of the Canol Road straightened out with the U.S. Army but volunteered to help us move by taking a truck load of our stuff to our first camp to the west, Duke River.

On June 22 we were all up at 6:00 a.m. and off with the two trucks by 9:30 a.m. We had lunch at Jarvis River and at 4:30 p.m. reached Bates and Rogers Construction Company abandoned camp at Mile 1098 on the southeast side of the Duke River Bridge, west of Kluane Lake. Here we were able to install ourselves in a large tentest hut for sleeping and living quarters while Joe took up quarters in a large log cabin which became our kitchen and mess house. When his truck was unloaded Ed left us. This was a comfortable camp became our chief camp of the summer as will be seen.

After a day's traversing to look over the country the next day, Sunday, Bob and I called on Eugene Jacquot at his lodge at Burwash Landing. He was in a way the patriarch of the Kluane country. He and his brother Louis had entered the country before 1910 as prospectors. Louis has been injured when prospecting in a shaft. He had lived in a cabin at the landing but died some years before 1945. He was evidently the best liked of the two brothers. They were Alsatians and had married Indian women. They had become quite wealthy and Louis' halfbreed son, also Louis, had been educated in France. More of him later.

I had heard of Gene Jacquot from many people including Col. Walter A. Wood of the American Geographical Society and his wife, Forresta, whom I mentioned in 1935. We had a very friendly talk with Jacquot. He knew at once who I was and he was full of information about the country. I told him I knew the Woods well and he said that they were fine people and then said "That Mrs. Wood is some woman". Indeed Forresta was.

Mr. Graham W. Rowley and I suggested the naming of mountain features in the area around the Steele Glacier where Forresta and their daughter Valerie had been among the first alpine climbers in the area, but we found that mountains had already been named for them on the Alaskan side. Forresta had been as much the spirit behind their explorations as Walter and their two children Valerie and Peter had also taken part some summers. The plane carrying the ladies vanished without a trace on their return from seeing Walter and his party start to climb a peak on the Alaskan side. At the outset of war with the Japanese no one knew more about the St. Elias Mountains than the Woods.

Gene Jacquot had been the Woods' supplier and guide through the approaches to the Steele Glacier. He apparently had not prospected after Louis was injured but set up the trading post and lodge at Burwash Landing. Here he became "king" of the region. It was said that most of the Indians owed him money and could make no major decision without his consent. He was a capable, shrewd businessman. He must be credited with keeping this part of the country going during his day.

His log lodge was nicely fixed up and we sat and talked of many people and matters in the large living-room. Here he had organized hunting and alpine climbing parties on which his camp cooking was famous. He also took fishing parties out on Kluane Lake in his boat which outwardly looked like the Loon of the White Pass mentioned in earlier years. He said the snowfall was very light in winter and that most of the precipitation came as rain in July and August. As a result no hay was cut for the large number of horses he had. They were turned out on Duke Meadows, a large grassy alluvial fan of the Duke River that extends from the Highway bridge northeastward to Kluane Lake. Also many horses were turned out in the upper part of the Donjek Valley where they grazed on the open hillsides and browsed on the "silver willow", a shrub of a light green silvery appearance that carried an abundance of small green berries with large stones, that grows on the river bars. The horses seemed to thrive on these berries. He warned us about crossing the silt bars and said that it was best to cross the glacier fed streams about 8:00 to 9:00 a.m. before the water from the melting of the ice came down them. Highwater on these streams came late in July when the white snow had gone and the sun shone directly on the blue ice of the lower parts of the glaciers which absorbed the heat more than the snow. He asked how we were going to travel over the hills and when I said we walked, he was astonished, saying it was horse country and we should ride. I told him, that later on we would like to hire a few horses and a man to pack us up Burwash Creek. He agreed to arrange this for us saying he would send an Indian, Sam Johnson.

On the 15th, Monday, the clouds were low over the valley and I sent Bob and the others to see what was going on in the lower part of the Burwash Creek. Here they met a Mr. Walsh who had several men placer mining in the canyon.

It was clearly best to work from the most remote part along the Highway to the west eastward and in the morning we packed up and moved not knowing what sort of country we were going into. The atmosphere was smoky. Those of us with the first load lunched at Siwash Creek and continued to Snag Creek without finding much of a place to camp along the Highway. Coming back we looked in at the Standard Oil camp about where the settlement of Beaver Creek now stands on a timbered flat and then at the large abandoned camp of log buildings put up by the U.S. Army on the west side of Beaver Creek. This was a mess. In the spring the camp had been deeply flooded and half a foot or more of silt was all over the buildings and on the ground around them. Finally we settled at a spot near Mile 1198 about a mile east of Beaver Creek where there was a shelter cabin and small dry patch of ground surrounded by the niggerheads that stretch over a large area in the drainage of Niggerhead Creek. I took the truck back to the Duke camp reaching there about 8:00 p.m. and returned with the second load and all the rest of the party, getting in at 2:00 a.m. the next morning.

After breakfast we all drove in the truck to a gravel pit at Mile 1222.2 in Alaska, the Boundary being at Mile 1221.3. There was no one around. The following day we traversed beyond Snag Creek and looked at the hill of Tertiary rocks west of Beaver Creek. On the 29th we went to the Snag airport and walked across the creek on the bridge which was in poor shape, and up the hill to the rotating beacon. From there we made a short traverse eastward and came back along the White River to the mouth of Snag Creek. Here we visited Paul Niemen, an old timer I had heard of from Bill Bamford in 1937. He originally came from Old Crow and now had run a small trading post among the Indians at Snag Creek for some years.

On June 30th after heavy rain in the night I dropped the idea of doing more traversing from this camp and we moved back along the Highway to Edith Creek at Mile 1146. Here we had a nice camp and good water. It rained hard in the night and the next morning. Fresh snow was down to 4500 feet. After supper I drove back to Burwash Landing to see Jacquot but he had taken a party of U.S. Army officers out fishing. The following day it rained again and we worked at the airphotos. On July 3rd the clouds were low in the valley and the snow was below 4000 feet. Despite this we traversed for the next three days.

The 6th opened sunny but heavy rain followed. Bob traversed along the Highway eastward and looked at the Donjek River bridge. This bridge was a causeway more than a mile long of piers built of log piles across the wide braided course of the river. In the afternoon there was a terrific downpour of rain and hail that lasted an hour and a half. When Bob came in at supper time he said the Donjek was rising, trees and brush from the river banks above the bridge were being swept down and caught in the piers. The two U.S. Army cranes on the bridge were having a hard time keeping the spaces between the piers from being choked up with debris. Already some of the piers had shifted and the roadway was now tilted and crooked. If the bridge became impassable we would be caught on the west side without any alternate way back and it might be weeks before we could cross it again. I decided to move back to the Duke camp and work west from there as we could not work and keep watching the bridge. It rained all night and Edith Creek bridge too started choking with logs and brush. The first load got away at 8:30 in the morning. Brush and logs were now caught on every pier of the long Donjek causeway. Many of the braces supporting the piles had broken and the roadway had tilted over more so that we had to creep across. What we feared were some hot sunny days now that would bring it all down. We were all glad to be back at the Duke camp, Mile 1098 by 6:00 p.m.

After supper I went to see Jacquot again about the horses and arranged for them to come on the 11th. The next day again there were terrific rains and more snow. Two prospectors came in and said that the embankment on the west side of Burwash Creek bridge was washed away but the truck could get around it as the water was not deep and the bottom was gravel. Also the west approach to the Duke bridge was being cut away by the river. On the 10th we drove west to the Donjek and as the bridge was no worse, crossed and parked the truck two miles east of Grate Creek to traverse.

The following morning the five horses arrived with Louis Jacquot (Jr.) instead of Sam Johnson, the Indian whom Gene Jacquot had led me to expect. Erle and I stayed with the horses and Louis who led us by a trail across the Duke River and up along the broad Burwash Uplands westward to where Cooper Creek enters Burwash Creek. We left Joe and Douglas at the Duke camp. The others traversed by Burwash Creek. We reached our destination with the horses about 6:30 and camped on the north side at the first pup west of the mouth of Copper Creek. Bob and the others arrived about an hour later.

The following day Bob and Jim traversed to the northwest. John, Louis and I with the horses went to see Jacquot's coal deposit. Louis knew vaguely where it was. On reaching the east angle of Amphitheatre Mountain we came abruptly upon the most spectacular area of badlands I have ever seen. The gulches heading in the steep east flank of the mountain converged eastward forming a large basin of badlands drained by Granite Creek at the foot of the mountain. Between them steep ridges crowned by sharp summits with hoodoos here and there extended from the cliffs of the mountainside. These ridges were composed of light coloured, slightly consolidated gravels, sands, silts and clay with numerous thin seams of organic matter some of which were thick enought to be called lignite coal. On the upper parts there was virtually no vegetation and the slopes were so steep as to be difficult to venture on. The vertical relief of some of these ridge was 500 feet or more. One or two lignite seams a few feet thick had been dug into and from these we took our samples. There always remains a doubt whether Louis took us to the best coal exposure.

John and Louis then returned to camp with the samples on one of the horses and I started to climb to the summit of the mountain. The first part of the climb was on the same type of sediments as formed the badlands below. Here and there were short lenses of lignite two or three feet thick which contained in them distorated stumps of trees a foot to 18 inches high and 6 inches to a foot in diameter. The roots of these stumps could be seen spreading out in the lignite. The interesting thing about these stumps was that they were partly silicified, the silica replacing the wood and preserving its grain and knots. Fossil plants in this lignite show it to be of early Tertiary age. This great deposit of soft sediments is the source of the abundant gravel and finer material that comes down Duke River in summer and has formed the large alluvial fan of the river.

Going on up, I worked my way westward along the north face of the cliffs climbing up a chimney in the thick lava flow that lies above the sediments and then up a succession of steep gravelly slopes separated by thin sheets of lava. Coming onto the top of the mountain the view was magnificent in all directions. To southwestward the summit slopes down in long sweeps of alpine turf to the open valley that forms the pass between the heads of Granite and Burwash creeks. Beyond this the ridge of the Donjek Range rises ever steeper to its icy summits of which Mount Hoge, named for General Hoge is a conspicuous peak. This ridge shut out any view of the Icefield Ranges. To the southeast the view was up the valley of the Duke River bordered by mountains. To the northwest it was through the pass down Wade Creek across the Donjek River and to the mountains beyond. To the north immediately below the precipitous face of the mountain stretched the broad turf and brush covered surface of the Burwash Uplands terminated by the canyon-like valley of Burwash Creek and beyond it the peaks of the Kluane Ranges. Through a gap in these ranges northeastward across Duke River, Kluane Lake and the mountains beyond showed. Not an animal was in sight but extending roughly eastwest below me on the Burwash Uplands was a broad braided pattern of old caribou trails. I sat for an hour or more enjoying this view and the solitude, sketching the map, writing my notes and trying to take in all that I felt I should learn from this opportunity. I saw John and Louis returning to camp with the horses and finally with regret at leaving walked westward along the sloping summit and descending the gentler northwest end of the mountain and turned down Copper Creek to camp.

The next day we went over the placer workings on Johnson Creek where Gus Lolland had his claim. Gus told us that some of the lenses of prelava gravels that we could see in cliffs on the mountains under patches of lava carried gold. There were some old cabins and shafts on Burwash Creek but they did not reveal anything.

The morning of the 14th started with rain and snow and we started to move over the ridge to the north to camp in Tatamagouche Creek. John and I set out ahead traversing and were soon in cloud. The others with Bob in charge and Louis guiding were to bring the horses. John and I found our way alright and reached the proposed campsite about 6:00 p.m. but no sign of the others. The light rain continued through the night. We found a good spruce and spent the night by a fire in the drizzle.

The next morning after waiting for the others we followed a trail down the creek arriving at Louis Jacquot's (Sr.) old cabin a minute or two after the packtrain reached there. They had come down the other side of the creek. It was a great relief to see them. It turned out that on crossing the ridge into the head of Tatamagouche Creek Louis had turned northwest instead of southeast and they had spent the night on Quill Creek where they had much heavier rain than we did. In the morning Bob could not make Louis get up before 10:00. Bob realized the mistake they had made and led them back to the head of Tatamagouche and down it.

We camped that night in Burwash Creek valley and John and I rode back up Tatamagouche Creek with Louis in the morning to the foot of a slope in the upper part of which there were some old lode copper prospects. From here Louis took the horses, picked up the others and they returned to Duke camp. John and I climbed up to the prospects and then onto the top of the ridge from where we had grand views in all directions. Kluane River and Kluane Lake were spread beneath us to the north and east and to the southwest we could see the upper part of Steele Creek valley, the stupendous mountain buttress that rises abruptly some 5000 feet on the southwest side of the Donjek valley, Mount Wood and glimpses of the other great peaks among the storm clouds. After sketching, writing notes and taking some pictures we made our way along the ridge down Burwash Creek and back to Duke camp along the Highway.

The 17th was taken as Sunday and I paid Gene Jacquot for the horses and Louis's wages. On the following day Bob led our last traverse west of the Donjek bridge and John and Jim traversed between the Kluane and Donjek Rivers north of the Highway. I fixed up the map.

The day after this I traversed up onto the top of the 6800 foot peak west of Halfbreed Creek and down via the Duke valley. This traverse revealed how exceedingly complicated the geology in the Kluane Ranges is but as Cairnes had included this side of Kluane Lake on his map we did not have to do it. On the very top of the peak were about a dozen plants of a little orange poppy in bloom that I had never seen before. The plants were scattered here and there in crevices in the rock. They had succulent furry leaves. It seemed a shame to take one just for my own curiosity, and I left them in their solitude. When I described them in the fall to Dr. Erling Porsild he said "I think I know what that must be. It has never been found in the Yukon yet. Why didn't you collect it?". To which I reminded him that he had said in the spring that Dr. Hugh M. Raup of Harvard Forest had made a thorough collection along the Highway and it wasn't any good my collecting. He answered "Raup would never go up there".

On July 20th it rained and we all stayed in. Mr. Jeckell, the Controller and Mr. Rex Jackson arrived for supper. It was a fortunate day for them to come. The next day we went up lower Burwash Creek to see Walsh's placer mining in the canyon.

On the 22nd we started our reconnaissance of the country accessible from Kluane Lake. We drove the truck with the tents, and supplies as well as the canoe and outboard motor including its gas and oil to the lower end of Duke Meadows where Dickson lived at the outlet of the lake a short distance down the river. Here the canoe was launched and loaded. Everything we did not need was left in the truck. Dickson said he would keep an eye on it and assured us it would not be touched. We moved in two trips to the first delta on the east side of Brooks or Little Arm as it was then called. The next day it rained and the wind continued to howl from the southeast, a thing we were to get accustomed to. Quantities of punk-soft caulk-like driftwood lay along the beach and this first started me wondering about the history of the lake. Where had it come from? In places too along the beach stumps stood up deeply rooted in the sand and a few in the edge of the water. Others could be seen still rooted in the lake bottom beneath several feet of water. Indian stumps stood in the woods behind the beach.

The next day we did some scouting up Brooks Arm and the day after traversed both sides of the arm. On the 25th leaving Bob and John to traverse, do odd jobs and make the sounding line for the lake, Douglas, Erle, Jim and I went up Brooks Creek and lined the canoe up the last 300 yards to the only decent campsite, a little above Mineral Creek. This was obviously an old Indian

site used for many generations. We found numerous stones in the brush that had been heated for boiling water as well as an old elaborately made wooden fish trap. A well worn sheep trail could be seen extending down the ridge on the north side of the creek.

The next day Erle and Jim traversed north along the trail up Brooks Creek. It was a wet swampy route. I went up Mineral Creek valley and panned a 3¢ piece of gold from a crevice in the lower part. Douglas hunted for artifacts around the campsite. When Erle and Jim returned we loaded the canoe, drifted down the first stretch of the creek and returned to camp for supper about 10:30. Bob and John had traversed north-east of camp.

The 28th it rained and the wind was from the west. At supper time an Indian boy and Babe Dickson about 18 years old turned up. They had brought some horses across Brooks Arm. Babe Dickson had swum in the icy water most of the way across the arm. She was good looking and short but powerfully built and full of energy. None the worse for her swim in her clothes. She impressed us all very much. The next day John, Erle and Jim sounded the arm. Douglas, Bob and I looked over the rocks along the west shore and where there was a cabin found fine colours in the large creek on that side.

July 30th for the first time the lake was a mill pond but the sky was threatening. We moved to the entrance of Talbot Arm where we found a better campsite on the beach just south of Striation Point. The second load came in at 10:00 p.m. Bob and Jim traversed.

The next day Bob, Erle and Jim sounded the lake and took Douglas to Sandspit Point. John and I traversed westward from camp, found the raised beaches that revealed that the lake level had been for a short time in the not far distant past up to 30 feet or more higher than at present. In the creek behind camp we found colours in every pan though there was no sign of anyone ever having mined there.

On August 1st, Bob and John climbed the mountain opposite on the east side of the arm. Jim acted as ferry man and took Douglas to Doghead Point and in the evening fetched Bob and John as well as Erle and I who had traversed north from camp. We had come down the small creek north of Striation Point where the sheep had a dry lick in the banks of till at the top of its canyon.

The next day I traversed to the west while the others moved camp up Talbot Arm to the delta of the small creek on the east side about four miles south of the head of the head of the arm. We were blessed these days with calm weather.

The following morning Jim and John traversed up northeast of camp. Taking Douglas, Bob and Erle I went as far up Talbot Creek as we could with the canoe, about half a mile and landed. Bob and Erle traversed north while Douglas and I investigated the area around the end of the lake. This too had been an Indian locality of many generations. Back from the creek large spruces grew in stone rings and there were many old signs of Indians. On the west side of the head of the lake we found a moose lick, a U.S. Army hunting camp with numerous sheep bones scattered about and the place where Michener and his party working for the International Nickel had camped in 1944. At the cabins on the east side Douglas found several Indian things including a stone adze. Finally we went up the creek again and waited for Bob and Erle and returned to camp with them.

On August 4th, Bob, John, Erle and Jim took the canoe with a number of gas drums to the last camp; but the lake was too rough to land at the campsite so they left drums on the little sheltered beach on the north side of Striation Point. They were then to have sounded the arm but it was too rough.

About this time, Joe started showing signs of being upset. His cooking had deteriorated. The hotcakes and breakfast were not properly cooked nor were suppers for which ham was the only meat we now had. It was at times nearly raw. I had been concerned about Joe for some time. He showed all the signs of having a nervous breakdown. The trouble basically was that he found no companionship with the assistants. Indeed he detested them as their conversation was often over his head and then too he was alone all day. Bob came to me about him and the cooking. All I could say was that we should be as considerate and patient with him as possible and that when we returned to the Highway and he saw more people he would probably get better.

On the 5th Bob and Erle traversed the mountains on the west side of the arm and took the Survey rifle in the hope of getting a sheep as we had had no fresh meat since we were first at the Duke camp. Jim and I went up the east side and I carried my rifle. Shortly before we started back down to the lake I spotted with the glasses a flock of at least 64 ewes and lambs on a hillside which was too far away for a stalk at that time of day and also because they commanded a view of every direction except of their far side away from us.

The next day we broke camp to move back to the site near Striation Point. I took the first load down the arm after lunch and landed the assistants and equipment alright but coming back the wind began to rise. When I started with the remainder of the party and equipment a mile or so down the arm the wind and waves were too much and after shipping considerable water, we managed to gain the shelter of a small, steep, gravelly delta on the west side. Here we landed, emptied the canoe and dried the equipment as well as ourselves by a fire. We put up a tarpaulin lean-to and made the best we could of the night. About 6:00 in the morning we loaded the canoe and reached the camp alright, in spite of a big swell rolling in from the main lake.

August 8th at 4:00 a.m. we were up and off on the lake by 5:00 and I took Bob, Erle and Jim with as much equipment as we could spare back to the truck at Dickson's. We had not gone far when a strong, south-east wind rose. We began to feel it as soon as we were abreast of Doghead Point. However, for a stretch Jacquot Island gave us some shelter but as we got farther from the island we felt the full force of the wind and waves and began shipping water along the sides and over the stern. All we could do was slow down and quarter the waves as best we could to try to get in to the partially sheltered beach about two miles east of Sandspit Point west of where the Geodetic bench mark is. This is about the only shelter along that stretch of shore. We landed here emptied the canoe dried the load and stayed for 24 hours after which the seas and wind had dropped a bit. Then to lighten the bow Bob and Jim walked across to the bay behind Sandspit Point, while Erle and I took the canoe around to pick them up. In the bay were the carcasses of three freshly drowned horses which Jacquot told Bob had been driven into the lake by wolves. From here in the shelter of the point we reached the river mouth and Dickson's without further trouble.

*Alaska Highway bridge over White River, 1945. (97781)*

*Bridge over Snag Creek leading to the Snag beam station, 1945. (97794)*

*Outdoor cooking, 1945. (97838)*

Bob and those with him were to take the truck to Jacquot's, get some food and set up camp near the south end of the lake. Then Bob and one of the others were to drive to Whitehorse for mail, supplies and gas.

About 3:30 p.m. I started back with the canoe nearly empty except for a 10 gallon drum of gas which I lashed in the bow. Coming out of the mouth of the river the lake was comparatively calm and continued so until Sandspit Point. The light of the sun was from over my right shoulder and penetrated deep into the clear water of this rather shallow part of the lake. To my surprise the bottom was dotted with a forest of large upright stumps, the roots still spreading out into the bottom. Beyond the point I faced the full force of the wind and waves. The canoe bobbed around like a cork the spray blew over it and at times the wind made steering difficult, but otherwise the return trip was uneventful.

The next day the 10th the remaining four of us packed up camp to move into the mouth of Gladstone Creek. I landed Douglas and Joe across the arm putting them off at a little cove on the east side about 3 miles southeast of Striation Point to walk around to Gladstone Creek while I took the load about 200 yards up the creek and then returned for John and the rest of the equipment. We ran the canoe back up the creek in the dark after 11:00 p.m. Douglas was full of enthusiasm as walking over the high cutbanks along lakeshore he had found a good archaeological site. The next morning he returned to his site. John and I examined the Gladstone estuary and then visited the site too. It was decided to move to Destruction Bay, on the Highway and the main camp the day after tomorrow.

On the 12th John and I traversed up Gladstone Creek. There was no decent trail and the way was slow. Hearing a noise up Cyr Creek we turned towards it and found old Chief Isaac of Aisheack, his wife and horses. The Chief had been placer mining in partnership with a whiteman. After they had cleaned up the boxes his partner had taken all the gold saying he would turn it into the bank at Whitehorse and bring them back some supplies so they could go on working. After we had talked with the Chief for a while and told him who we were and that we were going back across the lake tomorrow, he asked us to send a telegram for him through the U.S. Army Signal Corps at Destruction Bay. It was to his son at Aisheack airport. Here is the telegram. To: Albert Isaac, Aishihik (which the Chief pronounced unmistakably as "Aisheack")

"Will boy you got hard luck. You horse Daisy get kill himself. All today August 12 I go home Aisheack. I done work on my creek. I wait for my partner. Go slow Aisheack six days. Mama get hurt too. Horse he buck off. Feel better now. Soon alright."
"Chief Isaac, August 12."

After I had written the telegram changing the grammar a little I read it over to him but he would have none of it and wanted his own words exactly as above. Later in Whitehorse we heard that his partner Bill Hasey had taken all the money for the gold and left the country two weeks before this.

John and I went on up Gladstone Creek to a small canyon where we found all the crevices and ledges in the rock walls had been scraped out to wash their contents for gold.

The next morning started beautifully calm and clear and all four of us with the outfit travelled to Long Point in one trip. Beyond the point, however, the southeast wind was howling and a sea was running. We had lunch on the beach sheltered by the point and then I took Douglas and Joe with a light load across to the beach at Destruction Bay. We landed the equipment. Joe stayed with it and Douglas went up to the Highway to hitch a hike to camp and ask Bob to fetch us. John and I with the second load landed two hours later. After the three of us had had supper by a fire on the beach I went up to the Highway and heard that it had been blocked by a slide at Mile 1058 for a week. The traffic had been able to pass the slide that morning so it was fair to assume that Bob had gone to Whitehorse that morning. Returning to the beach, we carried the equipment up to an empty cabin where we spent a miserable night, no fire, cots, nothing.

In the meantime, on August 9th Bob, Erle, and Jim had taken the truck to Jacquot's picked up some grub and driven to look for a campsite somewhere around the south end of the lake. They looked at Sheep Creek, then along Slims River on both sides as far as the original U.S. Army Engineers road and bridge would let them, without finding a suitable place. Then they were stopped by the slide from going around the lake to Silver Creek and so returned to the little point at Mile 1064 where in 1979 the Bayshore Motel stood. Here they camped at 11:00 p.m.

The next day Erle stayed at their camp and Bob and Jim set out to drive to Whitehorse but were stopped again by the slide. This slide was caused by the building of the Highway disturbing the bottom of a large frozen mass of glacial till and scree that extended far up the mountain. The lake prevented a route from being built far enough out to avoid it. The lower exposed part of the scree now thawed when the weather was warm in summer and the thawed material slid down a channel about 20 feet wide out onto the Highway covering it for a distance of about 250 feet with a deep mass of thick soupy mud containing numerous large blocks of rock some of which were at least six feet across. This exposed more of the frozen scree to the warm temperatures and so it more kept coming down. When Bob and Jim reached the place the 7th slide of that morning had come down onto the roadway and the two bulldozers which had been working at it since it started to encroach on the Highway were quite unable to keep a usable lane through it for the traffic. Bob took the truck back to camp.

The following day the bulldozers had cut a roadway across the slide channel about 200 feet up the mountain slope above the highway that they were able to use but the traffic could not. There were now about 20 trucks on the west side and more on the east side waiting to pass. The Road Superintendent was there and decided to put steel girders over the slide and in this way a usable roadway was made by Monday August 13th. Bob and Jim were then able to drive to Whitehorse, pick up the mail, food, gas and leaving there about 9:00 p.m. reached the slide at 1:00 the following morning of the 14th. The improvised bridge, however, had been pulled out. They spent the night at the "Sheep Creek Construction Camp" a mile or so east of the slide and finally got back to camp at Mile 1064 about 10:30 a.m. Here they found Douglas with Erle and brought them to Mile 1084, Destruction Bay, to pick us up. That was on Tuesday, about noon. We were all glad to be settled back in our regular camp again and get the mail and fresh food. Though the campsite was a bit exposed Bob had certainly picked the best available. The next day was taken to wash and reorganize. The following two days it rained and the snow came down to 5000 feet.

On the 17th we went up Sheep Creek as far as Varga's cabin to look for the coal and at the placer workings. Lots of copper nuggets had been thrown on the gravel from the sluice boxes there, but no one was around. The following day leaving Joe in camp we took the truck up the Engineers roadway on the west side of Slims River and drove across the bridge there to Vulcan Creek. The bridge no longer in general use was sagging a bit and had some crooks in it but as almost no trees or brush were washed down Slims River it could last a long time. Some years later it was pulled out. From Vulcan Creek we walked up to the timbered "island" that the Kaskawulsh Glacier forks against where we camped for the night. In the morning we walked about 2 miles over the glacier and then returned reaching the truck at dusk. Bob was there first and saw a bull moose prancing around and around the truck. We were back at camp about 11:00 p.m.

The next day Bob and two others sounded the lake from the Slims River delta up to a line between Cultus and Congdon creeks. On the following day, the 21st, we drove the truck up to Bullion Creek dropping Bob, John and Jim off to farther up Sheep Creek than we had been before to look at the coal. Erle and I walked up Bullion Creek where we found Coglan living by himself some miles from the mouth of the canyon. Endeavours had been made to work the creek in many places along it by several outfits but the frequent "cloud-burst" torrents coming down from the mountains washed away or buried the sluice boxes. Coglan had been living on the creek 12 years and said all the best patches had been worked out. He grumbled at the Canadian Government as he thought it should pay him a pension but did not because he was an American. He hoped the whole country was going to be annexed by the United States as then things would be better. Here again there were copper nuggets scattered where the workings had been.

The following day I spent getting things ready to leave the party and make my trip to Dawson and Mayo.

On the 23rd Douglas, Bob, John and I drove to Whitehorse and I boarded the Casca after supper. The others stayed at Mrs. Viaux's White Pass Hotel. It was good to be on a steamboat again and talk to Captain Malcolm Campbell, Kid Marion, the pilot and others of the crew that I knew. At Carmacks I had a talk with "Bill" Hayes who was Telegraph Agent, Postman and had just been appointed Mining Recorder by Mr. Jeckell. Hayes told me of the Brown-McDade prospect discovery and said that in accepting the position as Mining Recorder he had stipulated that he would take full advantage of the information that came to him through that position. There was a good deal of resentment about this. The property discovered by Afe Brown and George McDade on a slope west of Victoria Creek had caused a small stampede. The claim stakers had to register their claims with Hayes giving him the positions. Thus Hayes had all the first hand information of claims likely to prove of value and took full advantage of it in his own interest. A little more of this later.

At Selkirk I was very glad to see Cam (I.G.) Cameron of the RCMP and several of other old friends. While a number of us were standing around on the river bank watching the freight being unloaded a flight of geese landed across the river at which one of the tourists from the boat asked when the shooting season opened. To this Cameron in uniform answered quick as a flash "When the policeman is not around". It raised a howl of laughter from all those of Selkirk knew how true it was. At Kirkman Creek we stopped to put off some freight for the Ymir Yankee Girl Mining Company of the West Kootenay that was prospecting there but I did not know at that time that the man in charge, Red Taylor, was Kipper, my assistant of 1928. We loaded wood at Calisle Creek and arrived at Dawson at 2:00 p.m. on the 25th. I phoned Mr. Jeckell and he invited me to stay at their cottage opposite Rock Creek. Before going out with him, however, I called on Mrs. George Black and among other things she showed me her book on flowers pointing out the poisonous ones including one of a species of arabis that I recognized at once as a plant plentiful on the bars at Duke River and which Joe, thinking it was a species of onion had used the leaves to flavour potatoe salads that he made. He complained that he could not get the bulbs up as they were so deep in the gravel. This was lucky for us as Mrs. Black explained that the bulbs were very poisonous.

It was always enjoyable to stay with Mr. and Mrs. Jeckell at Rock Creek and we discussed the various developments in the Territory. He told me that a petition had been sent to him by various prospectors at Carmacks asking him to remove Hayes from the position of Mining Recorder but not suggesting anyone in his place. Mr. Jeckell asked me if I could suggest anyone. To which I could only say that I did not know anyone else in the community suitable for the position. He told me just what Hayes had said to him. That was that if he was appointed Recorder he would not accept any restrictions on how he used the knowledge that came his way. Indeed Hayes was the most capable man in the community and no one else wanted the job anyway. Hayes stayed.

The next day the 26th, we visited Messrs. Andrew Baird and W.H. McFarland both of the Y.C.G.C. The 27th I spent with Grant Henderson, son of Robert Henderson the discoverer of Goldbottom Creek and McLeod White, well known mining geologist on the Mitchell Group of lode gold claims above Hunker Creek.

The following day, the 28th, I flew to Mayo in the morning, where I saw Mr. Buckles, then manager of the properties that had belonged to the Treadwell Yukon Company and that had now been taken over by Conwest interests. Also I was glad to see Dr. Bill Smitheringale who was in charge of prospecting explorations in the Wind River country and whom I had known years before. On the 29th Sam Wood, the Mining Recorder drove me over to Dublin Gulch and we looked over the work done by the C.M.S. on the tin prospect and we visited Fred Taylor's placer workings. I think we slept in one of the cabins below Taylor's on the Gulch. Barker was not on Haggart Creek that year. The next day we drove to the Elsa Mining Camp on Galena Hill and the day after went to Mayo Lake where we had our lunch. There was now a row of summer cabins belonging to people at Mayo and the Elsa along the beach at the lake. We were back in Mayo for supper with the Woods and I slept the night in Smitheringale's cabin.

On the following morning I left Mayo by plane. We landed on the McQuesten airstrip on the way to Dawson and after a brief stop flew to Whitehorse at 2:00 p.m. Bob had come in and with Douglas we were back at the camp he had picked in the abandoned construction buildings at Kathleen Lakes. Here we had one long cabin with kitchen and dining space at one end and sleeping quarters at the other. It is a lovely spot. September 1st Saturday was taken as Sunday to read mail. Bob plotted the work the party had done in by absence. Ed Barker formerly of Haggart Creek came to lunch and in the evening I visited Tuttle and his topographical party at Marshall Creek. Barker and Irving Ray were now placer mining on Shorty Creek a tributary of Alder Creek near Kathleen Lakes.

On August the 23rd the day after I had gone down river on the Casca Bob and John after gathering the supplies and gas left Whitehorse at noon. At Haines Junction they turned southward along the Haines Road to Kathleen Lakes to see if there was a place to camp and then returning to the Highway drove into the Kloo Lake Trading post, run by Frank Sketch a well known man of the area, 3½ miles north of the Highway. After this they returned to camp at Mile 1064 arriving at 8:00 p.m.

The next day Bob, John and Jim took the truck to Mile 1035.5 where an old road turned off the Highway to Kimberley Creek and drove along it for 3.2 miles. From here they traversed up the lower part of Kimberley Creek and after spending the night out in cold rain returned to camp the next day. On Monday the 27th, leaving Joe at Mile 1064 camp the other four took the first load to Kathleen Lakes camp. Bob and Erle returned, picked up Joe and the second load in the afternoon. The next day was spent in fixing things up in the large single hut. The first hard frost came that night. The two days following this were spent in scouting along the Haines Road, the Mush Lake road and in visiting other surveys and mining camps. On August 31st Bob had come into Whitehorse to fetch Douglas and I to the Kathleen Lakes camp.

On September 2nd Bob with Douglas drove to the crossing of Alder Creek on the Mush Lake road. From there Bob took Douglas to the Indian fish camp at Klukshu on the Haines Road. Here the Indians were drying salmon. They said steelheads came up in the spring, sockeye in the summer and cohoes ran until Christmas. These Indians moved to Champagne in the fall. After this Bob took Douglas to stay at Mrs. Dorothy MacIntosh's roadhouse at Bear Creek at Mile 1022 where Charlie Baxter had had his headquarters mentioned in 1935. Bob then returned to Alder Creek to pick me up. I had walked into Barker's and Irving Ray's placer operations on Shorty Creek. The others had traversed westward from Kathleen Lakes.

The next day, September 3rd, we all drove down the road to Mush Lake taking the canoe. Here we left the truck and went down the lake to the 150 yards of rapid creek that joins Mush and Bates lakes. The portage had been cleared wide enough for a wagon but with care we were able to line the canoe with most of our outfit in it down to Bates Lake. From there we went on down it to camp just below Murray's cabin, about 100 yards down Bates River which flows out of the lake.

In the morning we followed a bulldozer trail to Iron Creek through very pretty country of open grassy park-like areas with clumps of trees on the broad gently sloping twin gravel fans of Wolverine and Iron creeks. Beyond Iron Creek the Lower slopes of the mountains were forested and above the timber the long ever steepening slopes clothed a beautiful green rose to the crags and snow above. The whole scene was like one of the artists imaginary pictures of mountains on calendars but we found to our disappointment later that these beautiful green slopes were of alder and devil's club.

Iron Creek comes down from its glacier and has cut a valley about 300 feet deep and 150 yards wide in its former gravel fan. The trail led from the surface of the fan down the steep face of the terrace and over to a cabin used by Beloud for trapping. Against the door of the cabin a high flag pole about 25 feet high was fastened so that in winter he would know where to dig down through the snow to find it as this was in the border of the coastal wet belt and the snow built up to tens of feet.

Iron Creek was too high to cross that day so we panned along the right-limit of the creek recovering as much as 3¢ a pan in the surface gravel but there was no gold deeper than about a foot. Going up to the glacier there were a number of placer diggings and shafts on the way. Beloud said there was gold right up the snout of the glacier.

On the 5th some of us crossed Bates River and found along the lake the remains of the skiis and some other equipment discarded by Bob Bates and his companions when they were picked up by a plane in the spring of 1935 after Bradford Washburn and another man of the National Geographic Expedition had made the first crossing of the St. Elias Mountains. Bates and his two companions with their dogs had come southeast on the interior side of the mountains crossed the Alsek River and made their way in the snow to Bates Lake with very little food.

Afterwards we returned to Iron Creek and were able to wade across this time and follow a trap trail through the timber for about three miles westwards passing two cabins on the way. The trail led us down Bates River valley to where it ended at the creek coming down from the next glacier southwest of the Iron Creek glacier. There in the canyon just above the creek mouth was a thin steel cable stretched across the river with a cradle suspended from a pulley on it. On this I pulled myself across to the outcrops on the other side and then back. After panning a few fine colours and scouting around in the alder and devil's club where there were lots of signs of grizzly bears, we retraced our way to camp.

The next day it rained. The following morning, September 7th, we started back to Mush Lake, portaging the canoe and everything. On the way we had looked over the outcrops along Bates Lake and finally camped at the upper end of Mush Lake. On the 8th we finished the geology we could do around the Mush Lake. The fresh snow was down to 3500 feet now. The following day we returned to Kathleen Lakes camp. After lunch I went to Mrs. MacIntosh's and had supper there with Douglas and then we drove back to camp.

Mrs. Dorothy MacIntosh, Ph.D. was a very good cook and I ate a whole pie much to her annoyance which I only realized afterwards. Mr. MacIntosh, formerly of the RCMP, had died some years before but she had continued running their trading post and roadhouse. She was one of the characters of the country and told us this extraordinary story of herself. She had been a school teacher in some town in the western States. Here she had taken a violent dislike to a neighbour whose pride and joy was a lovely big garden that she had taken years to develop. Finding that her neighbour had gone away on a holiday for a month or two, Mrs. MacIntosh wrote to a farmer signing the letter in her neighbour's name and asked him to take out the trees and plough the whole garden as she wished to replant it when she returned. In due course the farmer did this and the garden was completely destroyed, but neither the neighbour nor anyone else ever found out or suspected who had written the letter.

September 10th was taken as Sunday to clean up and visit some local old timers. In this camp we had had many visitors including Dr. Kenneth Watson of the B.C. Department of Mines. The notable old timers were O.P. Johnson and LeGuyder who was known as Frenchie both of

whom had cabins near the east corner of the nearer lake. O.P. Johnson was a fine old man and much incensed at the extraordinary wastage of the U.S. Army construction men and the government ruling that nothing the U.S. Army had abandoned could be used by the local people. Indeed all the regular residents of the Territory were incensed over this. There were quantities of lumber, mostly prime douglas fir, left over. This was destroyed by using bulldozers. Not a piece could be used by any residents. In Whitehorse some months before when there had been a drive in eastern Canada on for bedding, drugs, for overseas hospitals tens of thousands of dollars worth of these things were deliberately being destroyed in the Yukon. Frenchie's English was fantastic. He was a Belgian who had learned to speak English from living with two Swedes.

On the 11th more rain and snow above 3000 feet. The next day I took Bob and Erle to Whitehorse to take the coast boat to Vancouver and returned about 9:00 p.m. The day after, John, Jim and I took some nails and other odd things to Mrs. MacIntosh that I had bought for her in Whitehorse and purchased a little flour from her for ourselves. The day that followed was worse than ever the snow coming right down. This however, was succeeded by two clear days. We drove along the Mush Lake road to Alder Creek crossing and left two drums of gas I had brought from Whitehorse for Parlee whose party was camped there. Then we drove along the Haines Road to Mile 72 turning back just before the road starts to drop down to the Coast. Here in the wide open pass between the Coast Mountains on the northeast and the St. Elias Mountains on the southwest the view in all directions was splendid and the copper, purple and gold fall colours of rolling slopes of dwarf birch and willow which had not yet shed their leaves were magnificent. During the year before in the summer the spruce bud worm had spread into this area of British Columbia and Yukon and the spruce in the valleys were dead but the cold winters had stopped the worm spreading farther into the Yukon.

On September 16th, we traversed around Kathleen Lakes lining and poling the canoe up the short stream between the two lakes. On the northwest side of the lakes small flocks of sheep were grazing on one mountain and groups of goats on the other. The following day started with rain and ended in snow. I took Douglas and a load of equipment to Whitehorse getting back late. The day after more snow but it cleared in the afternoon. On the summit between Kathleen Lakes and Haines Junction there were now 4 or 5 inches of wet snow on the road.

On September 20th, we broke camp and went into Whitehorse. After storing everything in Whitehorse under Rex Jackson I caught the plane to Edmonton on the 22nd and arrived in Ottawa by C.N.R. on the 26th. John, Jim and Joe went down the Coast on the CPR boat leaving Skagway on the 24th.

## CHAPTER 7: THE SEASONS 1946 to 1949, THE McQUESTEN AREA

### Section I: 1946, McQuesten area south of Stewart River by packtrain

This summer instructions were to start the mapping of the McQuesten area. I planned to make a tour around the whole map area so as to get a general idea of the main geological features as we had in 1939 in the Mayo area. The party consisted of Ronald J. Arnott, chief assistant, Donald G. Crosby, H. Graham Gammell, Tom Patton, cook, and Albert J. Gammon, packer. Except Bert, none had been in the west before and not one of the assistants had any experience in geological field work. Bert had been recommended to me by a senior member of our staff who had had him as an assistant packer.

On June 5th I left Ottawa by C.N.R. for Edmonton and flew into Whitehorse arriving on the morning of the 9th, Sunday. The others flew in or came up the coast. Monday was the King's birthday so on these two days every place was closed. Indeed the old order had changed. I could get nothing done and the R.C.M.P. now controlling permission to go on the Alaska Highway and would not let me on it as the Inspector was not in Whitehorse. Later, however, Ed Kindle's cook arrived driving Ed's truck with Dr. W.E. Cockfield. Before I had arrived on the 9th, Bert, Tom and Ronnie had reached Whitehorse and had driven with Ed in his truck to Canyon on the Highway to find our horses that had been wintered near Champagne. In the fall 19 Survey horses had been turned out to fend for themselves and now (in the spring) only 9 could be found. This was shocking. It would have paid to have wintered them all at the Pelly Farm despite the cost of getting them there and back. As it was they had been given no winter care at all. Of these horses Bert, Tom and Ronnie were to bring 5 for me into Whitehorse. Ed who was starting the Dezadeash map area was to have the others. Cockfield was staying with John G. Fyles whose party was starting the revision of the Whitehorse map area.

By June 13th all my party was assembled in Whitehorse and boarded the steamboat Whitehorse with horses, equipment and freight after supper. I left all our return tickets for the outside in the W.P. & Y.R. safe in charge of Yorke Wilson now ticket agent and my suitcase in the Territorial Agent's Office with Bidlake, both old Yukon friends. With these friends I could get them any time.

The next morning it was good to talk with Bill Hayes at Carmacks and get the news there. After a leisurely trip down we arrived at Selkirk about 3:00 a.m. and had breakfast with Mr. and Mrs. J.J. Wood in the Hudson's Bay Post. That company had now bought out Schofield and Zimmerlee's store. In the meantime Ronnie and Bert stayed on the steamboat with the horses to be put off at the old abandoned Hosfall Ranch on the right limit of the main river about five miles below Selkirk with instructions to go across to the Pelly Farm as the Pelly River had cut away the old trail of former years under the lava cliffs that used to lead to the Farm. When Wilkinson arrived from the Farm with his boat, Owl, about 10:00 a.m. he told us they had reached the Farm just after breakfast.

With our equipment and supplies we were all at the Farm in the afternoon and camp was put up by supper time. Certainly the party was very inexperienced except Tom who was a good cook but older than I expected. They were, however, a congenial group. The following morning I bought four horses from Wilkinson and this gave us 9 horses for the packtrain. After three days Bert had managed, with Wilkinson doing most of it, to shoe the front feet of the horses.

On Wednesday June 19th Bert had the horses in after Breakfast. Not one of the old horses was in the packtrain now. We moved off at 1:30 p.m. making camp east of Volcano Mountain. The following day Bert succeeded in getting the horses in before breakfast and we were packed by 11:15 a.m. I stayed with the packtrain. The horses went better today but in one place Bert who was leading them and should have known better got five horses mired. Each of them had to be unpacked, helped out onto dry ground and repacked. The next day we traversed and gave the horses a rest. The day after that we moved to the foot of Coldspring Mountain and traversed. Bert had accomplished this simple move along a good trail all right.

The 23rd was Sunday and we took it. Then we traversed over Coldspring Mountain but the following day steady rain stopped us moving. Bert talked a lot about how he could always find his way around and how much he knew. On the 26th we moved over to the west side of White Mountains ridge. Bert of course had a copy of the topographical map and when shown the general locality to camp, said he saw how to get there but to make certain he would keep going in the right direction, I pointed out that when he was in the forested slopes and could not see out to keep the sun on his back. My traverse was to cross the ridge in a wide loop south of the packtrain. We were up on the south end of the ridge when Bert appeared with the packtrain heading south straight into the sun and blissfully ignorant that he was lost. I would not have been so disgusted if he had not talked so much. I told him what I thought of him and led the packtrain back north along the ridge and into a fair campsite in the edge of timber on the west side of Rough Top. My mind was made up then and there that I could not take the chance of crossing to the north side of the Stewart River with this party.

The following day we discovered the serpentine stock of Rough Top and saw 9 rams on it and farther north along the ridge 12 ewes with 10 lambs. This small isolated flock had increased from the 13 that George Fairclough had seen about 1933.

The next day we moved down into Rosebud Creek. I made Ronnie responsible for leading the packtrain and deciding on the campsite whose approximate position I marked on his map. By late afternoon it had clouded over and was drizzling with mist right down in the trees. We found the horse tracks winding through the thick timber and got into camp where Ronnie had chosen

a good place on the main head of Rosebud Creek. As usual I pitched my tent on a terrace where I had a good view up and down the valley.

The next day when Ronnie and I were coming back along Rosebud Creek valley we saw Don in the middle of the valley on a slight rise clothed by clumps of willow and pingo. He was trying to get across the valley which was very wet but for us he appeared to be playing hide and seek in and out of the willow clumps with a cow moose that had her ears back and was certainly on the offensive. Fortunately, though quite close together, they did not see each other and Don soon found a way across the boggy bottom otherwise the moose who must have had a young calf nearby would have attacked him with her front feet against which he would have had no defence. A nasty business. The day was terribly hot.

On July 1st we started back to the Farm and we moved to Grand Valley. Here the old roadhouse had been burnt out but a trapper's cabin, high cache and the outhouse still remained. The outlines of the large T-shaped roadhouse, the big stable and two or three cabins could be traced. Grand Valley was a well chosen name as here broad meadows extend far up and down the valley bottom covered with lush deep hay. A considerable acreage had evidently been cleared but now scattered willows were again taking their natural place. This had been the source of hay in the days of the original overland stage route to Dawson not only for this roadhouse but also for Hume's and Steven's roadhouses. On the south side of the meadows a low open terrace clothed with short grass and an abundance of flowers including larkspur and monkshood slopes up to the forest which begins abruptly at the foot of the hills. Here it rained heavily for two days.

On the 5th we moved along the road to Haines and Clarke's roadhouse. The road climbs slowly through walls of forest along the foot of the hills. The buildings were still standing but in disrepair. The two storey log roadhouse was about 60 feet long and 20 feet wide standing on the southwest or upper side of the road while opposite it was a large log stable about eight feet high inside and flat-roofed. The roof was of logs and sod, supported by posts and beginning to fall in. The stable had stalls for at least six teams. Two or more cabins were spread on each side of the roadhouse. The forest was close all around and the site received little sunlight. This was the best preserved, abandoned roadhouse establishment on the original road that we found these years.

The next day we moved to the Farm. It was Saturday and hoping to get Wilkinson to take me to Selkirk for mail and supplies I went ahead but when I reached there at 4:00 p.m. he had just left for Selkirk so though he brought our mail back we had to wait to get our supplies on Monday the 8th. While we were at Grand Valley the Farm received 4 inches of rain. Grand Valley being in the hills had probably had more.

Despite the risk of some repetition it seems suitable here to mention that normally seasons were planned in Ottawa as much as feasible including trips from one supply point to another, the general locations of camps, the probable number of days lost to rain and in some areas the routes of traverses. Inevitably these plans had to be adjusted as the season went along but usually the main features of the scheme were carried out. After the years with Bill Miller and Cy Smith all responsibility for equipment and supply purchases in the field, and in this there was more freedom than elsewhere in Canada, were mine. When Clarence Sherlock, Fred Bacon, Bill Duncan and Clarence Reinertson had been with me much of this work was lightened as far as their departments were concerned but most other years and particularly in 1946 every detail depended on me from the number of eggs to the sizes of horse shoe nails. Otherwise our purchases remained much the same every year until the end of 1949. At Selkirk the eggs for our first trip in June usually had been brought there by the last steamboat down the river the previous October and kept in the cellar under the store through the winter. 1939 we succeeded in obtaining wild meat more regularly than any other year but looking back as the years passed less and less game was shot as we were in poorer game country.

Now on account of the time Bert took to fix some of the saddlery we did not leave the Farm until July 10th when we moved to our old campsite above Bradens Canyon. It was another terribly hot day. The next day we reached the Willow Creek bridge on the winter road. It was terribly hot again and Ruby lay down three times and had to be repacked each time. In the morning the horses went back four miles but we finally got off and arrived at Last Glimpse camp at 5:00 p.m. That evening a wolf kept hanging around the horses but it did not seem to bother them. On the 15th we moved to Van Bibbers cabins on Woodburn Creek and two days later to a camp two miles southwest of Crystal Lake. On this day after traversing and reaching the proposed campsite the packtrain had to be hunted for and brought to it. It continued very hot and dry and there was a big fire somewhere between us and Mayo. Rain started in the night and continued the next day. The following day we moved to North Crooked Creek. The canyon of the creek below the trail crossing is cut into deeply weathered granite. On the 20th we headed for a campsite on the creek west of Ethel Creek and again the packtrain had to be found and brought to the campsite. This was on the rim of a canyon-like valley. Our next move took us into Ethel Creek valley and from there we crossed by the Ethel Lake Gap trail to 17 mile meadows, our old campsite. It may be wondered why I did not fire Bert but I knew of no one in the immediate area that would take his place and be any better.

On the 27th leaving Don and Tom in camp we followed the winter road to Mayo and camped opposite the town, the only suitable place but there was no horse feed. On the morning after the others took some supplies and the mail and returned to camp at 17 mile. I hired Bud Fisher's old car and drove off at 11:00 a.m., ate my lunch at the McQuesten bridge and reached Dublin Gulch at 5:30 p.m. I had supper with the Fred Taylors and slept in Jim Gibson's old cabin. Ed Barker and Bill Lunde were in Whitehorse. In the morning I left Dublin Gulch at 10:00, had lunch at the bridge and supper at the Elsa camp on Galena Hill with Mr. Fred Connell, Col. Cochrane and Mr. Anderson, all Directors of the United Keno Hill Limited and Mr. Buckles, the Manager. After supper I drove to Keno and spent the night with my old friends Corp and Ryan. The next day I visited Bill Smitheringale's property and walked up to Wernecke Camp where it was good to have lunch with Alec Berry and see Shorty De Pessimier again who was cooking there. Going back to Keno I called on Billy Sime, still the Territorial Assayer and after supper with Corp and Ryan was back in Mayo by 10:00 p.m. On the way I called in on three fine old timers, Ray Stewart of Miller Creek on Sixtymile, Alec Nicol and Jim Gibson, all at Minto Bridge.

July 31st was a half holiday but I was able to get the mail and supplies, the canoe out of storage and the motor that had come by freight from Ottawa. After supper everything was put in the canoe and I ran down the Stewart River to 17 mile. August 1st we sorted and repacked everything. The next day I took Ronnie and Don to traverse up the river and then worked down-river but could not get back to pick them up until the evening as the motor ran so badly and we did not reach camp until 8:30 p.m.

August 3rd Bert could not find the horse, Irish, though he hunted until 11:30 a.m. Irish was a black horse with a strain of Clyde in him. He had no back teeth on one side and as a consequence was always thin. However, he was a tough and useful horse giving little trouble when packed. I decided to move on without him as we had the canoe and could do no more work from 17 mile. About noon while we were packing the Keno arrived with mail and some other things for us. This was good as I was able to tell Capt. Alec Corquinn what our plans were. Pierre Marcel was with him with the Woodchuck, another small boat of the White Pass, to help the Keno with soundings and lines, as the river was extremely low. We were finally away about 12:30 p.m., the packtrain following the old winter road while I took one assistant with the canoe and a good load in it. The canoe reached the planned campsite in the slough on the left limit just below the first outcrop below the Devil's Elbow. There was a good grove of straight spruces on the river bank here and an old wood road extended up onto the terrace behind it to join the winter road. We went up and along the winter road, met the packtrain and brought them down. Camp was soon up and supper at 7:15. Then it started to rain. The next day Bert and one of the assistants returned to fetch Irish. They looked for him all day without success. We had seen the last of him but I heard next spring that he was seen at 17 mile meadows at times until mid-January when the wolves are believed to have got him. In camp we built a high (18 feet) cache and ladder. The next two days we spent traversing on the north side of the river, up and down stream. Both days were showery.

After putting our surplus supplies and equipment on the high cache we moved to the upper Crooked Creek bridge, where the present highway crosses. On the way we passed the junction of Mayo, Dawson and Whitehorse winter roads. At that time there were a large two storey log roadhouse and a large log garage. This was an important place in winter as the trucks met here and the mail for the three towns as well as the passengers were transferred here before going their separate ways. This was the case from about 1922 until the mail and passengers were carried by planes but the road was still used in winter for heavy freight until the present highway was built. In the night it started to rain and continued until late afternoon of the next day.

On the 9th the packtrain started along the road southward and the new campsite, carefully explained to all, was to be in the canyon-like valley of the main branch of Crooked Creek. Don and I traversed. When we reached the campsite camp was not there. We started back to find where the horses had left the road but it was cloudy and became pitch dark. We went up the nearest hill into some small spruces and made ourselves as comfortable as we could for the night. Luckily there was only a light shower. A fox hung around and barked at us for about half an hour. As soon as it was light we went to the road, found the horse tracks and followed them in, reaching camp soon after 8:00 a.m. The packtrain had gone about three miles too far up Crooked Creek getting to where they had camped about 9:00 p.m. After a day around this camp we moved to where we were supposed to be and hunted for outcrops in the large area of pitted terrace between the forks of Crooked Creek. It was on one of these traverses that the assistant with me suddenly said, "Doctor Bostock, are your teeth all your own?" "Yes! Of course." I answered. To which he remarked "Where I come from no one as old as you are has their own teeth". After this on the 14th we returned to the upper Crooked Creek bridge and the following day moved to the lower bridge where we spent one night and went onto camp on the river bank on the bend below the abandoned Crooked Creek airstrip of the White Pass. Ronnie and I walked back to the cache, put everything in the canoe and joined the others on the river bank at the new camp arriving 20 minutes after they did. There was a bear track under the cache but it had not tried to climb up. I think this was because the cache was so high it did not smell the food when under it. Only flying squirrels had tried to build a nest in the folds of the covering tarpaulin. The next day was taken as Sunday, the food needed repacking and several things needed repair. From this camp we traversed both sides of the river and then moved to the New Crossing. Here the only building on the south side was a large log garage with a stove and woodpile in it. Across the river Tony Besner was living with his two children in a nice cabin. The boy about 12 years old had shot a moose just before we arrived as his father was back a couple of miles along the road towards Dawson hauling wood for the steamboat. This reminds me of a curious story of the killing of a moose at a wood camp on the Stewart many years before.

Three men were working cutting wood on the river bank when they saw a moose swimming the river to their side. Two who had rifles started after it. The third man having no rifle stayed at their cabin to get supper ready. They had several dogs some of which were loose. After about an hour and a half the two hunters returned disgusted, having lost the moose tracks and never saw a sign of the animal. Great was their amazement on reaching the cabin to see the carcass of the moose butchered and hung up, safe from the dogs. A few minutes after they had left the man who had stayed behind was in the cabin and heard the dogs barking outside. On turning to go out of the door he found it blocked by the hind quarters of the moose backed into it. He had nothing in the cabin to tackle it with as the axes were all outside. After a little trouble he got out through a window and saw the loose dogs had the moose at bay in the cabin door. Without disturbing the moose he got an axe and after some manoeuvring with the dogs succeeded in breaking the moose's front legs with the axe. The moose was then down. The rest was comparatively simple.

Besner's cabin and vegetable garden were well kept and the children cheerful and healthy. We had them all over for lunch on Sunday the 25th and afterwards I amused them by painting a picture of a moose in oils out of my head. Henry Bell, a trapper from Clear Creek came down river in a small boat with his dogs. This was a poor place to camp with horses as the high terrace came right to the river bank on the southwest and all around the forest was thick so that the only place the horses could feed was along the road. On the 27th Bert took till 9:00 p.m. to bring them in although they were hobbled.

The next day the Keno came up and we stopped her. We loaded the canoe, motor, rock specimens and some unessential equipment on her and Don, who had not seen Mayo before, went up river with me while the others

moved back to our last camp. The Keno reached Mayo about 8:15 p.m. on the 29th. In the morning we put the canoe back in Joe Longtin's barn, packed the motor and equipment and sent them to Ottawa by freight, collected our mail and supplies and settled all accounts. When we retunred to the wharf the Keno and her barge were not yet unloaded. We were allowed to have our meals and live on the Keno during the time she was in Mayo which was quite a treat as the meals were good. Finally she left at noon on the 30th. On the way down we loaded wood for three hours at 26 mile landing, and then tied up for the night at 8:30 p.m. just below the mouth of the Crooked Creek. This caution was because the river was so low. The next morning we were put off at camp. During this time we had had eight scorching, dry, cloudless days in succession. When Don and I landed three of the best horses had not yet been seen for two days. The following morning all except Tom looked for the horses. I brought them in at noon but by the time the others were in it was too late to move.

Earlier in the season when standing on the river bank at Selkirk with some residents watching for the steamboat we saw a man floating down the main river in a row boat. The telegraph operator who generally knew of any travel on the river said, "Who can that be?". No one knew. Someone remarked "It's an old timer. He has his bow upstream". When he arrived he was indeed an old timer and well on in years. He told us that he was floating down the Yukon looking for the place where he had found a very rich pan of gold in 1898 and that it had worried him all these years that he had not stayed to mine there and become wealthy. He was certain that he would recognize the place again because there was a cottonwood tree on the bank above it with a magpie's nest in it. After some days around Selkirk he floated on down to Dawson and sometime later came up the Stewart River where he boarded the Keno for Mayo. When with Don and I on board the Keno landed at Mayo in the evening no one noticed the old man going off in the dark despite the steamboat's lights, but he must have slipped, falling into the river between the steamboat and the bank. Suddenly one of the crew called out "There's a man in the water here". I was on the deck above and looking down could see his body face down in the water. They fished him out and rushed him to the hospital where he recovered consciousness but he died a month or so later. Discoveries are more alluring with time.

The following day, September 1st we reached a good campsite on the creek that enters Lake Creek above its canyon from the east. This was a good campsite and situated on a low terrace of fine gravel with clumps of spruce on it and looking south over a meadow. The presence of large stones, often cracked and discoloured by burning, were evidence of its occupation in the past by Indians. I referred to it as Firestone Creek. The meadow was dotted with willow clumps and moose trails worn down like stock trails in the country around it suggested lots of moose but we did not see any. We managed two good days traversing here and then after crossing Lake Creek we climbed through the pass between Pirate and Tonsure mountains. From there our next move was to the upper end of the canyon of Pirate Creek at the north end of White Mountains. The following day we moved again over into Silt Creek and from here traversed for two days before going on down North Rosebud Creek to the mouth of Stevens Creek. The Wilkinsons had staked a placer lease below the mouth of Silt Creek. The gravels in this part of the valley were thin and lay on Pleistocene basalt. We did succeed in panning a colour but otherwise the prospects looked pretty lean. As the basalt ends a few miles down the creek and then the gravels appeared to be thicker, here was a placer where there might truly be gold on the "second bedrock" underneath the lava.

The place where we camped on the right limit of Rosebud Creek in an elaborate meander had evidently been an Indian camping ground. Among other signs there was the remains of a steambath, a dome-shaped lattice frame of willows to spread skins over in the centre of which was a hole with stones that had been heated around it.

Again two days were spent traversing before we moved on past Stevens Roadhouse along the original winter road camping on it about half way to Grand Valley. The roadhouse stable and some cabins were in ruins but one cabin had been kept useable. September 15th was spent traversing and then we followed the road which wound around and through the hills, passed Grand Valley to camp again at Haines and Clarke roadhouse. The road between Stevens and Grand Valley roadhouses being largely dug out of the hillsides was well drained, hardly grown over at all and in good shape. As soon as they approached Grand Valley the horses knew where they were heading and travelled well so that they reached Haines and Clarke about 2:00 p.m. Also their loads were now light. The ruts made by George Fairclough's wagon before 1932 were still well defined in the soft parts of the road. The following day we started for the Farm and I went ahead.

Approaching the Farm the old winter stage road followed the north bank of a little creek. A steep, bunch grass and rock slope rose on the left above it while on the other side of the road was the creek and then woods. As I walked along the road the babbling stream drowned the sound of my footfalls. Right at the side of the road, overhanging the creek a wispy, thin willow clump six feet high was growing. Immediately across the creek and a little downstream within five yards of the willow was a large rotten stump. As I reached the willow there were loud snorts. At that instant I saw two mature bears, a black and a brown that had been rooting in the stump. I froze beside the willow through which I could see clearly but which formed light camouflage for me. They leaped over the creek and climbed onto the road right in front of me. They dashed up the road past me almost brushing against me as they went by. This was my closest to bears.

The next morning on the 18th at Selkirk I collected the mail and some supplies and wired to the C.P.A. for a plane which they said would come at noon on September 20th. In the meantime the party cleaned the equipment and blankets and started packing things in the cabin. Everything was good and dry as we had had only one light shower since leaving the Stewart River and the first frost came on the 19th. On the 20th Wilkinson took us to Selkirk in good time but no plane came "due to mechanical trouble". We stayed in George Devore's cabin while in Selkirk. The next three days after "the mechanical trouble" the weather was bad and the ceiling too low. Finally, the plane arrived at 8:30 a.m. on the 24th and we got to Whitehorse safely. Those of us not going down on the Coast boat which was leaving a day or two later left Whitehorse that evening at 10:30 p.m. by plane for Edmonton and thence by C.N.R. for the east and Ottawa.

## Section II: 1947, McQuesten area north of Stewart River by packtrain

The first memory of 1947 is receiving a wire in Ottawa saying that the cook I thought I had for the summer could not come. There were only a few days before I was to leave for the Yukon and suitable cooks were hard to find. I saw Bob G. Blackadar, our neighbour's son in his late teens over the garden fence, and asked him if he had a job for the summer. He answered "No!" to which I said "If you can learn to make bread, hot cakes and desserts in four days and pay your way to Edmonton you've got one". "I think I can do that", he replied. So I had a cook. He chose, however, to go to Vancouver and be employed from there instead of Edmonton. By doing so he travelled up the Coast in the C.P.R. steamship with Bob L. Christie, one of my student assistants.

I travelled to Edmonton by train one arriving on June 7th and with Bill S. Shaw, my chief assistant, Leon L. Price and Donald Stewart, the other two assistants flew to Whitehorse arriving that evening. The two Bobs came in on the train the next morning and I found my two packers, Erle Watson from Bear Creek in the Peace River country and Lloyd Wotten. Wotten started telling me how to run a party and how to pack. I drove to Robinson with John R. Johnston who had been with me in former years. It was good to see John again. He was to take charge of the revision of the Whitehorse area for which a new base was available but was finding it hard to get acclimatized after several years in the hot climate of Trinidad.

In all there were 25 parties of one kind or another around Whitehorse including, geological, topographical, geodetic, army, boundary, and legal surveys all trying to get started for some part of the southern Yukon.

I visited A.C. Tuttle and Milne Floyd of our Topographical Survey that evening as well as Bill E. Emery, Mining Recorder and met a number of mining geologists friends including Dr. Duncan Derry.

The 9th was Monday and the King's Brithday again. With the assistants I went to see some of the Whitehorse copper mines and then walked over to John's camp. The next day I sent the assistants to see Miles Canyon and walked up to see Cy, now Major C.H. Smith in charge of the Army Survey Establishment camp near Whitehorse Rapid. All the survey parties visited had personnel problems. Lunch was with Bill Smitheringale at the Emery's. The following day was spent fussing around Whitehorse.

By the 12th all our arrangements were worked out for the summer including appointments and a timetable of my visits to various prospecting camps in September. Our new horses had arrived. Wotten quit and that was no disappointment. I hired Walter Smith an Indian of Whitehorse in his place.

We were all on board the Klondike and left at 11:00 p.m. reaching Selkirk on the morning of the 14th where J.J. Wood of the Hudson's Bay Company had our order all ready. The packers and new horses were put off as last year at the Hosfall Ranch to go over the Farm. Wilkinson arrived at 2:00 p.m. and took the rest of us, supplies, baggage, and freight, in the Owl in the evening up to the Farm. We were all at our campsite by the old cabin by 9:00 p.m. Camp was up by midnight and it was a joy to roll into bed in the twilight with the thrushes singing in the brush around my tent once more.

During the first week of February the temperatures had broken the records for lows all over the Yukon. Selkirk claimed -83°F below zero. The lid of the box containing the thermometer, however, had been open and this temperature was not acknowledge as official. Instead Snag where it had been only 81 below was given the honour of being the coldest place in North America. It was as much as one's life was worth to mention this in Selkirk. The chances are that Selkirk was the colder of the two as Snag is in a more open area and gets more air circulation. For this reason too I believe Selkirk is also the hottest place in Yukon.

These very low temperatures are accompanied by intense stillness in the valleys while on the hills a thousand or more feet higher there is some air circulation and it may be considerably warmer. During the cold snap Wilkinson said the horses at the Farm had stayed up in the timber on the range 800 to 1000 feet above the fields on the river flat. On the third day, however, when it was warmer they came down at noon, as was their habit to have some hay and drink but only stayed down about an hour before returning to the range again. The game too goes up to timberline in the colder weather.

Alec Coward told me he was on his trap line on Jane Creek when the cold snap settled down but as he was only about 12 miles from Selkirk and had told his wife he would be in that day he started home. After going a few miles he knew by the way his dogs were behaving it was too cold to travel. He pulled into a grove of spruce where there was lots of wood, unhitched his dogs, made a fire and put a little shelter. During the next two days he never had more than 20 minutes rest at a time because as soon as the fire began to die down he felt the cold. Being thoroughly experienced he had some food and dog feed with him. On the third day it felt distinctly warmer. He hitched up his dogs and travelled the remaining seven miles or so into Selkirk. When he reached there it was 69°F below zero.

On the 15th, Sunday, the equipment and instruments were sorted and distributed, and in the evening a call was paid on the Wilkinsons. The following day the packers shod two of the new horses on the front feet and brought in those that had wintered here. Our new stove had not arrived and on examination the old one did not look as though it would last us to the Stewart River. Wilkinson took me to Selkirk where I wired Mr. Barteau in Mayo to send a stove hoping he would get it on the Keno which would catch the Casca at Stewart River on her way up. Very kindly the Camerons invited me to lunch and the Wilkinsons had me to supper. Heavy rain had started and this continued through the 18th into the morning of the 19th. George, one of the new horses, had a bad split in his hind foot and had to be thrown to put a shoe on.

On the 20th my things were ready packed before breakfast. The packers were out fetching the horses. Wilkinson took me with the freight that was to be sent to Dawson, Mayo and Ottawa, over to Selkirk. I expected the Casca, to have brought our new stove, but no. We were back at the Farm soon after 11:00. Two horses were packed. Bob C. and Leon were helping pack. Bob C. had had at least two years as an assistant in the mountains and Leon came from a farm and had been an assistant in the mountains before too. Though much junior to Bill in their university standing they were so much more expereinced it was tragic. Bill ran about full of energy not knowing what to do and feeling he should lead instead of being led. I should have foreseen this and told him to stay by one of them and learn. We started off at 1:00 p.m. but the new horses strayed

off in all directions the moment they were untied we had continual trouble with them and their packs. As a result we were not clear of the Farm until 3:20 p.m. Then when we were past the end of the fenced road along the river bank the new horses would not follow but wandered off into the brush. Two dashed away through the aspens shedding parts of their loads as they banged into trees. Finally they were rounded up and repacked. Then when we turned north from the trail along the river and started up the east fork of Benot Creek Buster ran off along the river trail. Bob C. and Walter got him back after sometime. We were heading a little east of north to go through a saddle in the ridge along the north boundary of the Carmacks map sheet. Going over the gap into Crosby Creek on the way a good deal of cutting was necessary to make our way through the second growth. Then this creek was badly "glaziered". Ice had formed all along it in winter and it was still 6 to 8 feet thick and more than 30 feet wide. The stream ran between canyon-like walls and in tunnels in the ice. The party and horses were strung out and each horse in turn had to be led across where we had found a safe place. From here we kept our northerly course to the westerly head of Caribou Creek. It too was glaziered. Beyond this was a trapper's trail that led to a bridge over the more northerly head of Caribou Creek and then continued up the creek valley into the saddle in the main ridge over to Lake Creek which we hoped to reach. The trail had been cut along the side hill climbing at a steady grade. We had come some 12 miles and climbed 2000 feet at least. It was 10:00 p.m. Some of the horses had been packed for nearly 12 hours. All were tired but not one decent campsite with horse feed had we seen. We were getting along steadily on the trail which was about 30 feet up on the slope from the creek when Polly fell over into it. Getting her out, and repacking her wet load which was now much heavier took time. Then we moved on but Harry was missing. Finally I found Harry. He was a big bay but a fool. He had rolled from the trail down into the creek and was lying in a small pool on his back, his legs in the air and luckily his head on an old log or he would have drowned. My pack, fibre cases and all were in the water. He could not move as the pack prevented him from rolling over. We got the pack off, repacked him with his wet load, like Polly's much heavier now and led him back on to the trail. Soon after this we reached the saddle to Lake Creek. There was a meadow here and a trickle of water through it as well as trees on each side. We camped. The last horse reached the campsite at 12:30 a.m. and supper was finished at 3:00 a.m.

My eiderdown which had been under Harry had been well wrapped in a tarp as always but was a little wet in places and a few items in the fibre cases too were wet but the things that mattered were in paraffined bags and alright.

The next morning breakfast was at 10:00 a.m. and we stayed. Polly's pack and saddle blankets as well as Harry's all had to be dried. The horses had stayed in the meadow as was to be expected after such a day.

The following evening the packers picketted two saddle horses and had all the horses in first thing in the morning and some saddled before breakfast. We moved down to where Lake Creek flows east and followed it to where it turns north a mile or so from Grayling Lakes. The valley was wide but had only one campsite which was on the northwest angle and even this was about 200 yards from the creek. It was a small area of dry ground with aspens. About 150 yards away was a pond whose steep banks were of solid peat and four or more feet high. The pond contained water lilies and a great variety of water insects including huge green "inch worms" about 3 to 4 inches long and more than a quarter of an inch thick. They swam from one lily stem to another. There was no outlet. The water was brown and appeared to be at least six feet deep.

After a day's traversing and then a day of cold showers and cloud right down on the hills we moved to a miserable campsite on muskeg with frost less than a foot beneath, about three miles southwest of summit 4235. Bill and Bob C. got in about 8:30 p.m. The next day we headed for the west end of Willow Lake. The packers had the horses in at 10:30 a.m. and the move seemed simple. It was very hot. I reached the hill southwest of Willow Lake overlooking the campsite about 5:00 p.m. Not a sign of camp and not a sound. We had seen the horse tracks on our traverse not far back and the only thing to do was to go back and follow them. They led on a circuitous route far off course around the east end of Willow Lake and then back along the north side. We reached camp at 10:30 p.m. and found they had got in about an hour before. The cook tent was up. I was very foot sore from a new pair of boots. This was indeed a weary day to start a season with. On the map I walked 22 miles up hill and down dale. The next day the assistants traversed the hills to the northward.

On the day after that, the 28th, all started well, heading for the upper Crooked Creek bridge where we had camped last year but as we started down the wide slope toward Crooked Creek we entered a broad area of second growth spruce forest that became denser as we progressed. The traverses caught up here and we were all cutting trail for about an hour before we hit a trapper's line that led us to the winter road. There Buster stampeded as usual and needed repacking. We reached the campsite at 7:40 p.m. The next day all the horses were packed by 9:50 a.m. and following the old winter road we were at 26 mile Landing on Stewart River by 1:50 p.m. Here our expected order of supplies with the mail had been piled on the river bank and covered by a tarp. It had been there three days but nothing had touched it. There was a note from Capt. Alec G. Courquin of the Keno saying that he would be back on or about July 3rd to take us across the river. The 30th was a lovely day and Sunday for everyone. The next day the assistants traversed. I had found this trip from the Farm to the Stewart particularly trying.

On July 2nd Clem Synyard, the prospector who had discovered the Hecla vein on Galena Hill and was now a rich man, arrived from down river in a gas boat. He told me the river was so low the Keno could not possibly be here until after the 6th at the earliest. I wished Synyard was a more reliable man but I had to decide what course would lose the least time and made up my mind to raft across the river the next day as there were good dry trees here and this was a particularly good place to cross.

Accordingly the 3rd was spent on building a raft, swimming the horses and floating the men and equipment and all over in two trips. It was a lovely day and the river was indeed very low. Leaving some freight and mail on the south bank we were all across, had camp up and supper at 9:15 p.m. At 6:30 on the following morning, the 4th, the Keno arrived and after picking up the freight we had left at the landing came over to our camp as the wood piles were just above it and she was to load four cords of wood. She brought us our new stove as well as another lot of mail and some other

things. I was able to send off the map I had been working on to Ottawa, attention of Mr. Joannes, Chief to the Draughting Division as arranged. Courquin was quite annoyed I had listened to Synyard and not waited for him. I felt a little guilty about it as he knew the Stewart better than anyone and was a man of his word. To have waited would have saved us a lot of work and we would not have lost a day as it had turned out. Back from the river bank here there was an oxbow and as a result the mosquitoes were bad, the worst we had this year. Henry Bell, the prospector mentioned last summer was on the Keno and I found he had a boat at the New Crossing so that I was able to arrange with him to help the party cross the river there to the south bank at the end of August.

On July 5th we struck out northwesterly into Reverse Creek valley. Two traverses were run. The next day our move over the ridge into Moose Creek valley was short and went well except that Moose Creek proved deep and steep banked so that a bridge had to be built to get the horses across. The bank was lined, however, with big spruces and it was easy to find four close together that could be felled across the stream. When down the branches were cut off and the logs fastened together by rope so that the horses feet could not slip between them. As all the traversers caught up the pack-train while this was going on there were lots of hands to lift logs together. From the bridge after crossing a hundred yards or so of flat covered by scrub and stunted spruce we came up onto a low, well drained terrace where we found the Liberal Trail that was the original winter sleigh and wagon road between Clear Creek and Mayo. After the election of a Conservative member to the House of Commons, a new route via Bear Creek, the McQuesten Valley and thence up Vancouver and Thoroughfare creeks to upper Clear Creek was made. This was a more practical and in all a shorter route for the miners on Clear Creek.

The trail where we found it was still in good shape for a wagon though it had not been used for many years. We turned east along it and camped where the creek flat was meadowy. A little way back from camp stood a large log roadhouse, still standing in good shape except that the doors and windows had been removed. A day was taken to traverse both sides of the valley and then we moved eastward along the trail farther up Moose Creek. In the new camp it poured with rain for the best part of two days. On the first of these Walter had a head-ache and fever and it was not hard to see that he had a severe case of mumps. Fortunately Erle who shared the tent with him and all the rest of us had had mumps. I gave him aspirin and tried to drive into his head that he must drink lots of water. It now turned out that mumps had been rampant among the Indians at White-horse before we left. The second day his fever had gone but he complained of headaches. I gave him more aspirin and told him again to drink lots of water. On the 11th we moved to the west end of Minto Lake and traversed for a day. I hoped that with the rest Walter would soon be well but he continued to complain of his headache and now stomach pains. He said he had not had a bowel movement for five days and I found his idea of taking lots of water was to have two cups a day. It seemed to me constipation was his trouble but the stomach pains could be a lot of things. The following day we were to move to the road in Highet Creek valley at Bennett Creek from where at least Walter could be driven into Mayo if necessary but I still hoped he would get over the trouble without that. When morning came, however, his aches and pains were much worse. I could have given him a strong purgative but was afraid his trouble might be more than constipation. Only a narrow, rough, rocky trail led along the north shore of Minto Lake so Leon went ahead, brought Frank Gillespie's boat from the east end and rowed Walter down the lake. When I met them at the far end Walter was in such a state I determined to get him into Mayo to the doctor that night if I could. The party was to take Walter on horseback and camp at Bennett Creek while I walked straight on to Minto Bridge where I arrived at 3:30 p.m. Only Charlie Hodinott was living there. No vehicle came along until 7:15 p.m. when George Reynolds arrived in his old car. He drove me back to Bennett Creek and then took Walter in to the hospital with a letter to Dr. Maisonville telling him the course Walter's mumps had taken and that I thought his problem now was simply constipation. Also that as he was an Indian he came under some kind of Government medical insurance. As well as this George took a note to Bud Fisher asking him to come for me at Bennett Creek in the morning.

The next few days I planned to see what was going on on Galena and Keno Hills and to arrange for our future orders of supplies and for our mail. In the meantime the party was to traverse the area around Bennett Creek and then move to the north side of the South McQuesten Bridge at Haggart Creek. Fisher's truck would take some of the party, the equipment and the order of supplies so those with the horses could make the long move in one day.

Bud arrived about 11:00 a.m. and drove me into Mayo where he gave me his old car with high clearance that I had used in former years. My first call was on Dr. Maisonville and Walter at the hospital. Walter had reached there at 11:00 the evening before. The doctor had been on hand and examined him at once. He said my diagnosis was ocrrect but it was right under the circumstances to withhold the purgative. Walter had now been thoroughly cleaned out and looked like a new man. I called on Sam Wood, the Mining Recorder and the stores.

After an early supper I drove to the Elsa camp on Galena Hill where I found Mr. Fred Connell and Col. Cockeram on their summer tour of inspection. Brodie Hicks was manager now. In the evening I was invited to attend their gathering with all the prominent citizens, the local managers of Northern Commerical Company, the White Pass and Yukon Route, and others. The United Keno Hill Company had spent a million dollars on development and were obtaining good returns Fred Connell said.

The following morning I went into the Calumet Mine and then drove an injured miner down to the First Aid Post at the Elsa. After lunch I went through the Elsa mill and then had supper with the gang. After-wards I drove up to see Bermingham who was sacking his old tailings dump to ship now as ore. The price of silver had risen so. He said it would be his last summer there and I regret to say I never saw him again. I returned to the Elsa for the night. The day had been cloudless and very hot and a forest fire was raging up the North McQuesten River.

The next morning I drove over the Williams Creek road to Keno. Billy Sime and Ryan were the only old friends there. Corp was in Mayo. Back in Mayo by 4:00 p.m. Mr. Whitney lent me his cabin to sleep in. The day had again been scorching and it was followed by a third on July 17th when I left Mayo with Walter and drove to Haggart Creek. The move had gone well but camp was on the low ground amoung the big spruces beside the road. The area was covered by silt from

the river flooding in the spring. Had we not been moved by truck we could have used our old campsite on the other side of Haggart Creek. The horses had to be put across there anyway to feed. The evening was still and cool and it was good to be back in camp. As silence settled on the camp the owls woke up in the big spruces around camp and along the river and it was wonderful to drift into sleep with them hooting, some close, some across the river and some far away.

The next day was a holiday for all except Bob C. who drew the lot of watchman for the day. The rest of us drove up to Dublin Gulch. There was very little water for placer mining. Fred Taylor had John Olin, mentioned in 1937, Cliff Greg and "Irish" working for him. Harvey Ray was prospecting in the hills and Ed Barker was in Whitehorse. No one else was around. The road was rough but dry and I drove back to Mayo before supper and saw Sam Wood, the Mining Recorder and Corp. The following morning I finished the business, bills, and mail and was driven by Bud Fisher back to camp in the afternoon. The weather had continued very hot all this time and the atmosphere was very smoky.

July 20th again was very hot but some clouds showed in the west. The following morning we moved westward to Goodman Creek and through the pass from its upper part to Red Creek. A moose lick lies on the west side of the pass.

There was an old prospect shaft in Red Creek but I found no colours on the dump. We traversed north of here for a day and then moved down and across the North McQuesten River. After a night there we went up Ballard Creek to camp at its fork near the north border of the map. There was little room to camp in this valley which was v-shaped in cross section right down to the stream. Leon traversed by himself north up the valley to scout for possible distinct Paleozoic rocks but he found only a few outcrops and an old cabin with a piece of paper showing Powers had been there 1916 to 1919. I traversed along the ridge westward close to the north border of the map area. Visibility this day through the smoke was about six miles. The next day the smoke was thicker and the skyline was hardly visible at two miles or less. We moved to below the mouth of Sprague Creek to where we had camped in 1942. In the cabin just above the creek were some notes which recorded that Jack Alverstone had been there as well as, Powers 1916-18 and Black Hank Couchman 1934.

In the evening Walter came to me and said that if he had something to gaff the salmon with he was sure that he could get some. Lots of salmon could be seen coming up the shallow reaches of the North McQuesten. I gave him two 8 inch flat files from our reserve which he and Erle heated, bent into hooks and then lashed on handles about four feet long. Erle and Walter fetched two saddle horses and riding bareback went into the river with two assistants naked except for their boots. The riffle below camp was the selected place. The water was up the horses bellies, cold and swift so that the men alone could not stand in the deeper part against the current. Walter and Erle on their horses gaffed a salmon between the horses and then worked it into the shallows where the assistants wrestled it onto the low bank. It was pretty cold work for assistants but they had a fire to warm by between catches. In less than 10 minutes they had three salmon 6 to 10 pounders which proved to be in excellent condition though here they were so far from the sea. They said there were some much bigger slamon and hooked one but they could not handle it.

On the 27th a light drizzle started but the smoke and haze were very thick and we could do nothing. Jack Alverstone and Cecil Poli arrived in the evening and came to lunch the next day on which it again rained heavily and steadily. The packers and assistants caught some more salmon. They were such a delicious change from our usual fare. Everyone ate all they could. On the 29th the rain stopped and the air was now clear so we were able to traverse.

The following day more rain but the day after we traversed and moved up Sprague Creek. Again it rained heavily. On August 2nd we traversed the East Ridge. This is a sheep range and we saw tracks but no animals. The next day the move was northwest, over into Arizona Creek and down to Hobo Creek which we followed northward two miles before camping. We were now in the "lonely basin" of 1942. Though the valley was open and pretty it proved a hard place to find a really nice campsite. The creek meandered slightly in the middle part. The floor was about 150 yards wide between the steep valley sides and was clothed with small open areas of grass and weed amongst the dwarf birch 3 to 4 feet high which covered most of it and particularly the country to westward. The spruces were widely scattered up on the hillsides. They were short and thick stemmed, with stout spreading branches eloquent of age and very slow growths. I suspect there is frost in this basin every month of the year. Suitable sticks for the tents and wood had to be fetched from 200 to 300 feet up the west side of the valley. The view northeasterly up Hobo Creek over the open foreground clothed in dwarf birch was very pretty. A mile or so away a round, broad, timbered hill formed the north side of the Hobo Creek valley where the head of the stream flows westward. The peaks of the Ogilvie Mountains showed above it in the background. In this broad stretch of relatively open valley one expected to see a moose or grizzly appear at any moment and indeed well worn game trails from all directions, some from as far away as Ballard Creek that we had seen on our traverses converged into the valley. All headed for the big lick on the divide to the South Klondike River that Poli and his partners had told us of and is mentioned in 1942.

Bob C. was very keen to examine Arizona Creek and get some placer gold as I had told him of George Potter's tailing dump there (1942). He had not seen it the day before as his traverse had been over the hills. On August 4th he went there, while the others traversed and Erle, Walter and I rode over to the lick with a pack horse to get a moose and also because Poli and the others had given such an exaggerated impression of the salt there I thought there might be an outcrop of salt beds or fossiliferous Paleozoic rocks at least.

The three partners, Potter, Alverstone and Poli in the three or more years they had been in this area had gone there frequently to get meat. The lick is in the timber on the broad, low ridge on the east side of the pass from Hobo Creek to the main South Klondike River valley. They had built a cabin with a clear view southward down Hobo Creek. It stood on the edge of the terrace-like front of the broad ridge. The lick lies about half a mile north of the cabin. We tied up the horses in the trees behind the cabin and sneaked up to the lick sitting among the trees on the border. Within five minutes a moose came into the lick and I shot it. While the others cut it up I went around the lick. It is an open space in the forest about 100 yards in diameter and composed of light coloured silty mud with a white crust of some salt or alkali where it is dry. Patches of clumps of grass are scattered in it and it has a

gentle slope northerly with open glades extending into the forest on the lower side. Near the south edge is the mound perhaps 6 or 8 feet high in which the shooting dugout had been made that is referred to in 1942. This was a small trench about 4 x 6 feet in area and deep enough to crawl into under a pole and dirt roof. On the north side an opening commanded a view of most of the lick. At this time it had fallen in.

One of the partners said that once when he was there preparing to shoot one of two moose that had arrived, a grizzly ran out of the forest and chased the moose onto the mound. Here they turned to bay but the grizzly was not prepared to tackle them together in their position of advantage on the mound and went off. So did the moose and the man came away empty handed. Among the trees around the lick, particularly on the north side were numerous signs that wolves and grizzlies often lay in wait there. There were also some caribou track in the lick. A dozen or more old heads of bull moose lay around, including one whopping big one with a spread measuring 65 inches but as it was dried, cracked and partly chewed by rodents it was impossible to say how big it had originally been. In the border of the forest around were many Indian stumps as well as several old shooting screens on the west side. Here too there was a shooting scaffold built in the trees. An oddity lying among the trees was a single wagon wheel. The trails coming from many miles entered the lick from all directions but there was no outcrop or any notable concentrated source of the salt though the southern or upper part was the most used.

The next move was directly west over a broad, ridge covered with dwarf birch into a creek we called Lost Horses Creek. Traversing on the following day the first encounter with the spectacular, coarse, porphyritic syenite that forms the ragged peaks of the Syenite Range was made. This rock is a syenite composed of large, tabular, pinkish feldspar crystals crowded together with a minimum of groundmass.

On August 7th we travelled down the creek and up the Little South Klondike River to the mouth of Josephine Creek but the packers could not find four of our best horses. Erle and Don stayed behind to hunt and bring them on while Walter and the rest of us went along with the main part of the packtrain.

At the mouth of Lost Horses Creek was an unusual "cabin". It was built in the form of steep sided wedge with rounded ends and an entrance in one end. The structure was made of two layers of steeply leaning poles with a thick layer of sphagnum moss between them. Inside was a bed, table and stove made from a gasoline can. Its whole construction involved a minimum of labour yet it must have been snug and warm.

Shortly before reaching Josephine Creek there is a small bluff on the south side of the river. To avoid taking the horses up around the bluff Walter lead them across the river to a gravel strand on the north side, along it about 50 yards and then across back onto the south side east of the bluff. The stream was about two feet deep where it was flowing swiftly over the gravel bottom but under the bluff was a deep pool. After looking at some outcrops I was catching up to the packtrain and arrived at the bluff just in time to see Harry, with all my stuff on him trying to take a short cut below the upper crossing, swept into the deep water where only his rump, the top of the pack and his head showed above the surface. All the other horses were going cautiously and safely across up stream. It was typical of that fool Harry. We got him out, straightened the pack which must have weighed an extra 100 pounds now and led him about 300 yards farther on to the campsite just south of the cabin. Not much in the fibre cases was wet. Rain had started about noon and we pitched camp in a steady downpour. Erle and Donald arrived with the lost horses and the things left behind about two hours later.

The next day was sunny and was spent on drying, washing, the map and traverses. The cabin at Josephine Creek had been used by Poli and partners. It had dog stables and cache beside it. Scattered around were many sheep skulls including one in the case with more than 12 annual growth rings on the horns. It was the finest Yukon ram head I have ever seen. Unfortunately it was largely spoiled by mold. A shaft with a windlass had been sunk about 100 yards up the creek where Poli said they had found colours but I did not get any in the top of the dump.

On the 9th we moved on up the river, past the mouth of Hobo Creek to about 4 miles south of that creek mouth. Locally the river from Hobo Creek upstream was referred to as Big Creek. Along the north side of the river from Lost Horses Creek nearly to Hobo Creek the valley side rises abruptly forming a good sunny winter sheep range. On the east of the bend southward of the valley up Big Creek limy bluffs form a westward spur of the East Ridge and sheep tracks were plentiful. Evidently the sheep have a lick there.

From this camp we traversed over a large area east and west and then moved to a very nice but rather crowded campsite at an elevation of 3950 feet in the very head of Boulder Creek. On the move we saw three sheep and two moose. This camp was most suitably situated. From it we could traverse the summits on the sides of Boulder and Sunshine creeks across the strike of the strata until we were looking almost directly down into the McQuesten Valley without having much of a climb either going out or coming back.

About three miles from the south end of the East Ridge and almost overlooking the deep McQuesten valley is a summit 5882 feet a.s.l. From here the view in all directions is amazing for so unconspicuous a top. Standing on this eminence and looking northwesterly one sees a broad, open hollow in the upland sloping gently away to the main South Klondike River valley beyond which rises the front of the Ogilvie Mountains. In the foreground the tributaries of Fortymile Creek run in northerly directions at their heads as though to join a main stream in this hollow but instead they drop steeply into the Fortymile's deeply cut valley reversing their direction as it flows southward to the McQuesten River. Indeed the drainage of this hollow exhibits a multitude of anomalies including numerous stream captures, windgaps and similar phenomena some on a grand scale, all telling of the capture of the streams of the ancient upland surface. Not only is there this capture of the former head of Big Creek by the Fortymile to the McQuesten River system in the foreground but beyond Big and Hobo creeks are together stolen from their earlier course through the pass mentioned on the west of the moose lick to the main South Klondike River by the Little South Klondike River which has eaten through the West Ridge cutting it off from the Syenite Range. Looking now in the opposite direction one views another wide hollow sloping southeastward across the McQuesten valley to the Stewart River valley while away to the left or east the heads of Johnson and Seattle creeks flow northeastward as though to join some master stream draining in that general direction. Furthermore, the narrowest part of McQuesten valley lies on the left almost at one's feet between Fortymile

and Boulder creeks and widens in the distance upstream. But the fascinating features of erosion all around are beyond the scope of this paper. It must suffice to point out here that the history of the development of the present landscape waits to be read. It lies unsullied by the scouring and masking deposits of the later advances of the Pleistocene glaciations. As yet we can only wonder what story will be unfolded of the parts played by warping and tilting of the land in the Teritary and later by the advances and retreats of the earlier ice sheets.

From here in the heart of the McQuesten area I could see much of the Carmacks area to the south, the Ogilvie area on the west and the Mayo area on the east, embracing close to 17,300 square miles. Their study had been my interest during the last 15 years. This point though not conspicuous is indeed a remarkable lookout.

The traverse along this ridge was particularly fruitful and enjoyable not only because we were working across the strike of the formations with fairly frequent exposures of the rock and had wonderful views of everything about us but also because we found numerous old cuts and trenches on small veins carrying galena made by Wernecke's ubiquitous prospectors in the twenties and also a small vein carrying galena in one place and a skarn in another place carrying zincblende neither which showed any sign of being discovered before. The assays of the galena from all these disappointingly showed a low silver to lead ratio.

We traversed again on the 13th and then moved right around the divide between Fortymile and Big creeks and down into the west head of Fortymile to camp at 4100 feet. The southerly facing side of the T-shaped fork of Fortymile Creek is steep with cliffs and short grassy slopes forming an excellent snow shadow for a winter sheep range and was quite evidently used as such.

After a day's traversing to north and south of camp on the West Ridge we had one of steady rain and then moved over into Clear Creek. I traversed along the spur between the two forks of Clear Creek and came down at the mouth of Barney Pup where the company still had their camp partly lighted by the pelton wheel run on the water of the Pup.

Here I had supper with Mr. R.T. Troberg, the manager of the camp, and old Gauvin of whom more next year. After supper Troberg kindly drove me down to the fork of Clear Creek with our load of supplies that had been shipped from Mayo and landed from the Stewart River at the McQuesten airstrip. From there he had brought it to the dredge camp for us for nothing. At the fork I found Erle and Walter waiting with some of the horses as arranged and we went a mile or so up the east fork to camp. The following day the packers fetched the rest of the supplies, the assistants had a day to see the dredge and placer workings while I replanned the rest of the summer's work.

The next day, August the 19th, I went up to the dredge which was then opposite Bell Pup that heads in the lowest saddle to the Little South Klondike River valley. It had been built a little below Barney Pup in 1942 and worked its way up stream. When it was a little above the Pup Mr. Ernest Patty, then the general manager of the company wrote to me that the dredge was digging some hundreds of pounds or more of cassiterite per shift in fact it was clogging the sluice boxes on the boat and he asked me if I could put him in touch with the Metals Controller in Ottawa which I did but had heard no more about it. Apparently the tin was in quite a local patch in the creek bottom. The plan was now, in 1947, to continue upstream for four miles and then move the dredge down on rollers in winter to a large area of ground below the forks that had been stripped of brush and muck in 1941 and 1942. This was never done. The dredge continued upstream until it was abandoned some years later.

The barometer had been dropping and the following day it rained steadily and snow showed on the West Ridge the next morning. Two of us went down the main creek valley over the stripped area to where the old roadhouse stood. The buildings were still up but lacking windows and doors. The old road up the creek passed the front or north side. The low, wide terrace slopes gently northward down to the creek. A short distance east of the roadhouse was a small gully or old placer cut in the terrace in which there was a large overshot wooden water wheel and nearby a fantastic three inch wooden hydraulic monitor about three feet long fitted onto another piece of wooden pipe by a wooden ball and socket joint. The two pieces were beautifully carved from carefully chosen spruce stumps so that the grain fitted the curves of the two pieces perfectly. What a hunt some one must have made in the forest for the two crooked spruce trees that supplied these two pieces of wood and what labour and time must have been consumed in carving them, hollowing them out and then fitting the socket of the monitor over the hollow ball on to supply the pipe. No doubt it served to while away long winter evenings for some one in the 1910s or early 1920s. A few years after 1948 a fire swept away the roadhouse and probably this museum piece was burnt too.

On the steep hillside on the right limit of the left or north fork of Clear Creek a little below and opposite Barney Pup, two long ditches, one above the other and converging gradually upstream could be seen. The origin of the two ditches is that one of the early placer miners who held a claim near the fork that could best be worked by a hydraulic monitor dug these ditches by himself. Starting at the upper end where the intake from the creek was to be he cleared the trees and dug by hand along what he thought was the right grade. When half a mile or so was completed the grade of the ditch was quite apparent from across the valley and his friends pointed out to him that his ditch grade was upward not down. He insisted that it was right and doggedly dug on for three whole summers. The ditch finally somewhere about a mile and a half long was completed and the water turned in but as his friends had said it would not flow along it. He began all over again digging the lower one on the grade he should have started on at first. For two years he worked at his lower ditch only to die before it was finished. That is why the lower ditch is shorter and ends nowhere.

On the 22nd we took the trail from the fork of Clear Creek southward over the ridge into Partridge Creek. This trail was well worn and goes down to the bottom of the creek at the fork where we pitched camp. Here, below a granite outcrop, is a little pool about 12 or 15 feet across with water rising into it and a trickle flowing out. The water has a temperature of 76.1°F, tastes of $H_2S$ and is hard, depositing a little calcareous tufa around the edge of the pool. Well worn moose trails converge on it and on the beginning of the hill above the outcrop are the ruins of a cabin that commanded the view around the spring. That evening while putting up camp Don chopped his foot but not badly. Traversing that day I first saw the gravels that cover the lower parts of the hills around Partridge Creek and to the westward.

We traversed for a day and then moved on down Partridge Creek where the trail was overgrown with alders. Don rode one of the horses. As the creek enters the Tintina Trench its course becomes lost in a swamp of alder and spruce. Traversing alone I kept on the line of the creek valley and climbing over a low hill came out onto an open bunch grass slope where the creek course below it winds among big trees in a deep, narrow bed floored and walled by large thick second growth and deadfall till the rim of the high cutbank overlooking the lower part of McQuesten River was reached. The packtrain had to be to the northeast, upstream and after following the game trail along the rim of the high terrace bank they were soon seen finding their way down to the river. We camped at the old 10 mile logging camp. Here on the left limit was a large low cabin or probably stable whose flat roof had fallen in. 150 yards upstream were two large well built cabins in good shape. The calendars on the walls dated from 1937 back to some years earlier. The locality was surrounded by a forest of fine big spruce trees.

The next day we moved to the bend of the Stewart River below the New Crossing. The morning of the 26th was spent in sorting and packing. Before noon with my personal things and one of the packers I rode along the old road which was very wet in places to Tony Besner's cabin at the Crossing to wait for the Neecheah, a large shallow draft, gas driven, tunnel boat of the White Pass, that was used when the river was too low for the Keno. She arrived after 7:45 p.m. with a small barge and brought the final grub order and mail for the party from Mayo. The grup was piled on the bank and covered with a tarp. Here the packers were to pick it up the next morning. I had laid out the general route the party was to follow back to the Pelly Farm and the work they were to do leaving Bill Shaw in charge.

Going on board the Neecheah I asked the captain and pilot, Bill Goodlad to take me down river. He said he hoped to meet the Keno at Eagle Rock which is on the right limit just above Pique Creek but did not know whether he would be too late. At this Besner who was present said I could take his spare row boat that was tied up at Eagle Rock. This was a great relief as the last thing I wanted was to find myself alone stranded at Eagle Rock not knowing when a boat would come along. Below Eagle Rock the river channel was better defined and the Keno was still able to navigate.

We were soon off and going around the big meander below the Crossing tied up at 8:30 p.m. until the light would be better in the morning. The only available bunk for me was in the stuffy cabin with the deck hands so I laid my bedroll on the deck below the pilot house. It was a mild, rather humid night. About 3:30 a.m. Besner's dogs that were about a mile away across the bend began to howl. I thought "That's a bear at our grub pile". A little later there was a shot but the dogs kept on howling. At 4:30 a.m. it began to rain. I rolled up my bedding and joined Goodlad in the pilot house as we were just starting off. We reached Eagle Rock about 7:00 o'clock and the crew started loading the piles of freight left on the island by the Keno and Loon a little below the Rock. This freight was uncovered. It included a large part of Mayo's winter food supply. Among it was a stack of cornflake cartons and all soaked by the rain.

After lunch on the Neecheah, I put my things in Besner's boat and started to drift down river at 1:30 p.m. The weather had cleared and it was a lovely afternoon as I drifted on in the silence. The river was now a series of slow reaches interrupted by gravelly riffles and shoals. One had to keep facing downstream and rowing upstream to avoid the shallow bars. At the wood camp above Lake Creek there was smoke coming from the cabin but I did not stop as I did not know who was there and I was getting anxious whether I could reach Stewart tomorrow night. When I was about a hundred yards past it I looked back and saw Mary Burien standing on the bank holding their baby, watching me drift away and wondering no doubt who it was who could go past without calling in. I was ashamed of myself for not stopping especially as I had known her since 1932 when she was a waitress at her father's restaurant at Mayo and where she always gave good and gracious service. I knew how much it would have meant to have called in for a few minutes.

Camp was made for the night at 7:30 at the lower end of the largest of the three islands where the big meander on the right limit has been cut off by a channel on the opposite side. I had come 21 miles or more in 6 hours drifting.

The next morning I was on my way at 8:00 as I knew this part of the river better and its channel was more defined I rowed, with the bow down stream. About 8:30 p.m. I stopped at our old campsite of 1937, opposite Tenderfoot Creek. Here Randell and his wife were camped with a dredge moored on the bar. We had tea and he showed me over his dredge. This was made like a miniature of a Klondike dredge from bucket line to spud. He had built it himself with all sorts of scraps of machinery picked up around Dawson. The bucket line was made of several old caterpillar tractor tracks fastened together. Each tread had a small bucket of his design with a manganese steel lip welded onto it. As the gravel was not coarse these small buckets could handle it. The trommel had 1/4 inch diameter holes. The heavy minerals including the gold were washed through the holes in the trommel and fell into small sluice boxes that carried them to tables which had a grade of 1 3/4 inches to the foot. Power was supplied by three old car engines. These worked the bucket line, trommel, pumps and ladder. Randell said the steep slope and a large quantity of water seemed necessary to recover the gold which was all very fine. Quantities of black sand were also picked up and continually choking the riffles. When all the machinery was running the dredge he judged dug as much as 24 men.

As I approached Stewart the sky had clouded over and the darkness was intense. Only the surface of the water in the centre of the river showed any reflection of the dark grey sky. Beyond, on either hand was blackness to the tops of the hills except where the boat approached a bank and the tops of tall trees were dimly silhouetted against the sky. The moment one entered the main river the current was swift. It was vital to land on the short stretch of low gravelly bank where a group of poplars grew at the head of Stewart Island. If this was missed I would be swept along the overhanging bank about 8 feet high where the steamboats docked. It was almost certain that one or possibly two barges abreast with their broad overhanging prows would be tied up here and there would be no chance of avoiding being swept under them. I cautiously approached the bank on the right limit the moment I was in the main river. My only chance was to spot the tops of the poplars and pull for them. I made it.

On landing I found I had missed the Keno at Eagle Rock by an hour and then I had missed the Klondike here on her way to Dawson by two hours. The Bamfords had sold their store and house to the Hudson's Bay Company

some years before and gone outside. None of my old friends were around. I spread my bedroll out under the trees at the head of the island and slept there.

In the morning, Friday, the 29th, after arranging with the Keno to take Besner's boat back up river for him, I met Bill (W.A.) O'Neill, Ernest Patty's right hand man for Clear Creek Placer Corporation which had a new dredge on the east fork of Henderson Creek and a camp starting on Thistle Creek. He drove me up Henderson to their operation. We went over the ground, the thawing plant, stripped areas and the dredge that had begun digging on the 24th of August. The plan was to work upstream to a mile above Dome Pup and then turn the dredge around and dig down to the creek fork. This season the surface muck had to be bulldozed off the gravels as there was insufficient water for monitors. The dredge drew 4½ feet of water, was of Frisco design with 64- 4½ cubic boot buckets and could dig 15 feet below the surface of the pond. Walter Johnson was dredge master.

We slept at the dredge camp and got back to Stewart for lunch. I phoned Kipper Taylor, known as Red in the Yukon, (see 1928) who was in charge of the Yankee Girl placer operation on Ballarat Creek to let him know I was coming up on the Klondike tomorrow afternoon. She arrived at 5:30 a.m. on Sunday, August 31st, and after picking up freight and mail she was off. We passed Kirkman Creek at 5:00 p.m., making very poor time on the low water and did not reach Ballarat until 9:30 p.m. Kipper was waiting and I was delighted to see him again after 19 years.

The next morning we drove in a jeep 8 miles up the creek to the camp and workings. Mining had not started and most of the operation consisted in clearing the pay channel. Two tractor salesmen, one for Caterpillar and one for International were there and wished to go down river that afternoon and so did I. We had lunch at the camp with Kipper and he then drove us to the river where we started drifting down in his spare row boat. Both men had rifles and were very keen to shoot a bear, so I suggested they sit on the broad seat in the stern while I rowed. It was a lovely calm sunny and peaceful afternoon with the sun low in the sky. We stopped at Kirkman Creek for half an hour to see Jack and Hazel Meloy. As usual their large flower and vegetable garden was a prize display. Kirkman, on the broad alluvial creek fan on the north side of the river gets all the possible sun and is sheltered from winds by the high hills on each side and behind it. This always seemed to me the choice place for a home on the main river.

Soon after leaving Kirkman I saw a bear ahead on the right limit at the edge of the water. The channel and current were going to take us close by it. None of us were talking and there was that intense stillness and silence of the Yukon that made the afternoon delightful. The two salesmen scanned the country on every side but in the right direction. The bear continued digging around as we drifted closer. It looked like a last year's cub and had a lovely black glossy coat. The more I saw of it the more I enjoyed the little touch of real wilderness that it supplied to the scene. I decided that if the others did not spot it on their own they were not going to shoot it. So when we were less than 50 yards from it I said in a low hushed voice that I knew would carry over the water, "There's a bear" and pointed it out. Though the rifles swung around and they shot at it, it was off in a flash and disappeared safely in some brush.

We reached the landing just below the mouth of Thistle Creek about 6:00 p.m. and found Bud (H.S.) Holbrook, son of Ed Holbrook of Sixtymile (1932) waiting there. He was expecting Bill O'Neill who soon arrived in his boat and we drove up a good truck road to the new placer camp opposite Blueberry Creek. An airstrip 2000 feet long had been built 8 miles from the river near Manley's old placer workings.

Over an area the muck had been stripped with monitors down to the gravel and digging had recently been started with a drag line shovel that dumped into a washing plant carrying sluices and jigs. The muck varied in thickness from a few feet to about 10 and contained lenses of gravel up in it. The gravel on bedrock was about 4 feet thick and estimated to carry $3.00 per cubic yard.

As in the Klondike the spruce forest and brush were cleared and then allowed to thaw for several inches and then washed off down to the frozen surface when the process was repeated. In one place the frozen surface was that of an old forest. Here stumps of white birch stumps a foot or so high above their roots and as much as a foot or more thick of some past age were exposed. The frozen surface of moss and leaves around the trees still clearly showed squirrel trails running from tree to tree and rabbit droppings scattered around. What change of climate had extinguished this birch forest, bringing in the muck and spruce above it and when?

Holbrook was a born story teller and had a keen sense of humour. He regaled us with accounts over the merits of the two types of bulldozers the salesmen were trying to sell him. At one point he turned to the Caterpillar salesman and said his tractors were no good to him as they could not be used as submarines like the Internationals. "Why", he said "the other day on Henderson when we were trying to float the dredge and get it started, the wall of the pond was too low and I told the kid who was running our International cat to build up the dam but to be careful not to let the bulldozer slide down the steep side of the dam into the pond. Well he knew all about it and I went on to the dredge and up to the winch room. When I looked out all I could see of the cat were the carburetor and exhaust pipes just sticking above the water with the shoulders and head of the kid with his dam fag still in his mouth showing in the pond. Before I could say anything that damn kid walks the cat right up out of the water. The motor had never stopped running and the kid had kept his hands on the levers. You couldn't do that with one of your cats with their low carburetors and exhausts.".

We left camp after lunch the next day and Holbrook drove us to the river to catch the Casca to Dawson. On the September 4th I was given a lift on a truck to the drdge camp on Sixtymile and one of the McCormick Transportation trucks brought me back the next day. Calls were then made on McFarland of the Y.C.G.C. and the Judge Gibben and I spent Sunday with the Jeckells. After gathering more mining news of the district on Monday I took the plane to Whitehorse in the afternoon and called on Bill Emery, the Mining Recorder there.

The next afternoon, the 10th, I flew in George Simmons, Northern Airways Avro Anson to land on an airstrip in Victoria Creek valley west of Carmacks. Here we were met by a halftrack which took us over a muskeg road and up the Brown-McDate mining camp at 4000 feet. Jack Hough, the geologist was in charge and gave generously of his time to take me through the workings in the evening.

The following morning I walked over to meet Spud (H.H.) Huetis on his lode gold prospect, (later famous for the Bethlehem Copper Mine in B.C.). He had found it by methodically panning the soil in the slopes below where traces of gold led him up to the vein. From here I walked over to Nansen Creek and up it into Discovery Pup and found McNee prospecting there. Farther up the gulch was Oliff King at his cabin with Fritz Guder. Near the head of the gulch on the upland we looked at a placer cut which exposed 10 to 15 feet of boulders, gravel and soil, all deeply weathered. Here on the upland surface of the plateau it looked like a till. Guder and King told me of a number of other prospectors working far and wide in the surrounding country. They had all been attracted by the discovery of the Brown-McDade vein. My route back to the camp was down to upper part of Back Creek and it was a revelation to me to see how continuously its course had been mined in the earlier days as I had not traversed down it in 1933.

At dawn there was snow at camp. Milne of the Whitehorse Flying School arrived about noon and we were back in Whitehorse by 2:45 p.m. From Whitehorse I reached Teslin at 4:00 p.m. and was met by George F. Jones of Western Ranges Prospectors. We drove to the Simpsons comfortable roadhouse at Rancheria. This was run by Mr. and Mrs. W.H. (Bud) Simpson. Mrs. Simpson (Doris) coming from the pioneer Callison family of the Cassiar was well known throughout northern British Columbia. I reminded her that she had been chaperoned to school at Vancouver by Dr. G. Hanson in the fall of 1935 and that the Yukon parties had gone down the Coast on the same boat. At the roadhouse were photos showing a number of oil tank trucks that had taken refuge at the Rancheria during the "big cold" in February. They showed the hoods thickly covered with blankets rugs and canvas and columns of steam were rising. The motors had been kept running day and night lest they should freeze up.

On the September 13th Jones took me around a number of silver-lead prospects his company had been examining on the south side of the river and we returned to the roadhouse for supper and the night. The next morning the bus took me back to Whitehorse where I saw T.C. Richards, Bill (A.R.) Hayes and Walter McAllister all of whom were interested in prospecting in different areas.

September the 15th was Monday and it took me until after midnight to get things squared away. The next morning reaching Edmonton by plane I was glad to run into Mike Feniak and Oscar Erdmann, both of whom were with the Geological Survey at that time. The following day I took the C.N.R. train to Vancouver where a visit was paid to Cockfield at the office on the 18th and after several other calls I caught the C.P.R. to stay at Monte Creek for three days, returning to Vancouver the same way on the night of the 21st. That evening I got on the C.N.R. train for the east and arrived in Ottawa on September 26th.

After I had left, the party had moved to the New Crossing on August 28th and crossed the river the next day. Their trip back to Pelly Farm was uneventful. They arrived there on September 12th, packed and listed the equipment in the old cabin as usual and turned the horses over to the Wilkinsons to winter. They left Selkirk by steamboat on Tuesday the 16th arriving on the 22nd in Whitehorse whence they took their various ways homeward. Bob Christie's and Leon Price's notes told me what was done on this trip. It had been very fortunate to have them on the party as they were both well trained and experienced.

## Section III: 1948, McQuesten area north of Stewart River by packtrain

On February 24th I made reservations on the C.P.R. boat sailing from Vancouver on June 2nd and was almost too late to get berths for those of the party going north by that route. The party was to consist of R. (Dick) B. Campbell, chief assistant, Aaro E. Aho, Stanley A. Kanik, W. Harry Rimmer, all assistants, Bob Blackadar, cook again, and Drew M. Wookey and Paul M. Kavanagh packers. Dick and Aara were two thoroughly experienced and most capable assistants. In addition Jack D. Campbell, a biological student employed by the National Museum was attached to the party as a guest.

Leaving Ottawa Wednesday June 2nd by train to Edmonton I flew to Whitehorse on Saturday night at 11:45 and arrived there at 6:00 Sunday morning. I saw Tuttle and started off to see John O. Wheeler who now was to do the geology of the Whitehorse map area as both John Johnston and John Fyles had had to give it up on account of health. Instead I met Dr. Archie M. Bell of the Noranda interests and ended by spending most of the day at his camp. They were studying the Whitehorse copper belt. Monday, June 7th was a legal holiday. I fussed around and got nothing done. The packers went to help Tuttle and Sergeant Coldham, R.C.E., of the Army Survey Establishment with men from their parties collect their horses that were to go to Mayo. Coldham was the son of Sgt. Major Coldham who had been one of my instructors at R.M.C. in 1918-1919.

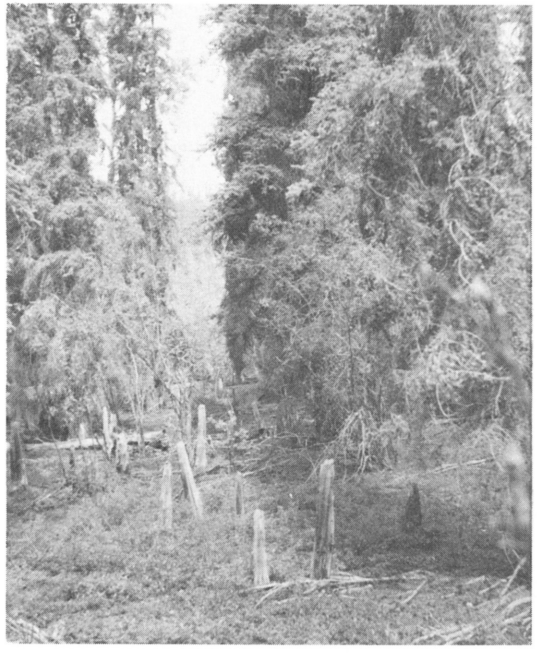
I had supper with Ed Barker where he had set up a business of buying discarded equipment, such as trucks, bulldozers and any machine he could repair, refit and sell at a good profit. He was also developing a combined camping-motel-shopping centre. With his shrewd mind and experience he was doing a tremendous business. It should be remembered Ed was a skilled master mechanic.

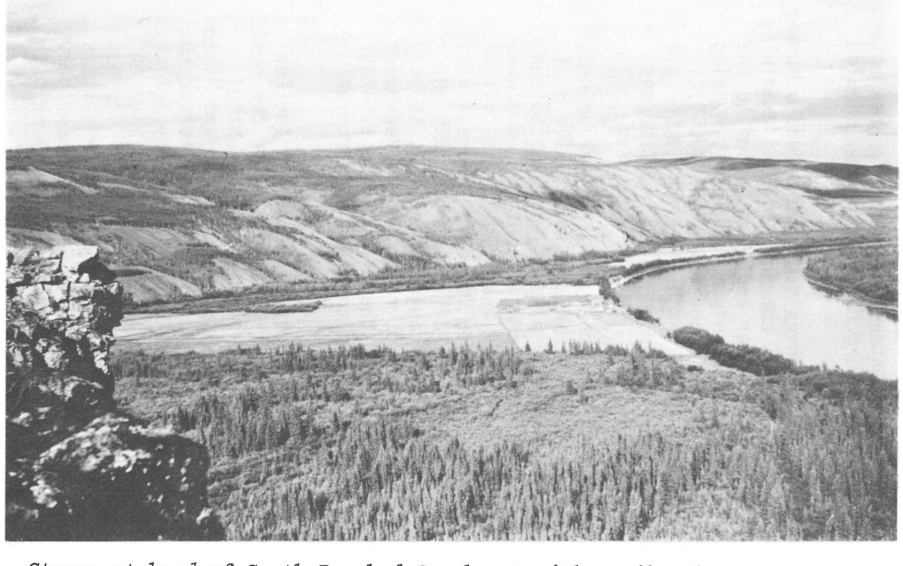
On Tuesday the 8th we finally managed to get things cleared up and the packers brought in the horses, took them on the Casca at 10:00 in the evening and we were off. We reached Upper Laberge at 6:45 next morning and did not arrive at Selkirk until 1:00 the following morning, the 10th. Our order was all ready at the Hudson's Bay Store that was now run by D.R. Sheffield. Wilkinson was waiting with his boat.

While our things were being loaded on his boat Wilkinson seeing Afe Brown approaching called out "How are you feeling Afe?" "Mighty handsome! Mighty handsome!" exclaimed Afe in his southern drawl heartily. This expression amused Dick and the other members of the party immensely. Three other men with Afe, all of whom I knew came over and shook hands with me. Afe said "We were starting off for Nansen Creek to prospect three days ago when we heard you would be here today so we decided to wait to see you and say Aullo!". This was one of those things that made the Yukon seem a real home to me. We were at the campsite on the Farm by 3:00 in the afternoon. While the others put up camp I took Dick and the two packers up onto the lava bluffs to view the Farm area and valley. The day had been very hot but the evening was cool and delightful with the thrushes singing in the brush around my tent as other years in June.

Another hot day followed. Eight horses were brought in and four shod. Most of the equipment was sorted and the instruments distributed. Four more horses were shod after supper and the others had their hoves trimmed.

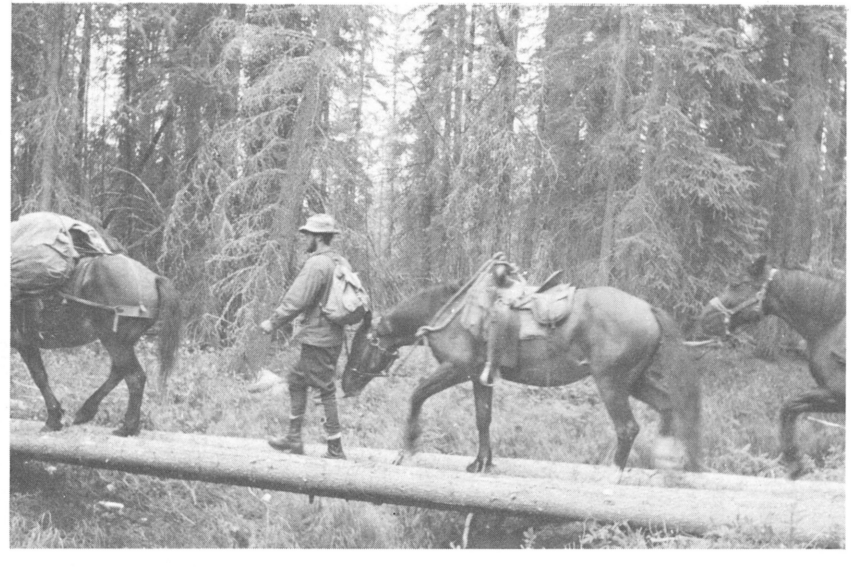
The next day Jack and Stan collected plants and the packers brought in four more of the horses but these



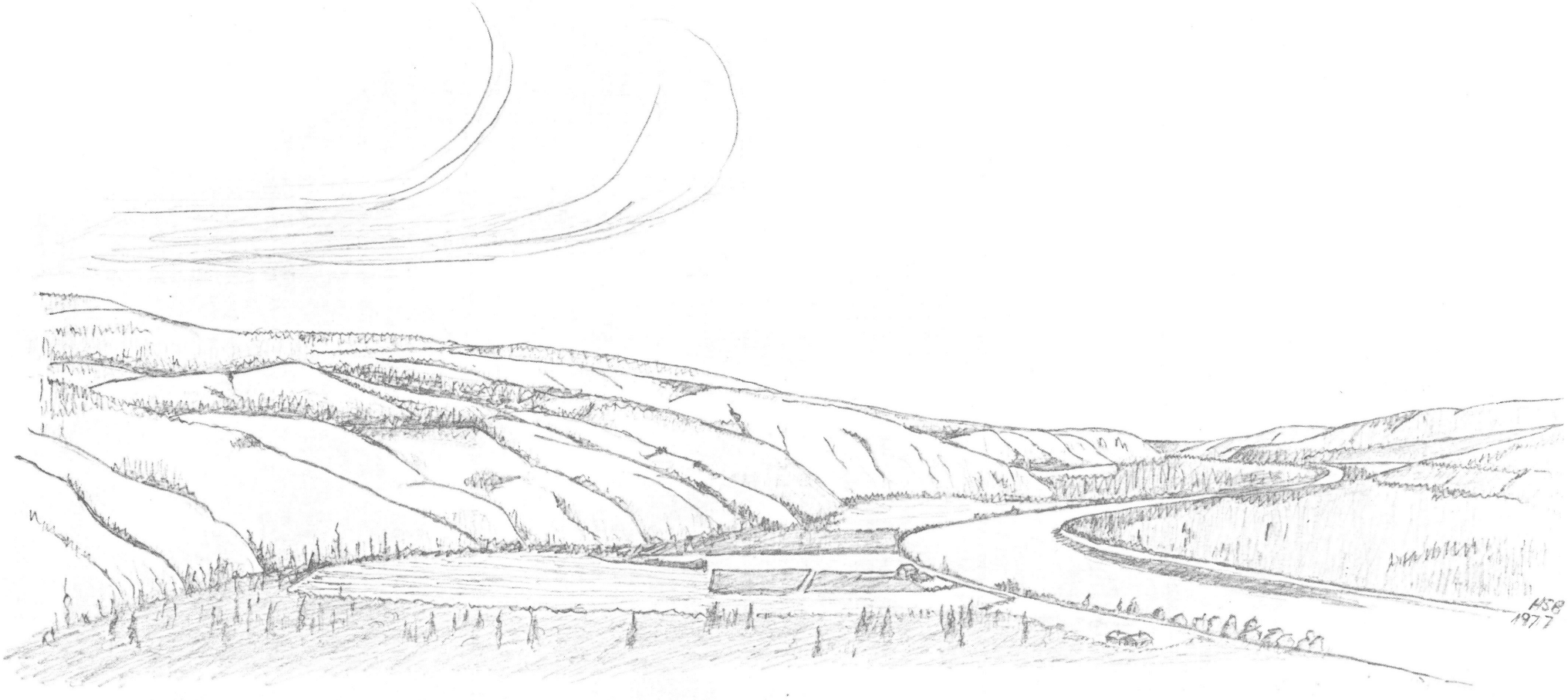


*Stumps at head of South Rosebud Creek cut with caribou horn. (144541, 144543, 144544)*

*Pelly Ranch, four miles up Pelly River from its confluence with the Yukon, 1947. (202013-C).*



*P.M. Kavanagh (packer) on improvised bridge thrown across Slough Creek, McQuesten map area, 1947. (144566)*




The Pelly Ranch, Yukon, September 1935, the winter home of the packtrain 1932 & 1954. From here we set out north, south, east & west.

gave them some trouble. The clear weather continued and on Monday, the 14th I went over to Selkirk with the mail and picked up a few things. All the horses were ready in the evening and Wilkinson let us keep them in his coral for the night.

We were off before noon the following morning. The readying of the packs, and their overseeing I had left to Dick and Aaro as this was Paul's first experience in packing and it had turned out that it was all new to Drew too though he had been recommended to me by Bill Duncan. Thinking Drew would be an experienced packer for an assistant packer I had offered Paul, the paper boy at the Museum, the job. He had been there always on the job for the last two years. We took the trail straight north from the Farm which involved climbing right up the steep mountain face from the meadow about 1000 feet before more level ground was reached. It being the first move and the trail so steep there was a lot of pack fixing. It is, however, the best route north from the Farm. Camp was pitched on Lava Creek, a south head of Grand Valley Creek, above the most recent lava flow that comes down from Volcano Mountain. The next day we reached a site two miles below where this tributary enters the main creek. From here after a day's traversing we turned eastward up the creek to pick up the trail again that we had used last year which was said to be the old cattle trail north to the Klondike and followed it to the west head of Coldspring Creek where we camped on a nice meadow. On the way we passed an area on the north side among big spruces where there was an abundance of Indian stumps. The next day we went on again to another meadow on the trail where a creek descends from Flat Top.

Unfortunately for some reason the horses did not like this meadow and wandered. On the morning of the 20th the packers could find only 10 and 6 were missing. During the next two days while two of us traversed the others searched for the horses. There was no sign at least back as far as the last camp on the trail. The weather was unsettled, wet and hot. On the 23rd Dick and Paul with some grub rode to the Farm to see if the lost horses had returned there. The others except Bob, the cook, continued their hunt through the wide area around camp while I traversed with one assistant. The next evening Dick and Paul were back having seen no sign of them. On the 25th a wider plan was made for the search. Harry came with me to the ridge north of Coldspring Creek and looking back northeast we spotted the horses on a partly open slope on the sunny south side of the hill about four miles southeast of camp. The horses and everyone were in by 7:30.

The hunt for the horses had taken five days but we had finished our traversing and our real loss in time was three days. Now we had to get a move on. Our next camp was on a meadow in the west end of the pass between Pirate and Tonsure mountains. Rain started in the evening and it turned cold. The following day we went over the top of Pirate Mountain and evening saw us on Lake Creek below the canyon. Here the tents were among some of the biggest spruce trees I have ever seen in the Yukon but three or four years later this whole area was burnt by forest fires. From here our course led past the west end of Reid Lake along a gravel beach and north to New Crossing on the Stewart River.

At five o'clock the following morning Drew heard the Keno coming and we dashed about getting camp down and ready to cross but in the end she did not arrive until 11:00 a.m. due to boiler trouble. She then took us across the river and landed us with our new supplies and mail but she was tied up at the woodpile at the Crossing until 8:00 p.m. It had been a particularly lovely day. The following day, the 30th, we took as Sunday to repack the supplies and to answer mail which we could leave there to be picked up by the Keno on her way down. From here we headed eastward up Moose Creek valley hoping we would find at least parts of the Liberal Trail as good here as it had been farther up the creek last year. Within half a mile or so after leaving the river valley it led into stunted, "drunken" spruce forest on shallow permafrost impossible ground for horses to travel through in summer. The packtrain started off at 11:00 a.m. but by 4:15 had only succeeded in travelling two miles through this tangled brush and wet ground. It finally reached a locality near enough to that chosen camp after 8:00 p.m. The following morning the valley bottom was left and the packtrain climbed to the summit of the ridge on the north side. After several miles of good going it descending northeastward to camp on the creek at the west end of the Conservative Ridge. The day after we moved to the second tributary of Bear Creek west of Carlson Creek where we traversed for a day. The afternoon of July 5th saw us pitching camp at Bennett Creek in Minto Creek valley on the site of last year. All this summer so far we had seen no game and few tracks.

The following morning the assistants collected samples of heavy minerals from the numerous old placer workings while I walked to Minto Bridge and after waiting two hours got a ride on top of a load of empty oil drums on a truck to Mayo. At the bridge the old roadhouse that the Steeves had kept so spotless and comfortable had been pulled down and no one was living in the remaining cabins.

A number of changes had come to Mayo amongs which were the crane installed by the White Pass to hoist the sacked concentrates and ore onto the barages instead of having them moved on by hand trucks, the bank had been closed for good, so that one had to go to the Elsa mine camp to cash a cheque and there was now no cold storage in town for meat. Mayo had a quiet, sad air about it.

I collected the mail, freight and express and our order of supplies from the N.C. Co. Then arranged with Bud Fisher to come and move the party on July the 9th as he had last year to the campsite at the mouth of Haggart Creek. After this Fisher drove me back to camp at Bennett Creek. Before we left Mayo Howard Spence of the Topographical Survey arrived on the plane from Dawson. He was in charge of laying out the control for the mapping but the helicopter for his work had not arrived and this was holding up his whole program.

The weather continued cloudless and hot. The next day I went up Highet Creek to see Ed Bleiler who had written to me. He was putting in a bedrock drain to enable him to work the ground at the upper end of Middlecoff's old workings just below Rudolph Pup.

The 8th was taken as Sunday and the next morning Fisher's large truck arrived at 7:30 and his light truck an hour later. Taking the light truck and Dick with me I met Dr. George S. Hume, Director of the Geological Survey at the Mayo airport. This was the first visit of a Director to the Yukon since R.W. Brock had been there in 1909. The next was to be by Dr. J. M. Harrison with Dr. C.H. Smith in 1958. We had lunch in town and then drove to the Elsa camp on Galena Hill where we spent the night. The day was very hot. The following morning with Brodie Hicks, manager of the United Keno Hill Mining Company, Dr. Bill Smitheringale

and his son Bill, as well as Dr. Ken McTaggart and Hubert Gabrielse, his assistant who were doing detailed geology of the area around Galena Hill for the Survey, we all drove over to Wernecke and the Lucky Queen mine on Keno Hill taking our respective vehicles. After going over the work being done on the Lucky Queen, some of us walked up with Dr. Hume to the upper level of Keno Hill to visit the Shamrock mine. From there Dr. Hume and the others went over to the Hope Gulch adit while Hubert and I went back for our trucks. Later we all met at Mrs. Erickson's in Keno for an excellent supper. We had been extraordinarily lucky this day as first we had escaped one tremendous downpour while in the Lucky Queen and then a second one in the Shamrock. We all returned to the Elsa camp for the night.

The 11th we went through the Calumet mine in the morning, and lunched at the mine cook house. From there the Director, Dick and I in Fisher's truck and Ken and Hubert in their truck drove to camp on Haggart Creek where the party under Aaro had arranged everything for us for the night. In the morning all except Bob, who had been to Dublin Gulch last year, went up to see Fred Taylor's placer operation. After returning to camp for supper and the night I took the Director to Mayo to catch the plane in the morning for Dawson but there was no room on it and he decided to miss Dawson and return direct to Whitehorse when the plane came back in the evening. After he had left Fisher drove me back to camp.

The following day was warm and humid. We sorted and packed everything ready to be off the next day. When morning came, July 15th, we moved down the McQuesten valley to Rodin Creek where we traversed and looked at the old placer cut up the creek. The following morning we went on to the Sunshine Creek as the hills east of the North McQuesten River had all been traversed last year. On the move we passed through the large area of spruce timber at the mouth of the North McQuesten. Here Jack found many fine straight spruces more than 120 feet high and some that reached 140 feet. This area was all cut for mining timbers in the 1950s. At Sunshine Creek on the right limit, a little way up from the river, was an old cabin and the remains of a large, high cache that had fallen over. It had been well stocked with all manner of lode prospecting equipment. An adit had been driven into the west side of the creek valley a short distance above the cabin but was caved. In the evening we built a two man raft with which to cross and traverse on the other side of the river.

The next day, the 19th, camp was moved to May Creek. Dick and Stan drifted downstream on the raft about three miles where they landed and traversed on the south side of the river to the top of the mountain shown as 5109 feet. Then returning to the raft they floated on down to camp. Aaro and I reconnoitred the lower part of Boulder Creek whose valley is choked with blocks of granite. At lunch on the lower part of the creek we panned the gravel in the stream and found some pieces of galena among the other heavy minerals. After this Aaro collected concentrates by panning at every opportunity and in the winter wrote his bachelor's thesis on their mineralogy. In this work he found that monazite occurred in several creeks and thus was the first to discover this mineral in the Yukon. Following the horse tracks along the river we came upon an open bar perhaps 50 yards long and 5 yards wide of coarse, gravel pavement with wild onions growing everywhere between the stones which were so tightly packed they made it impossible to dig the onions without a pick. This was the first time I had seen wild onions but they grow in other places in the Yukon.

Rain started about 11:00 in the evening while Dick and Stan were on the raft and they did not arrive at camp until after one in the morning. The rain continued with increasing heaviness until the following afternoon but it stopped at five and cleared. The day was taken as Sunday. Then the day after we traversed the nose of the ridge between May and Boulder creeks. It was a hot and weary day as I had not had much climbing for several weeks.

On the 23rd two of us drifted on down the river on the raft looking for outcrops in the banks as Dick and Stan had done upstream while the packtrain went over the ridge between Forty Mile and Right Hook Creeks. The other traverses followed a more northern route. From the raft our first landing was on the right limit below the mouth of Forty Mile. Here a trail led a little way back from and up river to a well kept cabin which I believe had been used in the early 1940s by Henry LeBlanc and Dick McClure as their trapping headquarters. On the other side of the cabin was a grave beside which was the stump of a tree that had been cut off about 12 feet from the ground and carved on it was "J.H. Taylor, Omaha, Neb., July 9, 1898. Died age 63.". He must have belonged to one of the first parties to ascend McQuesten River.

About two miles below Bear Creek the river splits around a small island into two channels. One channel, taking half the stream, goes under a log jam while the other has a nasty chute in it. This is marked on Tuttle's original topographical map as "R" for rapid. On the new map brought out in 1963 and made entirely from airphotographs by machines guided by hands with eyes that have never seen the country such features are omitted. After landing and looking at it we ran the chute successfully but were very glad for Tuttle's warning "R". On reaching a point opposite the saddle in the ridge immediately on the north we abandoned the raft as the course of the river wandered out into the middle of the valley floor and there was no probability of any more outcrops along it. Climbing the ridge we traversed northeastward until we found the horse tracks and followed them to camp.

From this camp we moved to a site 200 yards up Vancouver Creek from an old cabin in the McQuesten valley. This cabin seemed to be all that there was left of the Twenty Mile roadhouse of the Conservative trail. A day was spent traversing and then we followed the trail through the pass to Clear Creek arriving at last year's campsite early in the afternoon.

The next day started with light rain but the packers got the horses in before they were really wet, dried their backs and packed them. Our supplies and mail had been brought in safely over the road to the camp at Barney Pup and we were greeted there with the usual generous hospitality which we had so little opportunity of returning. The packtrain arrived about noon but Bud Holbrook who was manager here this year trucked our things three miles up to the dredge so the horses continued that much further lightly loaded.

Our camp was pitched about four miles beyond the dredge. The following morning was frosty, showery and cold and was taken as Sunday. The next day the geologists traversed while Paul and Drew with two saddle horses brought Blanche Holbrook, Bud's daughter and her friend Bella Cook for lunch and a ride. I went down to Barney Pup with the mail and arranged for our next shipment of supplies. Holbrook told me that the quantities of cassiterite that Mr. Ernest Patty had written

to me about came from a limited section of the creek between half and one mile above Barney Pup. This cassiterite was similar to that in Dublin Gulch in crystals not as "wood tin".

August opened with two wet days but on the third we crossed over into the Little South Klondike valley to the mouth of the pup that comes down from the pyramid-like rough peak that is visible from both King Solomon's Dome in the Klondike on the west and Keno Hill in the east. This was a poor camp but from it we traversed the south spurs of the Syenite Range. Coming down the upper part of the valley we were in one of those beautiful little secluded alpine nooks close to timberline with a narrow meadowy bottom of flowers and grass between slopes of alpine fir on either side.

From this camp the packtrain followed the river valley down to the mouth of the pup above Syenite Creek. About a mile above this pup were the ruins of a big logging camp, with a large stable and several large log cabins. All around the valley floor was forested with tall straight spruces. The camp, however, appeared to have been abandoned before many trees had been felled.

Our next move on August 7th was up Syenite Creek. At the mouth of the creek an old cabin stood on the northside on a low terrace. It appeared to have been originally built by a placer prospector but had been used mainly for trapping. A list of purchases from the N.C. Co. in Dawson under the name O'Dill was dated 1922 but the last figure was blurred. A piece of paper said Harry Little had used it in the winter of 1929-30.

Syenite Creek heads in a lovely alpine basin encircled on all sides except the creek valley by rugged summits of the coarse prophyritic syenite while the interior of the basin is floored by granite which has proved less durable to erosion and has few outcrops. A single grove of alpine fir stands on the north slope of the basin and we camped there.

The morning of the 8th was clear. The others set off on their traverses and Jack came with me up into the east part of the basin. Just as we reached the outlet of the little lake on the east head of the creek looking back we saw a bull moose browsing on the slope below us about a mile from camp. Jack stayed to watch what the moose did while I fetched my rifle and warned the packers to bring two packer horses if they heard a shot. The moose had stayed where he was on the open slope of low willows. Stalking to about 150 yards from the animal I killed it with a single shot. Dick and Harry on the ridge to the southeast had seen the moose before we did and watched the whole proceedings. When they saw the moose fall they came down. Jack with his intense biological curiosity wished to examine the moose and help butcher it so leaving him with Harry and the packers who could be seen coming, Dick and I went off on a traverse to the east. I had shot the moose at about 11:00 o'clock. On our way back to camp at 4:30 p.m. Dick and I found the moose still not butchered. Jack all this time had been engrossed in dissecting it to find and examine its various glands and organis and lecturing on the functions of the various parts of its anatomy to the others. We soon got it skinned, boned, packed on the horses, to camp and hung in the meat tent in the shade but some precious hours of good cooling and drying weather had been lost. The night became warm and sultry. In the morning it started to drizzle and this continued most of the day punctuated by heavy downpours. As a result the meat did not cool well or dry on the surface despite all we could do and it began to rot in two or three days. This was the last moose I shot, and the only chance we had that summer of having fresh meat for a week or so.

On the 10th we moved down into the Little South Klondike valley again and camped near the mouth of the second creek below Syenite Creek. Dick and I traversed the northwest rim of the basin and around the head of the creek camp was to be at. There were some signs of grizzlies in this part of the basin and we kept a sharp lookout. Crossing over the rim and side hilling along the steep outer west slope below the ragged outcrops but well above timber, the vegetation consisted of thick clumps of dwarf birch and willow barely a foot high, interspersed with areas of turf. Here we came suddenly upon a bull moose at about 10 yards distance. It was on a patch of turf and the slope was steep enough for it to browse the willow clump above without putting its head down. While we struggled to get our cameras ready he went off. Farther on while we were eating our lunch Dick spotted an old grizzly and two cubs about 700 feet down the slope below us. Farther on as we worked our way around the head of the Creek we saw three more moose below us. The steep south facing slopes of the valley of Ross Creek, that is just beyond the 64th parallel, lie in the snow shadow of the Syenite Range and have all the appearance of a well used winter sheep range. From the ridge we were on we could see great boulders of the distinctive syenite scattered here and there along the tops of promontories projecting from the range. As these boulders were above the conspicuous moraines extending from the range and ending in the valley of the Little South Fork, they clearly indicated the occurrence of earlier more extensive glacial advances from local ice caps that had occupied the range from time to time in the Pleistocene. The Syenite Range geology was finished as far as our time allowed but it offers interesting petrological phenomena for detailed studies. Since leaving Clear Creek too we had been dealing with a younger sedimentary sequence of formations that was less altered than those to southward. Parts of this sequence had first been found last year around Hobo Creek. It gave new interest to the geology though we found no fossils. The packtrain had moved alright and the other traversers were in when we reached camp in the dusk.

The following day we moved over the low ridge to Glacier Creek, crossed it and through a pass beyond the forks of Parker Creek. The ridge between the Little South Fork and Glacier Creek gave a marvelous view of the profiles of the spurs on each side of the river valley. Here is recorded the history of the cutting down of the valley as the stream ate step by step around the Syenite Range to attain the capture of Big and Hobo creeks referred to last year. Going up the far side of Glacier Creek in one place the horses had scraped the thawed moss off the top of a great syenite boulder which was embedded in frozen moss and muck. This exposure showed that the top foot of the boulder had been rotted by weathering and that the rock underneath was as fresh as the day the ice had left it there. On the divide to Parker Creek an old burn revealed many of these boulders. They had been carried not only across the Little South Fork valley but over the ridge to Glacier Creek and then up to be deposited high on this second ridge where they ended abruptly, apparently marking the limit of the advances of Pleistocene ice from the Syenite Range.

About two miles below its fork the floor of the valley of Parker Creek widens and is clothed by scattered, stunted spruces standing in wet muskeg while second growth of aspens covers the slopes on either

side. In the middle of the valley here was an old water-filled placer prospecting shaft, well cribbed, with the top of a ladder projecting from it. The wood was pretty rotten and a small irregular shaped pond around it suggested that the frozen overburden had thawed and drifts extending from the shaft had collapsed. Any of a gravel dump may have sunk into the pond too. In one or two other places downstream similar ponds suggested other prospecting attempts probably about 1900 or earlier. If there had been any cabins they had been burnt by the forest fire. We saw no other sign of man's presence in the valley but this does not means that it was not used by trappers in winter. Even on this bright sunny day this valley radiated a desolate lonely air.

The junction of the broad valleys of the main South Klondike and the Little South Klondike rivers lies north of the 64th parallel and is overlooked by the ridge northeast of Parker Creek. From here the river courses can be seen meandering elaborately and keeping the permafrost at some depth along wide belts on either bank where the spruce trees attain a good size. This forest area was the largest acreage of big timber I had seen in the Yukon. It is to be hoped that it has not been burnt.

On the 14th we moved over the ridge to the south and camped at 3000 feet a.s.l. on Slough Creek near its head. After three nights there the packtrain travelled south to Zinc Creek, and thence to the road leading to the Clear Creek dredge camp. It crossed Barlow Creek by the bridge on this road and then branched off up the old road that follows along the right limit of Clear Creek, camping about two miles above Henry Gulch. After crossing to Zinc Creek higher up than the packtrain, I walked down it looking at the old placer working and cabins, one of which was still in good shape. A long ditch extended down the right limit of the creek to a big hydraulic cut. There were the remains of the cabins lying directly avove the cut where charred logs and quantities of burnt rusty tools, all the temper gone out of them, lay around. The size of the cut, the dry stone walled tail race and the tools spoke of the ability of the miners who had done this work. The great bulk of the rock types at the bottom of the excavation were strangers to me. They were largely big, well rounded stones of quartzites from the Ogilvie Mountains to the north. Continuing downstream I called on Wilfred Gauvin in his cabin at Barlow on the west side of the Clear Creek valley floor about two miles below the bridge over Barlow Creek.

Gauvin was a remarkable man. He had everything organized and clean. He was born in 1869 making him 79 at this time. I wish I could remember the things he told me of the past years of the Clear Creek area where he seemed to have spent much of his life since sometime in the first decade of the century. Now he lived at Barlow throughout the summers and in Dawson during the winters. His present cabin was only a few years old. It was spacious and stood some 30 feet up the west slope looking across the wide valley floor to the twin summits beyond the creek that Gaubin appropriately called the Two Sisters. He had a shallow well at the edge of the flat below the cabin and an old small cabin that he had used before he moved to his new cabin stood near it. The new cabin had been built for him by Clear Creek Placers as it was handy for them to have a rest point between the airstrip and landing at Stewart River, 14 miles to the south, and the dredge camp somewhat farther over the hills to the eastward. Formerly, before the forest fire of 1939 or 1940 that had swept over so much of this neighbourhood Gauvin had lived in a cabin at the old Barlow Roadhouse on the bank of Clear Creek which is on the far side of the valley. He had cooked there for some years in the early days. The fire had burnt the roadhouse and many other cabins in the area.

He told me our load of supplies had been taken up to the dredge camp that morning, that Big Alec MacDonald of Klondike fame had had a placer prospect shaft sunk near the head of Slough Creek but found no gold though the shaft went down through 200 feet of White Channel gravels without reaching bedrock, that the little gulch on the left limit of the Little South Fork below Josephine Creek had been staked and called Deep Creek, that the one good cabin I had seen up Zinc Creek was Bob Bowers' and a two dollar nugget had been taken out of Barlow above Zinc. The big hydraulic cut and ditch on the right limit of lower Zinc Creek had been made by Mike Pavisic and Tony Gergich and that they had recovered considerable coarse gold before they were burnt out. Pavisic had also made the big cut in the terrace on the left limit of Clear Creek about half a mile above the old Barlow roadhouse. Gauvin pointed this cut out to me. He said the cut was largely in White Channel gravels but he did not think Pavisic got much gold out of it. The good cabin we would see at the mouth of Squaw Creek on the right limit of Clear Creek was Tom Spitzer's and so on.

On my leaving Gauvin started me on the old winter road across the flat to the roadhouse. It proved wet but was a cleared way having been cut through the brush. On reaching the charred ruins of the roadhouse I looked them over and then waded Clear Creek and went on up the old road on the other side. It wound up the northeast side of a small gulch, crossed Pavisic's ditch to his hydraulic cut and then turned northeastward across the wide terrace area and dropped down into the canyon-like part of Clear Creek valley about half a mile above Henry Gulch. On the terrace the road had been cut through small straight spruce trees, now charred skeletons. What surprised me was that four of these little dead sticks in different places along the road had been struck by lightning since the fire, showing the usual spiral strips of bark taken off them.

Going on down the road I waded Clear Creek again and picked up the wagon road along the right limit in the canyon where the horse tracks led me into camp. This road follows a steady grade from the truck road east of the bridge over Barlow Creek and continued all the way up to the fork of Clear Creek. The roadhouse up the creek mentioned last year was on it. In places the road had been cut through the granite across the necks of entrenched meanders, the rock being deeply weathered and rotten.

On the 18th we traversed on both sides of Clear Creek and I hunted for outcrops on the hills south of the creek where I was surprised to find the first true ventifacts I had ever recognized. These are stones abraded, facetted and polished under desert wind conditions and are a common feature of the arid areas of the southwestern United States but who expected them in the Yukon. They recorded some extensive arid interglacial period.

The next day we moved down Clear Creek past Barlow along the Clear Creek Placer truck road to the bridge near the mouth of Clear Creek. I started back along the route I had come by but on reaching the ditch I followed it to Pavisic's placer cut. Here the soil and the top gravel were brown but below these a thick section of white gravels lay on rotten granite. The white gravels were composed of the resistant constituents of

the granite and were probably formed during the same period and climatic conditions as the Klondike White Channel gravels which had contained such rich paystreaks in places.

I waded the creek again and going down to the ruins of the roadhouse walked across the flat to Gauvin's. The packtrain and I arrived at about the same time and Gauvin at once asked if we would let him ride one of the horses to the bridge with us. I was on the spot. He had not been on a horse for many years and we would have to see that he got safely back again. At his age I felt this was quite a responsibility and would almost certainly delay us a day at least whereas when a truck came through from the dredge camp he could always get a safe ride down and back in it. I refused him.

The road was good and dry and followed along near the east rim of the large terrace area that lies between Clear and Slough creeks. At points it overlooks the wide floor of Clear Creek valley but much of it was walled by second growth. I didn't expect much geology of interest but was wrong. First ventifacts are scattered here and there on the surface, then there is the unusually thick deposit of loess near Barrett Pond and beyond this where the road comes out to the edge of the terrace at Belleview Point as Gauvin called it, a thick section of slightly consolidated Tertiary sediments is well exposed. From there as the road winds slowly down the irregular face of the terrace the road cuts expose well sorted, fine gravels of rounded pebbles almost entirely composed of large feldspar crystals. Further on are more exposures of the Tertiary beds and some of glacial drift sections.

The next day the 19th was taken as Sunday to attend to our mail and supplies that had been brought back from the dredge camp. And about 11:00 o'clock in the morning, to my shame, old Gauvin arrived on foot spry as a lark with his rifle and pack on his back having walked the 14 miles in less than six hours. He stayed with us all day and the following night as the weather had turned showery and then went on to the cabin four miles along the road at the airstrip. During his visit he talked incessantly of the local history from about 1910 when he ran a roadhouse after having cooked for the Mounted Police post on the bank of the Stewart just below the mouth of Slough Creek. As this was Sunday the other members of the party spent much of their time with him. I had accounts letters and such things to look after. The next day they told me that he talked of his whole life history except for seven or eight years starting about 1922. When they realized that these years were alwasy skipped they amused themselves by every dodge they could think of to find out what had happened to him during those years but, he would not give them a clue. They began to suspect that either he had been "outside", had a stroke of some sort, or spent the time in jail.

The next morning Gauvin went to the cabin at the airstrip and all the geologists of the party went back up to the road to look over the Tertiary and glacial exposures. The following morning it rained but the day after, the 23rd, we set out for the upper part of Pique Creek. We did not get started until noon, however, as at first two horses could not be found. The beginning of the journey went well as we followed the old wagon road down Clear Creek, across Slough Creek and thence along the river bank where we found the ruins of the roadhouse, police post and other cabins on a narrow strip of ground between the river and the terrace behind just as Gauvin had said. From here on there was no trail and the country was mostly second growth and quite thick in places. On each side of Gravel Creek there was forest of large spruces and when we reached the creek it did anything but live up to its name in this part, being a deep sluggish stream with mud bottom and high mud banks so that a bridge had to be built for the horses to cross it. The only redeeming factor was the handiness of the spruce trees. We were all travelling together on this move which helped with cutting trail. Aaro had started to earn his living early in his teens in a lumber camp and so our Swede saw had never been so well set and sharpened before. His axe was like a razor. I think it was this day that when he happened to be walking a little in front of Dick he stopped suddenly and let the head of his axe rest on the ground with the blade point behind him. Dick's foot came down against it and the axe sliced through his boot into the side of his foot. Luckily Dick's cut was not serious but the repair of the side of a good boot presented a problem. We finally reached a suitable campsite about six miles up Pique Creek at about 2300 feet and camp was up and settled as the light faded. That night was the beginning of fall with a crystal clear sky. In the morning the ground was frozen hard. A good deal of fresh snow lay in drifts on the tops of the ridges at the head of the creek and the next night was even colder. From this camp we moved down to the Stewart reaching it a little above Lake Creek, where Rene Burian had been cutting wood last year, and arrived about 4:30 p.m. There were three wood cutters, Rex Wilson, Bill Barnett, and Jack Harginger in the cabin which was across the river. One of them brought their row boat over and they let us use it. We had everything across, except the horses, and camp was up by 8:00 o'clock that evening. There had not been much frost down here and the weather had turned a little warmer. First thing on the morrow the horses were collected and driven into the river which was exceptionally high for this time of year and not an easy swim.

After finishing the traversing around here we moved south across Lake Creek and up Old Trail Creek along which the winter road to Stevens Roadhouse, the other side of Rosebud, had been cut through the small spruce forest and could still be followed in places. The weather turned wet, foggy and frosty again. On September 2nd we moved eastward up Pirate Creek. The pattern of drainage around this creek shows a sequence of stream captures. The blockage of the former courses of other creeks had been caused by the glacial advances.

Camp was a few hundred yards up the valley of a southern tributary of the creek and on a small rise on the east side stood an old cabin. This cabin was unusual in that it was square in plan, had a pyramid shaped roof and a stone fireplace and chimney in the centre. The walls of logs standing vertically were caulked with mud instead of the usual moss. Beside it stood a four-post, high cache, a log tent frame and a log two-dog stable.

From here after traversing for a day we moved to the mouth of Silt Creek and on the next day to camp on North Rosebud Creek five miles directly west of Rough Top. We had two days traversing here on one of which I came upon an Indian grave that had an artistically designed white picket fence around it but I heard later that the corpse had been moved to the graveyard at Selkirk. On September 8th we were up early and the packtrain was away before 8:00 just as a steady drizzling rain began which continued all day. The loads were light and the horses sensing where they were going needed no urging and travelled at a good pace. We were all at the Farm by 4:00 in the afternoon.

The rain continued until the afternoon of the next day. I went over to Selkirk with Wilkinson for the mail and to find out where the steamboats were. The next day was clear and sunny until evening when it rained again but we had been able to get much of the equipment dried and the horses turned out. As we were anxious about catching the first up river steamboat we had arranged with Mrs. I.G. Cameron to broadcast news of them on the 11th but at the Farm as was sometimes the case there was no reception from Selkirk. The next morning Dick went over to Selkirk with Wilkinson while Aaro and Drew tried to shoot ducks. When Dick returned we heard the Whitehorse was expected at 8:00 the next morning, the 13th. As a consequence we were up the following day at dawn and left the Farm at 7:00. The Whitehorse reached Selkirk about 11:00 a.m. and we were soon off.

On the 14th we were through the Five Fingers at lunch and went through Carmacks about 7:30 p.m. It was a lovely day. The following day we reached about half way between Cassiar Bar and Hootalinqua where we tied up for the foggy night. On the 16th we started at 7:30 a.m. but on coming to Lower Laberge the wind was howling down the lake and we tied up again until daylight finally arriving at Whitehorse 4:40 p.m. on the 17th. This had been a very typical fall up river trip, enjoyable as always.

The next two days we were all in Whitehorse. On the morning of the 20th those of the party for the C.P.R. boat, Princess Louise took the train at 9:00 and the Edmonton group left the airport at 10:15 p.m. The 21st I spent in Edmonton and arrived in Ottawa by the C.N.R. train at 6:30 p.m. on Friday September 24.

This had been an exceptional party. Dick, Aaro, Bob and Paul all obtained Ph.Ds. and went on to satisfying in life. Jack too was a post graduate student. Stan and Harry also got on. Dick and Aaro initiated the others into camp life and guided the packing and pitching camp and in many ways took much off my shoulders that had been such a burden during some recent years.

## Section IV: 1949, McQuesten area, the last holes by packtrain and canoe and fall trips

In 1949 the 4-mile geological studies and mapping were considerably expanded in the southern Yukon and northern British Columbia. Dick (R.B.) Campbell was to start work on the Glenlyon area, Bob (R.L.) Christie, the Bennett area in B.C. just south of the Whitehorse area and Leon L. Price, the McDame area in the Cassiar and John O. Wheeler to continue the Whitehorse area. Besides this Kenneth C. McTaggart was to go on with the detailed studies of Galena and Keno Hills. I was to fill in holes in the McQuesten area and then make a supervisory tour of these various projects to see how they are getting on. This was in a sense my final season of field work.

The work by me for these field parties began early in the year at Ottawa with arranging their instructions, estimates, equipment and instrument lists as well as the allotment of assistants and all travelling schedules, then most ardous of all the checking of everything and supervision of the packing and reservations and so on. The chiefs of the parties were all graduate students working towards their Ph.Ds. at universities scattered over the continent and the organization of their parties this spring was the most arduous task of that kind I have ever had.

I left Ottawa by C.N.R. on June 1st and flew from Edmonton to Whitehorse arriving there at 7:00 p.m. on the 4th. The next day all those who were due in Whitehorse had arrived from their various starting points.

My field work was to start with Dick's party as he moved from the Pelly Farm by packtrain eastward into the Glenlyon area. His party, seven in all, included Jim D. Aitken as an assistant, Ed Kohse Jr. as chief packer and John Phillips, assistant packer. Jack T. Cook was my personal assistant. In addition Dick had four new horses, all three or four year old bays with a dash of Clyde in them. These included an unusually tall saddle horse which was badly needed in the packtrain.

In the meantime while I was in Whitehorse, John Wheeler and Bob Christie assembled their parties at Carcross. John had a truck, a packtrain and canoes. His party consisted of Jack G. Souther, packer, three assistants and a cook. His horses had wintered at Robinson's. Bob had only canoes as the lakes spread into most parts of his area and the remaining sections could be reached by short back packing trips. Leon's base was Watson Lake. He had a truck and packtrain. His packer was Ed Kohse Sr., father of Dick's packer, three assistants and a cook. They of course assembled at Watson Lake.

On the 7th I visited Bob at Carcross and returned to Whitehorse. Dick's party, horses, Jack and I boarded the Whitehorse in the evening of the 12th and she started down river at 1:30 next morning. We reached Selkirk Tuesday the 14th. The horses and packers as in the last few years were landed at the Hosfall Ranch to make their way to the Farm. The rest of us with supplies and equipment reached the Farm in Wilkinson's boat, Owl, and we were all there by 6:30 p.m. I arranged with Wilkinson to make two trips up the Pelly during the summer for Dick's party with mail and supplies much as Alec Coward had done for John R. Johnston in 1935 and that Jack would go up with him on the August trip and remain with Dick's party while I visited the various parties.

After the usual preliminaries we started up the Pelly valley on the 17th. The packtrain got off at 12:45 p.m. and I took Jack and Dick's cook, Harry Munroe, two cases of gas, oil, 5 heavy fibre cases, two cook-tents and a spare motor and gas tank as well as our bedding up in a canoe. We reached our old campsite above the cutbank beyond Bradens' Canyon about 6:45 and the packtrain arrived an hour later. The Pelly was very high but not as high as in 1935.

A steady drizzle started in the night and continued the next day but the time was not wasted. A lot of things needed doing. On the 19th going on up to Pelly Crossing I left the canoe and some things there. The construction of the all year road between Whitehorse and Mayo had been started the year before and was now in progress north of the Pelly. Dick's party with the packtrain took our trail up the river and then followed the old winter road north up Willow Creek as in former years. Leaving the crossing Jack and I followed it. The road was very soft and wet. At about 7:45 camp was pitched at the old bridge over Willow Creek. The next day started with light rain but we moved off at noon heading for the southern part of Willow Hills. The great wide valley of Willow Creek was largely second growth and muskeg which was slow to travel across at any time but now being very wet it was at its worst. A lot of cutting was needed to get the packtrain through and the soft ground was tiring for the horses. Finally we made camp short of our objective on a small stream

of brown water. Horse feed was poor and the whole country was like a sponge. The new horses, particularly the saddle horse which only had his saddle on, were very slow and seemed weak. On the 21st we traversed expecting to move on the next morning but the packers did not find any of the horses until 4:00 in the afternoon and the four new ones were still missing. The day following, it rained again but all the horses were found. In the evening about 11:30 we had to get out of bed and get a horse out of the muskeg. This night it was frosty. In the morning we moved northward and traversed but the only campsite we could find was on a small sandy rise in a sea of muskeg. The muskeg consisted of wet moss, sedges, Hudson's Bay tea, scrub willow and stunted black spruce. Its only saving grace was that the frost was generally within 18 inches of the surface so that in most places the horses did not sink deeply into it. Here and there, however, where water seeped eastward down the gentle slope from the hills to the west there were thawed channels that might be several feet deep. If they were suspected we could test for them, by pushing down our axe handles but they did not always show any surface expression. I had often been across local areas of such muskeg but never such a great continuous stretch. The endless lift, lift, lift of pulling their feet out of the soft surface was most exhausting for the horses and on top of this when they were turned loose at the end of the day there was hardly any feed. That evening at first they just stood around camp.

While the tents were being put up Jack chopped his foot laying open one of his toes and the top of the lower part of the top of the instep nearly to the bone. Luckily his boot had a small iron plate on the front of the sole or the axe would have gone deeper. We fixed him up as I had Bob Thompson in 1941 drawing the cut together with adhesive and string and fastening his foot and lower leg in a splint made from a piece of spruce nailed on the end of a long bacon can. On the map we were less than six miles from the new road construction and we could hear the bulldozers working on it clearly. We had done enough traversing on the hills to the west of us and the only outcrops that had not been checked were some to the north of Willow Creek a few miles from where it comes out of Willow Lake. We had heard that the construction company had a very good first aid man so that there was every reason now that we should drop the traversing, get Jack out to the road where if his foot became infected or needed more attention he could be taken to the doctor at Whitehorse. Also it was time for Dick to be heading for his Glenlyon area.

Accordingly in the morning we broke camp and headed east to the sound of the bulldozers. When we reached the road we would follow it to the first construction camp and Jack and I would get a ride to Pelly Crossing from there. Dick's party would go on to Last Glimpse camp where there was the best horse feed around this part and a good dry site.

The start, however, was slow. Though the horses had not wandered far they were scattered and hard to find. We moved off about noon through the muskeg and stunted forest. Jack rode and the new saddle horse with only his saddle on empty was led at the rear. We wound slowly along from one patch of firmer ground to another. At times there was trail cutting and delays over bad places and packs. The new saddle horse had to be helped across every difficulty and nursed along. At least three times he fell over on his side and it took one of us pulling on his halter shank and three others lifting his body to get him on his feet again. He had no life at all, so the pace was slow. Finally the ground became firmer and we came to the top of a high terrace. The new saddle horse got down this alright and across a flat area beyond which we entered a belt of big spruce on the natural levees along Willow Creek. The stream meandered irregularly between steeply sloping banks in the upper part of its channel below which the water was contained in a central ditch about eight feet wide with nearly vertical sides. The muddy water swirled along the ditch, its surface within a foot of the brim. We built a bridge over the ditch and the horses crossed one by one. The new saddle horse came last. He descended the bank alright but would not step onto the bridge. His legs gave way under him and he fell lying diagonally down the slope his legs protruding on the upward side and his hindquarters higher than his head which was close to the edge of the ditch and water. In this position any movement would send him head first into the stream. Even a healthy, strong horse could hardly extricate himself from it much less this sick, exhausted one. We looked at him. We could stop him from going into the water if we could get ropes around him but what then? We could do nothing more. Ed asked what we were going to do. I answered, take his saddle and halter off and shoot him. He did so. The limp carcass slid head first into the ditch and vanished completely under the swirling muddy water which must have been at least six feet deep.

Coming out of the trees we crossed a treeless muskeg. The old horses choosing their own ways got over all right but one of the new ones got all four legs down. It was now late, a short way ahead was a rise of dry ground but the water and feed were poor.

The next day we didn't get off until 3:00 in the afternoon. The ground was firmer and the bulldozers seemed to be only a mile away but there was a lot of trail cutting through dense second growth spruce. I reached the roadway about 5:00 and turned south along it arriving at a quarter to seven at the road camp which was close to where the old Summit roadhouse had been. The packtrain arrived an hour later. The foreman, his hands all dirty, looked at Jack's foot. I was glad he did no more. There seemed to be a little inflamation at the upper end of the cut and his leg was swollen though this could be due to sitting on a horse for so much of two days. Johnny Brown, Afe Brown's son who was driving a truck for the road gang took Jack and me and Dick and one other assistant in a truck along the new road. Heavy showers started. We put Dick and his companion off at Van Bibber's old cabin where the trail to Last Glimpse camp started east. I can still see them standing in sheets of rain waving to us as we drove off.

Jack and I were taken as far as Pelly Crossing where we put up our tent, had our supper and went to bed about 10:30. In the morning the rain was better. We crossed the Pelly in our canoe and were given a ride in a truck at 9:00 to the main construction headquarters at Minto. Here we found Mr. Bright, the first aid man. He looked at Jack's cut and said it was healing well. Mr. H.W. Nunn, the supervising engineer, volunteered to keep Jack at the camp for a few days so that his wound could be watched.

I went to see Afe Brown who was living in a log cabin by himself and was invited to lunch with him, Leta and J. Walter Israel who were living together in a larger building. We all four had a cheerful and congenial meal together cooked by Leta. I was so pleased to see them and to hear from them the news of

many of "the river people" of the area. Leta and Israel showed every deference to Afe. I regret to say this was the last time I saw Afe.

Since I had last seen Afe and Leta together they had obtained a divorce and later Leta and Israel had been married. I did not know this at the time but it was none of my business, they were all old friends and had asked me to lunch. I knew Afe had a very long head and I had heard sometime before that he had told a mutual friend that being a lot older than Leta he would not stand in the way of Leta and Israel marrying as if he did the home for their two boys and himself would be broken up and there would be bitterness among them. As it was he had co-operated in obtaining a divorce. He left the money he had obtained from the discovery of the Brown-McDade property to the two boys. The whole arrangement had turned out happily. Leta and Israel felt a sense of gratitude towards Afe and looked after him until he died as well as continuing the home for the boys. Here among the river people who knew them and the whole circumstances they continued to be accepted but would this have been the case elsewhere? Afterwards I went to buy some odds and ends at Taylor and Drury's branch store that had been recently put up there. The management was under an outside couple and the wife kindly asked me if I would like lunch. I answered "No thank you. I have just had it with the Browns". She looked horrified and absquatulated.

Another truck took me back to Pelly Crossing about 3:00, I packed our things in the canoe and reached the Farm by 8:00 in the evening where the Wilkinsons kindly gave me supper. I engaged Jared Wilkinson to cook for Jack and myself from the next morning for about a month. My tent was put up for the last time on the spot that had seen the start and finish of so many seasons. In the morning Jared came over, we set up the cook tent and assembled the equipment for the three of us. Again heavy rain fell that night and in the morning the water was dripping on our spare equipment stored in the cabin which had a sod roof so that it had to be moved or covered.

The following day the 30th, leaving Jared to cook I took the canoe down the Pelly, through the reversing slough and up the main river to Minto. I saw Bright. Jack's cut was healing well and we were back at camp by 7:20 to have our first supper on Jared's cooking. The next morning we packed and left the Farm before noon. After picking up some supplies and mail at Selkirk we ran down to the site of the old Hosfall Ranch to have lunch and then on to camp at Ballarat Creek for the night. No placer mining was being done there this year. The following day light rain continued again. Going down river we visited the Meloys at Kirkham for some time and reached Stewart at 7:30 p.m. The rivers including the White were all high. More and more of Stewart Island was being washed away. The area which the White Pass had used for the transfer of freight and the big vegetable garden of 12 years ago inside of it as well as the government building had all been carried away. The log roadhouse and store that had stood behind the garden were now on the brink of the river. It was estimated that the river had cut away at least 600 feet since 1932 while the bar on the other side of the river had grown immensely. We camped at the head of the slough behind the island.

On July 3rd we had the first really nice morning of the summer. In the evening we moved into a cabin for the night as the Whitehorse which was now running on the Stewart was expected any time after 2:00 a.m. and we planned to go up to Mayo on her. As it was she arrived at 7:00 a.m. and we had breakfast on board. That was the morning of Tuesday the 4th. We passed Lake Creek the following morning and we reached Mayo at 4:30 p.m. on the 6th. Our camp was pitched on the river bank above the town where Wernecke's plane hangar had once been.

On the 7th Ken McTaggart arrived with his new Ford truck and we spent the day going over the Mayo River canyon damsite with Mr. Mulheurin, engineer for the Montreal Engineering Company. Both Ken and I thought the site warranted careful geological investigation before the precise localities were chosen for the works. Mulheurin agreed with us. The proposed plan was to dam the river at the upper end of a horseshoe bend in the canyon and tunnel through the neck of the bend to a powersite at the lower end. The position of the river course, deeply entrenched, partly in drift and partly in bedrock, on the extreme west side of the three mile wide valley floor suggested the presence of permeable, buried channels and worse the intermittent distribution of the broken schist outcrops in the canyon spoke of the likelihood of a great deal of fracturing and possibly a major fault. I wrote to the Chief Geologist pointing out that Ken had both the training and experience to make a detailed study of the area and its problems, that he had the equipment for the job, estimated it would take him no more than two weeks and would be glad to do it. If done now it would involve a minimum of time and expense. I suggested that the offer be made at once to the power commission. Some time later I heard that my suggestion had been followed but that our offer had been refused on the basis that it was a very simple powersite and no study was needed. More of this in 1951.

After seeing the powersite Ken drove me up the Duncan Creek road but it was very wet and there were a number of bad mud holes. We got stuck about a mile below Williams Creek and walked over that road to the Elsa camp arriving at 2:30 a.m. One of the company trucks took Ken back to his truck after breakfast and pulled it out while I visited around the camp. Later Ken and I drove to Wernecke to look at some features of interest and returned to Mayo for supper. Looking north from Elsa and Wernecke the mountains could be seen to be heavily mantled with snow above timberline even on their south faces and this was July 8th.

The next day I visited friends in Mayo and collected our mail and supplies. The following morning we moved down river to near the mouth of Talbot Creek and had camp up by noon. In the night the river rose 5 inches and traversing the next day north of the river, looking south the snow cover on the higher levels seemed even worse than it had from Wernecke. This made me wonder how Dick and his party were getting on up the Pelly. We shall see later.

From here we moved on down river to camp on the right limit opposite Crooked Creek. The sharp meander at the Devil's Elbow had now been cut off and was silting in. The small slough across the bend had developed into the main channel. So the courses of rivers change as described in Mark Twain's "Life on the Mississippi". On the way down we called in at the road survey camp opposite 17 mile and then had lunch at our old camp of 1946 above "Goose Slough", the big oxbow above the present bridge. Jack's cut had healed up and now he was able to traverse with me. The following days we went over the areas south and west of the White Pass Crooked Creek airstrip. The mosquitoes were quite bad. On the 15th we moved to the McQuesten airstrip passing

the Whitehorse at the mouth of the McQuesten where she was washing out her boiler and taking on the clean water of that river as the water in the Stewart was full of silt. Before this, on our way down we had gone in to see the old Lefebvre Ranch. The brush had grown up on the fields and the main buildings were in ruins. One cabin was still usable.

The 17th was taken as Sunday. I got up expecting breakfast ready an hour later than other days as was our custom but when it was somewhat past that time I found Jared still in bed. When I asked him to get breakfast he answered that as he didn't particularly feel like any himself he thought we would not want any. Evidently I had not explained our ways to him and I told him that we always had things to do.

After supper Jack and I rode to Barlow on a truck that had come down from the Clear Creek camp for a load of soil and we spent the night with Gauvin. He was eighty now and sat reading Maclean's magazine in the dim evening light in his cabin. First thing in the morning he took us to Barlow Lake and pointing across the lake to the far shore more than half a mile away said "You see where those three gulls are sitting on a log. The white channel gravel is exposed on the beach right behind them.". I could see the gulls but I am far sighted and had found it difficult to write my notes in the poor light in the cabin without my glasses. When I asked if he had ever worn glasses he said he used to but did not need them now. The well below his cabin had 12 feet of water in it which he said was the highest the water level had ever been.

The following day Jack and I walked back along the road to see if we could get any more out of the exposures there. The next three days we traversed on Icechest Mountain and on the 22nd started on down the river again looking at outcrops as we went. In this, the first stop was at the old roadhouse site below Slough Creek and poking about there we found several old cabins we had missed in passing last year as well as the steam boiler, engine and garden area Gauvin had told us of. Passing Chapman's Bar we stopped where some men were cutting wood on an island to raft to Dawson. We camped in the slough where the river comes against the bedrock on the right limit below Independence Creek and from here we traversed along the 138th meridian on both sides of the river in the following days.

Monday, the 25th, we ran down to Stewart in six hours and finding there would be no boat up the main river until Wednesday we camped on the slough at the head of the island again. A wire arrived from Wilkinson saying that he planned to leave the Farm on August 2nd on his trip up to Dick and would Jared be back by then. I answered that all three of us would be at the Farm as soon as we could get a boat to take us up river. I also wired to John Wheeler, Bob Christie and Leon Price telling them what days to expect me. The steamboats were scattered on the river so that with the canoe we might have been able to beat the first one to Selkirk but a key factor was that we did not have a good propellor. It was better to wait at Stewart where we could keep in touch with the boats. The Whitehorse arrived at 4:00 in the morning on the 27th and we went on board in the evening. On account of the dirty water, on her arrival she had started cleaning her boiler again which took about 30 hours and as a result she did not start up river until 3:15 p.m. on the next day and then she was pushing a barge which meant she would make no more than 3 or 4 miles per hour. We passed Coffee Creek during breakfast the following morning, the 29th and then spent several hours that day loading wood. We finally reached Selkirk at 3:30 a.m. on the 30th. The Sheffields at the Hudson's Bay Company kindly invited us to breakfast and we reached the Farm at 11:30. After some discussion it was arranged that Jack and Jared would go up to Pelly Crossing, get a ride to a suitable spot on the new road opposite the outcrops that we had not looked at on the north side of Willow Creek, traverse in to see them and return the same way. Wilkinson would pick them up at the Crossing with the Owl when they got back. I paid Jared to the evening of August 4th. They made the trip satisfactorily and in the fall Jack sent to me his notes and specimens which enabled me to fill in the hole in the McQuesten map.

Before leaving Selkirk for the last time mention of the changes in the river courses that had taken place since I first saw them 17 years before are of interest. All rivers have reaches that are relatively permanent and unchanging perhaps for centuries, anchored by rock outcrops, or by durable drift terraces that take a long time to cut away before change is effected. Examples of these reaches generally held by some combination of these anchors are apparent in numerous localities; but along the courses between them the streams swing from side to side forming meanders and bars that move slowly but inexorably downstream as they widen the floor of their valleys. In these sections the changes are often apparent in less than a decade. While erosion by the streams is a regular annual process, in years of major spring floods such as 1935 on the Pelly and 1937 on the Stewart changes took place far greater than in any span of ten normal years. Since 1932 the rivers had brought considerable changes in their courses and in few places were they more notable or had more impact on the inhabitants than around the junction of the Yukon with its tributaries the Stewart and the Pelly. The washing away of much of Stewart River island has already been mentioned and some reference to the changes around the mouth of the Pelly close to Selkirk is of interest here.

At Selkirk the gravel bars in the Yukon River at first had been mainly above the landing allowing the steamboats to cross the river nearby in front of the settlement. But as year followed year the river had cut away its bank on the right limit opposite, widened its course and moving the bars downstream over a broad area in its central part was leaving only a minor channel, unnavigable at its head, along the left limit, giving access to the landing so that now the down river steamboats must cross well downstream and then ascend the channel to reach the settlement while those going upriver must do the reverse.

Across the Yukon River the Pelly formerly had only two channels at its mouth, the main channel on the right limit and the reversing slough on the left. Now it has developed a second major channel farther to the right than the first cut about 1935 and the reversing slough appeared to be slowly silting in.

Opposite the lava point the Pelly is held firmly in a single channel by the lava on the right and a packed gravel terrace a little above it on the left but upstream a mile or more the clearing that had marked the site of the Old Pelly Crossing roadhouse and ferry cable tower in 1932 now had all been washed away while across the river the barn and last remanants of the road at the foot of the lava were now gone. The upper part of the trail that had led to the Yukon River bank where it passed under the lava too was washed away. Downstream from the Crossing a broad area of bars had

developed which was now partly clothed with poplars while opposite much of the wide flat below the lava had been cut away. The two islands just above the Crossing had grown as the main channel developed on the site of the roadhouse and upstream from the islands where the river impinges against the rocky hillside on the left limit the riffle had become more marked and moved upstream. Above here again the long reach beside the Pelly Farm buildings appears to have been stable for a very long time and only time will tell when the riffle's progress upstream will result in the river starting to disturb the banks along the Farm but the time will inevitably come.

After settling things with the Wilkinsons at the Farm I returned to Selkirk at 10:00 p.m., spent the night with the Sheffields and boarded the Klondike at 8:30 the next morning. We reached Stewart at 8:00 that evening and were still there when Casca arrived from Dawson at 11:00. The Casca was not pushing a barge and would make good time to Whitehorse so I checked my baggage that I would not need in Dawson on it. The Klondike reached Dawson at 8:30 the next morning. The day was spent calling on the various officials, including Mr. McFarland of the Y.C.G.C., Mr. Gibben, now the Controller in Mr. Jeckell's place, and Mr. John Dines, the Mining Recorder. In addition I saw several prospectors and Dr. Bill Smitheringale.

John Dines kindly invited me to drive around the Klondike operations with him. The next day we drove to Bear Creek, up Hunker, over the summit, down Dominion, up Sulphur, to the summit and down into Quartz and the back by the Calder summit, down Eldorado and Bonanza stopping to visit the various operations on the way. This one day trip speaks well for the roads that rainy summer. After another day in Dawson I flew on the 4th to Whitehorse.

On the morning of August 6 Rex Jackson drove me to Carcross where I saw John Wheeler and met Bob Christie and his party as arranged.

Bob planned to take me around Tagish Lake during the next few days. We left Carcross in his canoes at 7:55 the next morning going through Lake Nares and into Tagish Lake. We passed the entrance of Windy Arm and started around the point into Taku where it became too rough for our heavily loaded canoes. Also for some reason the motors were not running well. We turned back a mile or two towards Carcross and landed at a place where the party had camped in the beginning of the season.

The time before when the party had been there and left the site, a forest fire had sprung up there that was seen from Carcross but had been extinguished before it had spread far. When we were there one could trace exactly how it had started. All the camp fires had been carefully put out on leaving but one of the assistants despite strict instructions to the contrary had tossed a burning cigarette butt away onto an area of thick dry moss. The whole pattern of the fire's ignition and spread from the butt was recorded in the burnt moss. This as far as I know is the only instance of a forest fire being started by the Survey in the Yukon or Northern British Columbia though as told in 1941 we had had two narrow escapes on the same day. The motors had continued to give trouble off and on but the lake had steadily become calmer and we moved to Potter's Point. The next morning walking around to the north side of the point I saw a wolverine about 100 yards away. The only one I have seen. Later Bob took me to see the Racine Falls, the ruins of the old sawmill and its power plant and a number of features including frost polygons.

From Potter's Point we moved to Graham Inlet camping on the beach on the east side of Indian Point. The other tents were along the beach but always liking a good view I put my tent about 150 yards away up on a bank of drift some 20 feet above the lake shore. Here I could look across the inlet at the mountains. At the tip of Indian Point the inlet is at its narrowest except perhaps at the Golden Gate at the entrance. This narrows is a natural game crossing. Behind my tent there was rather open second growth of spurce, poplar and willow and another 150 yards to the east, the bank sloped down and the shore bent north forming a shallow, muddy bay. The next day it rained and the only notable event was the passing of the steamboat Tutshi which looked very pretty all lit up in the evening in the moonlight now that the weather had cleared.

The 11th was a beautiful day and calm. We visited Taku, near the end of the inlet where the Tutshi and small boats docked to unload at the end of the railway that crossed the isthmus to the wharf on Atlin Lake known as Taku Landing. We rode on the railway track on a vehicle that was a hybrid between a small flat car and an old motor car. The one and only steam locomotive, No. 52, of the line was on a siding and seldom if ever used now. The track was about two miles long and I believe boasted that it was the shortest railway in Canada. Two White Pass men kept the railway in condition. Its importance was that it formed the vital link in the supply line to Atlin as the road connecting the town with Jake's Corner on the Alaska Highway had not yet been completed.

Back at camp that night I was busy and up later than usual. The little fire in the entrance of my open tent gave me light and company and was still flickering a little when I got into bed which was along the back wall of my tent. The lake was quiet and all was silent. After a few minutes as I was dozing off I was aroused abruptly by a tremendous roar that seemed immediately right beside me outside the tent. Opening my eyes I instantly realized that the outline of my form as I lay on the ground was silhouetted by the firelight on the back wall of the tent. I must remain motionless and silent or I would invite attack on the tent. I had not the least doubt it was a bear and thought it was probably a grizzly though I had never heard one roar before nor indeed had I ever read or been told of one roaring except when wounded. For a minute or two roar followed roar. I could hear him draw his breath for each. There was no sound of movement. Then he moved away a little and stopped to roar again two or three times. This procedure was repeated and to my relief I realized he was gradually moving further away and the intervals between stops to roar were longer. He was going towards the little bay. Then I heard him splashing in the water still giving roars now and then. Finally all was silent again. I put a couple of sticks on the fire in case he should return and got back into bed. It was 1:00 a.m. In the morning I went over the tracks which showed clearly, particularly in the muddy edge of the little bay. It was a grizzly but not a large one, perhaps a two or three year old. Evidently he had come through the second growth to go out to the point and cross the narrows but coming to my tent had smelt either me or the fire and didn't like it. At that moment he had been about 5 yards from the tent. His roaring probably was a means of trying to bolster his courage and bluff. The others asleep down in the camp had not heard a sound.

On the 12th we moved to the old abandoned Engineer Mine which had been a small but spectacularly rich gold producer in its day. Here we stayed in two of the mine buildings. Walter Sweet, a prominent character and old timer with a partner were collecting and cleaning the amalgam that had fallen to the ground between the floor planks of the old mill. He showed us through part of the mine workings and a number of specimens of the interesting rare metallic minerals that occurred in the vein were collected.

The next day it rained and was stormy but the following day after an early lunch, as the weather was improving we went to Ben-My-Chree at the end of the West Taku Arm where I was to board the Tutshi in the evening. I had often heard of the beauty of Ben-My-Chree which means "girl of my heart" and had looked forward to visiting it. It is on the sunny north side of the Swanson River where the ground begins to rise towards the valley wall. The setting is, indeed, superb. On all sides except the lake, on the east, are the Coast Mountains. Looking west up the valley of the river in the far distance, snowy peaks project from the icefield that lies along the International Boundary. In the nearer distance the ice surface slopes down and tongues protrude as glaciers between closer summits supplying meltwater to the river. On either side ridges and peaks of no less height and ruggedness than those along the Boundary wall in the valley. Their lower levels are clothed with green vegetation and spruces and firs grow on the parts of the valley floor not occupied by the broad, braided course of the river. Looking eastward to the lake, the mountain walls continue on both sides framing the view of the mountains down the lake in the distance. This locality on the inner side of the mountains is blessed with a more moderate precipitation than the icefield on the divide but not so light as to give it the aridness of the interior plateaux.

Here in this choice nook Mr. and Mrs. Otto H. Partridge took up a homestead and staked gold quartz claims early in the 1900s. They built their house a little back from the lake to take full advantage of the exquisite view to the east and south. Around it and particularly on the south side they developed a lovely flower and a vegetable garden. In this they made Ben-My-Chree a beauty spot on the lake where they invited and entertained visitors. In their later years the White Pass arranged with them to make Ben-My-Chree a regular stop for the Tutshi on its tourist excursion trips and built a long pier out to deep water for landing. This was so popular that the company continued to keep the place up on the Tutshi's schedule after the Partridges had both died near the end of 1930.

We landed at the end of the pier, tied the canoes where they would be out of the Tutshi's way and went ashore along the pier which was several hundred feet in length built on piles over the wide stretch of shallow water of the Swanson River delta. A hand rail extended along each side of the deck of the pier. A short walk led up to the Partridge's house. The staff were busy preparing food and floral decorations for the tourists. We wandered around the house, green house and garden which were all well laid out and maintained. When the tourists arrived at 7:30 p.m. they were shown around, given refreshments and told the history of the place. An interesting thing that was told us was that one year a good deal of the vegetable garden had been left in the ground when the place was closed for the fall. The following spring the potatoes, carrots and other roots were as good as they had been the fall before and had not been frozen at all. In these mountain valleys the snow comes early and at Ben-My-Chree reaches some 20 feet or more in depth. As a result there was no frost in the ground nor any sign of permafrost in the valley.

After the refreshments we went out to the Tutshi where I said goodbye to Bob and his party who followed the steamboat down the lake to the Engineer Mine. The tourist season was waning so the steamboat was not crowded and the passage along the fiord-like lake with mountains on each side on this still evening was indeed delightful.

In the morning in Carcross I ran into Jack Souther who was looking after John Wheeler's horses while John with the rest of his party were up the west arm of Lake Bennett. He was on his way with their truck to fetch mail and supplies from Whitehorse. He expected the others back in the afternoon. I was glad to meet Dr. W. Earl Godfrey, the ornithologist of the National Museum of Canada here and we lunched together. He was most interested in the unexpected variety of birds he was finding in the area. About 3:00 p.m. John arrived and after supper in Carcross we went by canoe to his camp on the west side of Watson River. The lake was stormy and it had been drizzling all day. When the second canoe trip arrived later with Jack and other members of the party together with 800 pounds of supplies it was dark. The rain continued all night and the next day we could not see or do much except go over the maps and the only incident was that a brown bear wandered through camp. The following day, still with rain and wind, John took me back to Carcross by canoe and then drove me to Whitehorse in his truck. It was August 17th, Klondike Discovery Day, and the Whitehorse streets were a mass of mud, with the rain.

The next morning I flew by C.P.A. to Watson Lake and was met at the airport by Leon Price and two of his party with their truck. After lunch at the lodge and some fixing of the truck we drove to McDame. The road south from the Alaska Highway had been built to service the Moccasin Mine, a placer operation on McDame Creek, and not much construction had been expended on it but it was passable in dry weather when the streams were low. The road down to the mouth of McDame Creek was about the roughest I have ever been on. At McDame the Hudson's Bay post and Mounted Police station stood on the west bank of the Dease River and their buildings were in good shape but vacant. The Indian Village that had been opposite on the east bank was gone. There, only the school building and a cabin a little upriver were still standing. The village site was covered with a lush growth of lawn grass and on the northeast side stood a great poplar tree with spreading branches and crown and broad, heart-shaped leaves like those of southern interior British Columbia and quite unlike the poplars I was accustomed to in the Yukon. Several other familiar southern plants grew here too and there was no sign of permafrost. The current of the Dease here is relatively slow, its channel is of fine gravel and mud and its water warmer than that of the Yukon and its tributaries. As a result there was a good deal of weed in places something almost never seen farther north. We rowed across to the camp on the village site.

In the morning we moved with the horses along a trail eastward. On this we crossed Four Mile River and went up Sheep Creek to pitch camp a mile or so east of the divide to Rapid River. This was quite different country to what I had become accustomed to in the Yukon and I was delighted to see something of the Cassiar if only a little of the northeast part. The next day Leon led us on a traverse north and we had a grand view in

all directions but particularly of the Rapid River valley and the Horseranch Range beyond it. The following day we crossed the valley south of us and climbed to a commanding point. The valley was choked with scrub balsam, very wearisome to get through. The mountains around us were in small block-like ranges each having three or four high summits and separated by deep wide valleys. The scenery was lovely. At this camp the horsefeed was not as good as I expected in this country and it rained. On the 24th we returned to McDame they way we had come. The next morning we visited and had lunch at the Moccasin Mine camp where the company had a drag line shovel and washing plant. From here we went up to Centreville looking at old placers along the way. One miner was working there.

On the following morning we drove to Watson Lake where I stayed at the Lodge. Frank Steers of the Geodetic Survey was there putting in control.

The 27th of August I flew to Edmonton arriving at 4:30 p.m. The C.N.R. train from the west was six hours late coming through the mountains. When my train reached Winnipeg there had been a head-on collision between two freights on the mainline to the east and it was closed. We were re-routed on the southern line and then spent the night some 40 miles west of Fort William as there had been another head-on wreck of freights on that line. When we started on again we were 26 or more hours late so we had free meals until we had made up time and were less than 24 hours late. I finally arrived in Ottawa on the 31st, 23 hours late. I had never experienced such a trip on the C.P.R.

In the meantime news had come from Dick Campbell of his summer. The trail along the route east from Last Glimpse camp had been very wet but passable. On reaching the Big Kalzas River, instead of finding it a fordable stream as we had every time in the Mayo area, it was a swirling torrent, flooding its valley floor on both sides of its normal course. Finally they had found a narrow enough place where big spruces were handy. Here they built a log bridge 180 feet long across the stream and carried everything over the stream on it piece by piece. Another place was found where the horses could swim and so this obstacle was surmounted but with the wet state of the ground in general, travelling had been slow throughout the season and not all that had been planned could be accomplished. However, they had made their appointments with Wilkinson on the Pelly on the prearranged dates. The three remaining new horses died one by one. We never did find out what was wrong with them but had to be thankful that whatever disease it was they had, the old horses had not contracted it.

While I was with him, Leon mentioned that on August 1st he had found a showing of asbestos at above 6,000 feet elevation on the summit of a spur projecting northwest from the side of the ridge that extends north from McDame Mountain. The showing was of good, cross fibre asbestos in veins up to an inch thick, in bright green serpentine and paced 800 feet along the crest of the spur. Also abundant asbestos fibre lay on the upper part of the slope on the westerly side as float. We discussed its value in this seemingly inaccessible area and I particularly thought it was of no immediate interest. Leon planned to compile a preliminary map with notes in which it would be described for the Survey as soon as he returned to U.B.C. in the fall so it did not seem urgent to report it to headquarters at once. His report, however, was never written as he was moved to other work. At the end of the season Leon had his horses taken by truck to Robinson for the winter.

After I had left, a lone prospector, Bob Kirk, visited Leon's camp about September 1st and asked Leon where he should prospect. In the discussion Leon referred to his discovery of asbestos and told Kirk where it was. At this Kirk implied that he was mainly interested in sulphide mineralization and complained that 6,000 feet was too high. Could not Leon suggest something at a lower level?

In those years in the Yukon and northern British Columbia the chiefs of field parties gave advice to prospectors on where and what to look for in their respective map areas with the purpose of expediting the mineral industry in any way possible. The competition of later years had not yet arisen. In telling Kirk of the asbestos Leon did nothing against instructions. He was prepared to tell any other prospectors he met in the area but he did not see any. Here the matter rested as far as he was concerned.

As for Kirk the asbestos was apparently ignored until sometime in the winter when he read in the Northern Miner of the great demand for asbestos. On the basis of this he returned with three other men in 1950, staked the showing and optioned the claims to Conwest Exploration Company in October.

A year or two later one of Leon's assistants sued Kirk for a shore in the returns received from Conwest on the basis that he and one of the other assistants had told Kirk of the deposit. Just when these two had talked with Kirk is uncertain but Leon knew nothing of it until he read of the case in the papers. In the case Kirk did not mention his conversation with Leon but did say he had understood the occurrence was common knowledge.

It was after this case, that in 1958 strict regulations concerning the release of any information found during fieldwork were instituted and an annual "Information Circular" describing interesting features such as mineral discoveries was published each fall for distribution simultaneously from the Geological Survey offices across the country. Such is the story of the discovery of the great Cassiar Asbestos mine.

## CHAPTER 8: THE SEASONS, 1950 TO 1954
## SUNDRY JOBS AND SUPERVISION

### Section I: 1950, The Dyea Hydro Water Diversion Scheme

Pressure for electric power increased immensely after the war and led to a search for major hydro-electric sites throughout the west. This brought the development of the great power plant of Kemano, B.C. where the headwaters of the Mechako River gather in a group of lakes at an elevation near 2500 feet, close to tidewater on the Gardener Canal. The main headwaters of the Yukon River also collect in a group of lakes at elevations of more than 2150 feet near tidewater in the north end of the Lynn Canal and this suggested another great power site. The situation here, however, is complicated by two factors, first that the water diversion is all in Canada and the power site in the Alaska panhandle and second that the whole course of the Yukon River through both the Territory and Alaska would be robbed of much of its water. The possibility of using this power prospect was particularly attractive to American aluminum manufacturers who pressed for its development.

Due to this during the winter of 1949-50 a meeting was held in the office of Dr. H.L. Keenleyside, Deputy Minister of Mines and Technical Surveys. It was attended by some officials of the American Aluminum Company, including the president, and I was among the Canadians summoned. The subject discussed was the conditions effecting the power to be developed by the diversion of the headwaters of the Yukon River to near Dyea on the Lynn Canal. In the course of the meeting the president of the A.A. Co., naively gave the opinion that of course there would never be any use to speak of for power on the Canadian side and to reserve a maximum 5% of the power for Canada would be more than ample to allow any possible future requirements there. None of us had ready information by which to refute such a statement. This was a Thursday morning. There was to be another meeting in the middle of the next week. By the time I was back in the Museum after lunch I had made up my mind to write a paper by which Dr. Keenleyside could deny such a conception of our future needs and I had conceived its form and matter. By Friday night I had my paper roughly written out with a map drawn in pencil. All Saturday and Sunday I improved it and drew the map in ink on linen ready for printing. First thing on Monday morning I took it into Clive Cairnes, then editor for the Survey, and told him why I had written it. When he had gone through it we took it into the Director and explained its urgency. By Tuesday afternoon a copy was in Dr. Keenleyside's hands. After reading it he called the Director and expressed his thanks to the Survey and classified it. I did not attend any subsequent meetings with this group but it was apparent later that the paper had had the desired effect. As soon as feasible the Director obtained its declassification. This was the origin of G.S.C. Paper 50-14, "Potential Mineral Resources of Yukon Territory". It was polished up, the map redrawn by the Draughting Division and first released to the public that fall. It proved popular despite its speculative character. Among other things, it gave the first suggestions that there might be oil and gas in the Porcupine and Peel Plateaux. Two lots of mimeograph printings of it were made before the end of 1950 and it was revised and reprinted in 1954 and again in 1957.

But now to deal more directly with the season of 1950. The thirst for the development of this hydro-electric power site in the spring of the year led the Canadian and American governments to take steps to study the numerous factors bearing on the power prospect. A joint International Committee composed of Canadian and American governments to take steps to study the numerous factors bearing on the power prospect. A joint International Committee composed of Canadians and Americans was appointed. Mr. Charles H. Herbert of the Department of Resources and Development was made the Canadian chairman and Mr. J.M. Morgan, Chief of the Alaskan Investigations Office was the American chairman. The other members of the Committee were men of both nations conversant in branches of law, economics, science and engineering bearing on the international aspects and feasibility of the prospect. A geologist was appointed from each country and the lot fell upon me to be the Canadian while Mr. Ade E. Jaskar of the United States Bureau of Reclamation was my counterpart.

At first my feelings were not very happy. For one thing I felt lacking in the type of experience required and also I had now more than 24 years service to my credit making me entitled to four extra weeks leave in addition to the usual three weeks annual leave. 1944 was the only summer I had ever had at home with the family and the duration of my field seasons had generally been from the end of May to October. Violet and I had been planning and looking forward to a summer holiday with the children in British Columbia. At first it looked as though we would have to forego this altogether for another year. When, however, Charlie Herbert told me the Committee meeting in Whitehorse would be at the end of August and I heard from Jaskar that it would suit him to join me in the earlier part of that month it was clear the work could be carried out with little interference with our holiday.

The study of this great power prospect involved not only a number of the Geological Survey field parties in the Yukon and northern B.C. but also others, notably parties from the Topographic and Hydrographic Surveys of the Surveys and Mapping Branch of our Department. Visits to these parties were planned during the reconnaissance tour that Jaskar and I were to make.

Accordingly, with Violet and our two daughters I left Ottawa on Friday, June 30th by C.P.R. for Monte Creek to stay with my two sisters, Jean and Nan, at the Ranch where we all enjoyed ourselves on such activities as the cattle drive to Paxton Range.

On August 7th leaving the family at Monte Creek I caught C.P.R.'s fast through train, No. 3, to Vancouver. The trains still stopped for us at Monte Creek on request. Here I called on Bill Cockfield and Jack Armstrong at the Vancouver office of the Geological Survey and boarded the C.P.A. plane in the afternoon for Whitehorse, arriving there on the morning of the 9th. I called on Reg Jackson in charge of the Forestry and Bill Emery, the Mining Recorder to get the Yukon news and then looked up Jaskar. John Wheeler arrived with his truck and we discussed the possible damsites along the Yukon River between the Whitehorse Rapid and Marsh Lake and then we drove to see the control dam at the foot of Marsh Lake that was used by the White Pass to hold back a few feet of water on Marsh, Tagish, Nares and Bennett Lakes in the winters and early springs so that when navigation was to be opened the water could be let down the main river to raise its level before the natural time which would normally be a month later.

The work of many field parties was involved to some degree in an overall general study, the basic objective of which centred around determining the most practical level at which the waters of the Yukon River could be held to be diverted by tunnelling about 20 miles from the head of Lake Lindeman under the Chilkoot Pass to develop the maximum feasible power at some site close to tide-water on Taiya Inlet, a branch of Lynn Canal in Alaska. The key of the whole project would be the dam on the Yukon River between Whitehorse and Marsh Lake. The size of the dam and the level to which the water could be raised, would depend on the characteristics of this dam site, the topography of the valley where it was located, the permeability and other features of the ground, whether bedrock or overburden, around the site. But the locality chosen for this dam also depended on what water level was considered most practical. This in turn would be dictated by numerous factors, including not only the characteristics of the storage basin around the lakes but economics and human factors.

On the one hand if most of the basin of Lake Lindeman was lower than the surface level of those lakes down stream it might be feasible to cut a channel between Lakes Lindeman and Bennett and start the diversion tunnel low enough so that there would be little or no flooding. While this would sacrifice some head and so some horsepower it would not disturb Carcross, Atlin the White Pass railway, many other localities, and some miles of the Alaska Highway. At the other extreme was to aim at the maximum possible head, regardless of other factors, allowable by a dam site on the Yukon above Whitehorse. It appeared this would raise the levels of the lakes including Atlin Lake into one great sheet of water and involve a great deal of flooding and general disturbance to the whole countryside. Between these two extremes many intermediate levels were possible and data had to be collected so that they could be considered. It was the duty of the field men to gather the data by which the choice could be made.

For this the Surveys and Mapping field parties were making detailed contour maps of the topography of the valleys below the 2400 foot contour as well as all the lake basins that might be involved below water level including those of Atlin and Sloko lakes.

The Geological Survey parties of Wheeler and Christie were carrying on in their respective Whitehorse and Bennett map areas and paying special attention to the localities at which we thought engineering might possibly be needed. In this John Wheeler had the possible dam sites above Whitehorse and Bob Christie the localities from Lake Bennett to the tunnel site and over to Sloko Lake. This preliminary work particularly took in the qualities of the bedrock and its fracture zones and also the characteristics of the overburden. It was up to the Committee geologists to indicate feasible localities for engineering works, particularly dam sites that might later be worthy of more detailed studies.

The following morning, the 10th, Jaskar and I went by train to Bennett where we met Bob Christie and his party as planned and had lunch in the White Pass station. Captain Brown of the Hydrographic Survey was at Bennett as he was completing the soundings of lakes Lindeman and Bennett.

After lunch Bob took Jaskar and me to his canoes on Lake Lindeman and thence to his camp on beach at the lakehead. The next two days were spent in going over the area there to see if there were suitable sites for the diversion tunnel and over the Chilkoot Pass route as far as Long Lake under which the tunnel would lie. In places the brush had grown up and the trail of the Klondike gold rush days was gone. Back at Lindeman townsite the most noticeable remnants of '98 were two or more low mounds of broken glass of liquor bottles of every conceivable size and shape but no whole unbroken bottles were to be found. Jaskar was most enthusiastic about the hydropower development and was full of confidence that it would be carried through. We blazed a tree to mark where we thought the entrance of the tunnel would be and wrote on it in large letters "Start Here". He had had wide experience in hydro engineering geology, first with the U.S. Army Corps of Engineers and then with the U.S. Geological Survey. Going around with him was like having a first class field instruction trip in this discipline of engineering science.

The campsite on the beach gave a lovely view down the lake but the water though crystal clear was icy cold. The weather was sunny but the wind very cold. The possibilities of a branch of the great Shakwak fault system passing across the tunnel which we judged would be around 20 miles long altogether were discussed but Bob's geological mapping on the Canadian side and the topography suggested there was no likelihood of that. The plans for the rest of our tour were talked over including our visits to the Lindeman-Bennett channel, Taku Isthmus, Atlin and Sloko Lakes, Carcross and the Tagish-Marsh Lakes narrows. On the 13th camp was broken and we went down the lake and looked at the canyon-like stream course into Lake Bennett. We lunched at the Bennett Station and caught the train for Whitehorse, while Bob and his party went on by canoe to Carcross.

From Whitehorse Jaskar and I took our things to John's camp which was at the old site of Canyon City on the bend above Miles Canyon where the old tramway by passing the canyon had started. We returned to Whitehorse and took rooms in the Whitehorse Inn. The next day the 15th, the Joint Committee gathered and we spent the day and evening at meetings. Among others there was Col. J.G. Truitt of the U.S. Army Corps of Engineers who had been in the Yukon during the war and after whom Mt. Truitt at the south end of the Glenlyon Range is named because as he told us when piloting a plane across the range he had almost hit it.

The meetings over, Jaskar and I returned to John's camp arriving sometime after midnight. The next day we went over the river valley above Miles Canyon and the Chadburn Lake depression as it seemed that the best dam site would probably be somewhere in this area. The following day leaving Whitehorse after lunch with A. Milne Floyd of the Topographical Survey we drove along the highway and down the new road from Jake's Corner to Atlin to meet Bob there. The lake was very rough so as Bob's canoes would be heavily loaded without us we stayed in the Kootenay Hotel run by Mr. and Mrs. Roxburgh. This hotel was a museum of the earlier days, equipped as it had been nearly half a century before with the best of that time in furniture, china and other hotel utensils which gave it a comfortable atmosphere even if the facilities were old fashioned.

In the morning we crossed the lake to the wharf at Taku Landing, in a fast boat owned by Mr. Turner of Atlin and hired by Captain Brown whose hydrographic party was now working on Atlin Lake. Dr. Douglas Leechman archaeologist of the National Museum of Canada and two other men came with us. From the landing we went south down Torres Channel to the camp of Gordon M. Armstrong's Topographical Survey party. From here across the channel we had a fine view of Teresa Island, the most mountainous island in a lake in the world. Its highest peak, Birch Mountain, stands 6755 feet a.s.l. and more than 4500 feet above Atlin Lake.

After lunch we continued south to the end of Llewellyn Inlet and landed at the old wharf, built for the tourists who used to come by launch from Atlin to see the Llewellyn Glacier. Also there were two or three buildings for overnight tourist accommodation. We walked over the rocky bluff to look at the glacier and returned for supper and the night to another Topographical Survey camp under L.W. Churcher.

On the morning of the 18th we went on to the south end of Atlin Lake and walked over to Sloko Lake and back. Then we returned to Armstrong's camp for supper and to sleep. A bear had been a nuisance around the camp. Jaskar and I shared a small tent and he wanted to have the entrance closed up tight when we went to bed. It seemed to me this would be unbearably stuffy. I could see little likelihood of the bear disturbing us. He would go for the cook tent so I slept in the open doorway with Jaskar at the inner end.

The following morning we were off by 7 and reached Taku Landing by 11. We examined the upper end of the Atlin River channel and watched Walter Sweet pilot the large White Pass barge which was no longer needed on Atlin Lake now the road to Atlin was completed, down the river to the wharf at Taku on Graham Inlet. We met Bob and had lunch at his camp where we left our things. Then he took us to the northeast end of the inlet and we went over the isthmus in that part to see if a better control channel than that of the river could be made there should it be desirable to drain Atlin Lake to a lower level. The weather was warm and sultry. The next day we walked up the south bank of Atlin River and after lunch Bob took us to catch the steamboat Tutshi at the Golden Gate. She was crowded with tourists and we slept on cots on the deck. In the morning at Carcross we hired a boat to take us around Lake Nares and after lunch caught the train to Whitehorse where John met us.

The next day, the 23rd, we hired a plane on floats and flew up the river to Marsh Lake, then north up the valley of M'Clintock River and through the deep wind gap to the Teslin Valley. We followed the Teslin to near Johnson's Crossing and turned northwestward to look over some of the other gaps between the Teslin and Marsh Lake through which the Teslin might be diverted. After lunch in Whitehorse we took a taxi to Miles Canyon as John's truck was having tire troubles. From camp we walked up the right limit of the river and examined the consistency of the high drift banks that would flank dam there. The numerous sandy layers in them looked quite permeable to me. But Jaskar pointed out that the sand layers were intersected at every few feet by transverse seams of fine silt which he said would seal them making the banks impermeable. Remembering our troubles with leaking irrigation ditches in similar fine glacial silts at the Ranch at Monte Creek there is still a question in my mind about this matter.

The following day we took a taxi to Milne Floyd's camp on the Yukon River just below the Marsh Lake control dam and borrowed one of Milne's canoes to use in making a traverse of the river as far as John's camp. The purpose of this was to see what alternate sites there might be. Milne was making a very detailed map of the river valley from Lake Marsh to Whitehorse. After supper at the table Jaskar entertained us by taking off a number of well known personalities including Hitler whose mustache he represented with his comb in a most effective way.

Later we discussed the writing of our reports. In this he emphasized that they should be entirely objective and no conclusions should be put in. Later in writing mine in Ottawa I thought some conclusions were called for. When I sent him a copy of mine he said emphatically that no conclusions should have been given. I have since realized the wisdom of this.

On the 24th Jaskar left for Juneau, Alaska by plane and I was indeed sorry to say, goodbye. For me our tour together had been most congenial and instructive. Our work throughout had been greatly expedited by the generous co-operation we had received from every survey party.

The next day John and I spent examining Miles Canyon to find out what we could about the materials between and underneath the lava flows. The field work as far as I was concerned for this stage was now finished. The next morning I flew back to Vancouver and caught the evening C.P.R. train for Monte Creek to take the family who in the meantime had paid a visit to Nelson, back to Ottawa by C.P.R. two days later. This was the last time I made the journey between Monte Creek and Ottawa; I had made a round trip during more than 36 years of my life.

## Section II: 1951, The Mayo Hydro Dam Site

There was no plan that I should visit the Yukon this year but things turned out otherwise. On May 15th Mr. E.W. Humphreys, electrical engineer for the Northwest Territories Power Commission phoned to say that the Montreal Engineering Company and the construction company building the hydro power development on the Mayo River were having trouble with the ground. Could we help and at once? Going in to Dr. Walter A. Bell who was then Director, I told him the situation as far as I knew it. It was imperative that

we should help despite the brush-off we had been given in 1949. I tried without success to make reservations to go by air as soon as possible but none were to be had before the 21st at the earliest. A meeting was called during the afternoon of the 15th in the office of Mr. J.M. Wardle who was chairman of the Northwest Territories Power Commission. Dr. George S. Hume, Director General of the Department of Mines and Technical Surveys of which the Geological Survey was a branch and Dr. Bell were both there. Also Ted Humphreys and a number of others besides myself. We were told the trouble as fully as they knew it. The diversion tunnel through the neck of the horseshow bend in the Mayo River canyon was in 1200 feet, about half its length. It had been driven in very soft ground and part of the tunnel was being slowly crushed and closed. The miners refused to work in it. Also the ground where the site for the powerhouse had been chosen had proved too soft to hold it. The engineers were uncertain where to look for better ground. This was just what Ken McTaggart and I in 1949 had been afraid might happen if the area was not carefully studied, mapped and tested before the sites of the tunnel, dam and buildings were chosen. I was not a bit anxious to do the study now after the problems were complicated by the work already expended on the tunnel. I reminded Mr. Wardle of our offer in 1949 when it would have been of maximum use to the engineers to have had a report on the geology and so simple and economical for us to have made the study. He said "Well, we are asking you to go now". That settled it. I told him of the difficulty in getting flight reservations and he said he would look after that and that all expenses would be on the Power Commission. I asked Dr. Bell if I could take Mr. E.B. (Ted) Owen with me as he had had considerable experience in such engineering geology problems. Ted Owen and I flew by T.C.A. to Vancouver the night of May 21st. Mr. Lawrence H. Burpee met us in the morning at the airport and drove us to his house where we were treated royally and put up for the night at the Hotel Vancouver. There we met several officials of the Northern Construction Company and the J.W. Stewart Company both of which were involved in the building of the power plant.

In the morning we were driven to the airport and given seats on a plane belonging to an American company, Morrison and Knudsen Incorporated, that had just flown in from Seattle. We flew directly up the Coast and the weather was unusually clear. That this happened was to prove a great stroke of luck for me as will be seen in 1954. We landed at Whitehorse for Customs, Immigration and to refuel. The Immigration officials jumped on our pilot for transporting Canadian passengers in an American plane between two places in Canada. It almost looked as though we were not going to be allowed to go on for awhile but the matter was finally settled and we flew on to Mayo arriving at 4 p.m. Vancouver time or 2 p.m. Yukon time, May 23rd.

We were met and taken straight to the construction camp on the terrace where the houses of those in charge of the power plant now stand. After being suitably equipped with hard hats, lights, picks, overalls, and rubber boots we were taken into the tunnel. The entry of the tunnel was close to the river level and about 200 yards from the camp. It was 8 x 8 feet inside and lagged with 8 x 8 inch douglas fir timbers, the frames being set close to each other. A short distance in from the entry these great beams were cracking, then farther in splintering and buckled with the pressure of the ground around them. Part of the tunnel was reduced to about 5 x 6 feet with grey, slimy mud oozing in on all sides and had become hard to get through with the deep mud on the floor. Farther in it passed into rock and was alright.

The next two days Ted and I went over the whole horseshoe bend of the river canyon and on the 26th Mr. MacLean of the construction company and Mr. Con. Mulheurin of the Montreal Engineering Company whom Ken McTaggart and I had met in 1949 went around with us. We told them they had driven the first part of the tunnel in a large fault zone and could get out of it by relocating the site of the powerhouse several hundred feet upstream from its original site and diverting the lower end of the tunnel and other works to fit. Here, upstream, the rock though fractured a bit was relatively sound. It was the expansion of the clay-like fault gouge due to the absorption of water on thawing that was crushing the tunnel.

Ted and I decided to stay another week and map the whole area of the canyon where the engineering works were to be in case further problems arose. We had already mapped the inside of the tunnel and the Montreal Engineering did any drafting and map copying we needed.

The next day was Saturday and in the afternoon we went to Mayo where Ted distinguished himself in a ball game between the construction camp and the town. I watched for awhile but finding that Alec Nichol was the only old time resident I knew in the crowd I went off to visit my friends. Among others I was delighted to find Henry Le Blanc whom I had not seen for some years and regret to say this was the last I saw of him. I phoned Kipper (Red) Taylor at the Elsa Mining Camp on Galena Hill and Ted and I visited there on Sunday. Kipper showed us around and invited us to supper with him and Margo, his wife, in their house.

During the following week we mapped the canyon in detail and also went up the Mayo River about a mile to look at some diorite outcrops as we had been asked to find heavy, blocky breaking rock to face the dam with. With its specific gravity near 3 this was ideal but too far away and ultimately some blocky quartzite close by was used for the dam. We drove with Mulheurin to Mayo Lake to see where the control dam would be as the lake would be the main storage reservoir. During the week Mr. Burpee arrived to see how things were progressing. By Friday we had done all that was necessary. The whole layout of the works was discussed with the engineering and construction staff. In this we suggested as already mentioned the moving of the powerhouse, surge tank and the lower part of the tunnel upstream well away from the fault zone. This meant making the tunnel longer than originally planned and putting two bends in it but the hydraulic head would not be appreciably reduced. Had the new sites been chosen in the first place, the tunnel would have been shorter and less costly. We were also consulted on the route the transmission line should follow to the Elsa Camp.

Throughout, our stay in this camp had been most congenial. The weather had been lovely with the fresh clear air and spring sunshine. On the willows and aspens the leaves were busting from their buds in the valley while around above 2500 feet the snow mantled the hills with white and blue. The work had been interesting and enjoyable.

Ted and I hired a pick-up truck from Bud Fisher on June 2nd, Saturday, and drove to Whitehorse stopping to visit old friends on the way and to have lunch at the Israel's at Carmacks. After a night in the Whitehorse Inn we flew homeward by C.P.A. to Edmonton and thence by T.C.A. to Ottawa.

## Section III: 1952, A Supervisory Tour to Widely Separated Field Parties

This summer, 1952, was occupied by a supervisory tour visiting seven parties in the Yukon and northern British Columbia. They were led by Bill (W.H.) Poole in the Wolf Lake map-area, Bob (R.L.) Christie in the Bennett, Jim (J.D.) Aitken in the Atlin, Dick (R.D.) Campbell in the Glenlyon, Ed (E.D.) Kindle in the Mayo Lake, John (J.O.) Wheeler in the Selwyn Mountains and Hubert Gabrielse in the McDame. All except Ed were postgraduate students at University. There was more to do than ever in allotting assistants, in making out estimates, equipment lists, writing instructions and then in seeing that everything was sent to the right men in the right places and at the right time.

The northern Selwyn Mountains project was a notable one and warrants background. It was an exception in the general policy of the Survey of methodical 4-mile mapping. Also it was perhaps the longest and loneliest packhorse journey for the Survey ever in the Yukon it not anywhere in the Cordillera. It is almost certain no horse expedition was made in earlier decades even by G.M. Dawson and D.D. Cairnes in such solitude. In their areas prospectors were frequently to be met here and there but here there was no expectation of meeting a single soul. In a sense, too this journey marked a climax for the packhorse days as the use of horses had already begun to fade before air and motor transport. C.H. Stockwell's long, lonely journey in 1932 north of Great Slave Lake to Coppermine River and MacKay Lake by canoe and paddle was perhaps a similar climax for that mode of travel in the Northwest Territories.

The writing of Paper 50-14 described under 1950 had emphasized the serious dearth of geological knowledge of large regions of the Yukon, notably the Porcupine Plateau, the northern Selwyn Mountains and the southern Selwyn Mountains. Also the fact that though these areas had been neglected since Wernecke's time some prospectors were again beginning to venture into them made their exploration urgent. Before this I had already suggested to the Director that we look towards exploring them but at that time lack of qualified personnel as well as funds were curtailments. In 1952, however, funds were granted for the exploration of one of these regions and the northern Selwyn Mountains region was chosen, partly because of reports of mineral discoveries, including hematite in it. The little known of this region came from a very few prospectors, bush pilots, trappers, hunters and early explorations of adjacent areas. There were no topographical maps, but air photographs of it had recently become available. All indicated its mountainous character and a scarcity of lakes.

The work was to be done by a small horse party supplied at intervals at the few scattered lakes in the region by fixed wing aircraft. The personnel had to be carefully selected and the horses good. Last summer John Wheeler had completed the field work of the Whitehorse map area which gave him a full enough load of research and writing on top of his studies at Columbia University. The preparation of a map and report on the northern Selwyn Mountains alone would be a considerable task. He had, however, shown himself admirably qualified to lead such an expedition. It was offered to him and in spite of the delay in obtaining his degree it might entail he accepted it.

The party was to consist of four men, including John, and eight pack horses. Z. (Hank) Nikiforuk was to be his assistant and Ed Kohse, senior and his son, Fred, were to be packer and cook. Ed had been John's packer around Whitehorse for the last three years. He was now 69. He had been in the Prussian cavalry before he migrated to Canada and settled with his family near Hazelton, B.C. where he had become well known as a packer. He was an outstanding man in his training, experience and character for such a vital position. Hank was a University of Alberta geology student and had been with John the previous summer. Fred had been well trained by his father. Ed chose eight horses from among those he had packed in the recent summers around Whitehorse. They had wintered at Robinson and were well acclimatized.

The season for the party began with trucking the horses to Mayo and driving them thence to Wernecke on Keno Hill. From there on June 19th their long pack journey started down the valleys of the Keno Ladue River past Scougale Lakes, across the Beaver River to Kathleen Lakes where their first supplies and mail were flown to them by Pat Callison an outstanding bush pilot who knew the region as well as anyone. From there they were to start their explorations and mapping and we may leave them for the present.

For me the season would involve some travelling alone, notably to reach Dick Campbell where a long trip on the upper Pelly River was planned. A companion was desirable not only for company but most important for landing my canoe in swift water. I could employ a student assistant at a cost of at least $1500. Charles, my second son, now 12 years old, was quite able to fill the place. I decided to take him and say nothing. His trip would cost only what he ate in camp as far as the Government was concerned.

Violet, Charles, Nibby, our youngest, my sister Marian and I left Ottawa on Friday, June 10th by C.P.R. At Calgary Charles and I parted from the others who went on to Monte Creek. We called on the Geological Survey office in Calgary, had lunch with Bob (Dr. R.T.D.) Wickenden, visited the zoo and boarded the C.P.R. train for Edmonton where we arrived at 10:15 p.m. Here we slept at the Corona Hotel and after some shopping took a plane for Watson Lake where we arrived at 6:15 p.m. After spending the night at the hotel we caught a bus at 7 a.m. and reached Swift River, Mile 733 on the Alaska Highway at 10:15 a.m. Here Bill Poole met us. While Bill was attending to a number of things including hiring a truck to take us all back to his camp at Mile 728 we looked over the settlement of Swift River. Here the Department of Transport had a maintenance station which formed the heart of this small community. The station consisted of a number of buildings put up by the U.S. Army and several dwellings. There were large sheds and repair shops for road maintenance equipment including snow ploughs and bailey bridges. A wash house with showers, an eating house and motel were also part of the place. Swift River is for the Highway, what Revelstoke is for the mainline C.P.R. in British Columbia as both are on the westerly side of the second wet belt but here the mountains are not so high and the wet belt far less pronounced than in southern British Columbia.

Later Bill picked us and our things, a tent, and bedrolls up and took us to his camp that was on the north side of the Highway. We looked over some of the geology and on the 27th moved by truck west to Seagull Creek and then up its valley about 10 miles by packtrain. While moving in the truck Charles sat on his open jackknife and gave himself a nasty cut but it soon healed.

The weather now turned very wet. Fresh snow covered everything down to about 4800 feet on the mountains around so that little could be done except to visit a prospect that the Hudson Bay Mining and Smelting Company had drilled and abandoned.

On July 1st Bill, his packer Andy Porterfield who later married Ethel Wilkinson of the Pelly Farm, Charles and I rode back to Swift River arriving about 3 p.m. While we had been up Seagull Creek the streams had risen. The Highway to the east had been washed out in six places as well as the approaches to the lower Rancheria Bridge and all traffic was held up in that direction. Charles and I had expected to go on by bus to meet Bob Christie and Jim Aitken at Johnson's Crossing on the Teslin River on the morrow but no buses were running. Nothing had come from the east, the Highway being closed in that direction for 30 hours; however, we met Red (Bruce L. Anderson) of the Topographic Survey. As he complained of not being able to do anything on account of the weather and had a car I asked him if he would like to drive us to the Crossing which he generously consented to do. On the way a tire had to be repaired at Teslin and we did not arrive at the Crossing until 10:30 p.m. Red went straight back to Swift River while Charles and I stayed at the roadhouse run by Mr. and Mrs. Bob T. Porsild and family whom I had visited in 1937 on Sixtymile River.

In the morning we walked across the bridge over the Teslin and up to the old Canol Road construction camp to make final arrangements to have the salvage company there take us with our equipment, canoe, outboard motor, gas and food over the Canol Road to Ross River Post on the Pelly on July 15th. I had already corresponded with Mr. Hyde whose company had the salvage license to bring out all the worthwhile discarded equipment and utensils left along the road. Mr. Morrison was in charge at the camp and knew about our plan. He said there had been no difficulty on the road and as their trucks were going over it daily they would be glad to take us. Our plan was to go over the road and then down the Pelly from Ross River Post by canoe to meet Dick Campbell at Harvey Creek. I had never seen the Canol Road nor the Pelly above the Detour Bend so I was looking forward to this trip and I judged it would take us no more than two days at the most. Also if our motor gave out we could drift down to Harvey Creek. I ordered enough supplies to last Charles and I three weeks so as not to draw on Dick's as well as gas and oil all from Taylor and Drury in Whitehorse to be sent on the 15th to the Porsild's roadhouse. Our Pelly trip seemed assured.

Jim Aitken was beginning the Atlin area. Parts of it had been geologically mapped by the Survey twice before. The first time was by Messrs. J.C. Gwillim, geologist, and W.H. Boyd, topographer, in 1900. I never knew Gwillim but he was credited with saying that "If a man couldn't eat two pounds of salt bacon a day he was no good". Today this seems strange but in his days in the area salt bacon was often the only source of protein available. Boyd, already mentioned in 1932, became the first Chief of the Topographical Division of the Geological Survey and must be credited with bringing it to the high standard it attained. He took great pride in his Atlin topography and held it up as an example of 4 mile mapping in the mountains. He told me that in 1900 the field work for the Atlin map had cost 50 cents per square mile.

The second time was by a party under Dr. D.D. Cairnes in 1910 in the general district. This party was doing both topographical and geological work. The reason Cairnes Atlin Memoir No. 37, was published without a map was that when the traverse of the shorelines of the main lakes were plotted instead of closing they crossed each other and the location of the error could not be discovered.

At noon while Charles and I were having lunch at the roadhouse, Bob and Jim arrived and afterwards we drove to Atlin in the afternoon in Jim's truck south from Jake's Corner over the Atlin road that had been opened in 1950. At Atlin Bob crossed the lake in his canoe to join his party in camp there while we went with Jim to camp about nine miles up Pine Creek. This was a lovely campsite in a grove of pine trees by the road to Surprise Lake. The next day after doing our laundry and sorting our things we went to Atlin to check the canoe and motor that had been sent there for me. Here we met a number of the citizens including Ross Peebler and his housekeeper, Lena Rudolph. They ran an exceptionally good general store. We were all invited to lunch which was a treat as Lena was an excellent cook. The weather was cold and cloudy but otherwise dry and the scenery around Atlin is indeed lovely. We returned to Pine Creek camp for the night and the next morning July 4th set out with Jim's party in our canoes from Atlin across the lake to meet Bob and his party at the north end of Torres Channel.

Our canoe was one of the 20 foot, flat bottomed freighters bought for use on the rivers. Bob's and Jim's were the same size but designed for lakes with more seaworthy curves. We had as usual a tarpaulin nailed down along the gunwales from the bow for about four feet towards the stern. But the others had long, broad strips of tarpaulin nailed along each gunwale from close to the bow nearly to stern as well as another like ours nailed over these in the bow. When their canoes were loaded these tarpaulins were lashed down overlapping each other so that with the load forming a ridge along the centre line the water ran off and there was nowhere for it to get in. The personnel sat in the stern part under the tarpaulins facing the motorman whose legs were covered by another tarpaulin while his upper part was enclosed in a U.S. Navy rubberized parka of which the hood was tied snugly around his face. With the canoe somewhat lighter in the bow than the stern any water that blew in could be bailed out by those in the stern. With this arrangement they could face almost any storm on the lakes except when the water broke in over the stern.

Returning to our meeting with Bob's party. Their canoes were rather heavily loaded so Bob's cook and some of his equipment were taken in our canoe. All five canoes then started along the Torres Channel and thence between Teresa and Copper Islands where Charles, the cook and I waited for the other four. When the canoes were loaded with my older 6 h.p. twin firing motor and its large three bladed propellor we easily drew ahead of the others with their newer, high-speed more powerful motors, but of course,

emptier, their canoes shot ahead of us. From the south end of Teresa Island we set out for a campsite the others knew on the northeast side of Sloko Island but as we drew ahead of them again and the lake had become much rougher with white caps we lost track of where they were heading. Partly through my inexperience on lakes and partly through the heaviness of our load we began to ship some water so I steered a more southerly course taking us to shelter west of Sloko Island and we became separated. We landed on the island, emptied the water out of the canoe and waited. Presently Jim arrived looking for us and guided us to the camp which was in a nice little sheltered, beachy cove with trees around and room for the tents.

The next day Jim, Bob, Charles and I went to the tourist landing in Llewellyn Inlet, mentioned in 1950. The day was just beautiful. We followed the old tourist trail over the small ridge southwest of the landing, skirted around the pond on the other side of the outwash fan, past the long lake where great detached bodies of ice stood up 100 yards or so from the main front of Llewellyn Glacier. We climbed onto the glacier. Bob and Jim were properly equipped with ice axes and crampons but we had only our hobnailed boots. Where we went, however, the ice was rough and partly dirt-covered so the walking was easy. We visited some crevasses and a couple of fountains where the water was spouting up three or four feet in solid jets about a foot in diameter out of holes in blue ice. I had never seen or heard of such fountains as these. The sun was brilliant but the wind off the ice to the west was bitterly cold. Jim and Bob wished to see the outcrops on the far side of the glacier so Charles and I returned the way we had come up and found a shelter behind a knoll sticking up in the outwash where there were a few willows for our fire for tea and warmth while we had lunch. From here we had a view over the fan and the lake that the glacier's front ended in. The main drainage from the glacier came out on the far side. The columns of ice sticking up out of the water in the lake were all that remained of a former great arch of ice that for years had formed part of the front after the glacier had ceased to move. The sight of this arch in the lake had been a main attraction for tourists. As we ate lunch a grey wolf loped across the fan. After lunch we joined the others on the east side of the fan and then climbed along the bluffs overlooking the river where we saw five goats and so back to the canoe and camp.

The next day we looked over some limestone hills to the west for fossils and also at the Llewellyn River delta formed by the great quantity of outwash sediments carried by the stream into Atlin Lake. Had this stream been building its delta at the present rate since the last major ice retreat much of the lake as it appears today must surely have been filled. One can only conclude that in the warm period following the retreat of the ice in the last major glaciation, the Hypsithermal period, this glacier became inconsequential until its rebuilding and following readvance in the recent "Little Glaciation".

On the 7th we moved camp to the delta of Willison River with Bob's party, Jim and one of his canoes. This was an education. Charles, Jim and I sat in Bob's canoe with the tarpaulins over our heads near the stern facing Bob who was running the motor. The arrangement of everything in the canoe was as described above. Bob took us south of Copper Island and into Willison Bay where it was sunny but windy. Here a violent squall hit us and we had to run full into the wind and waves for two or three miles before we began to benefit from the shelter of the end of the bay. When the bow plunged through waves, sheets of water flew over us, sheltered beneath the tarpaulins, full against Bob off whom much of it poured into the open space at our feet from where we bailed it out. This went on for about half an hour. We pulled up on the lovely beach and camped in the shelter of the trees behind. Only parts of our bedrolls were a little wet. The other canoes coming about three quarters of an hour later had a relatively calm lake the whole way. The tracks of a variety of game were along the sandy beach including one of a large grizzly.

The next day Bob, Charles and I waded across Willison Creek and climbed the mountain to the north to the top of timber on the west side of the pass to Nelson Lake. Here we had lunch and then Bob and Jim went off to see some outcrops to the north. As Charles and I travelled slower than they did we climbed up the spur to the west to about 4600 feet. Here we had a magnificient view from the Willison Glacier up the creek and over the whole valley to Atlin Lake and all around. A number of great granite erratics lay perched along the edge of the ridge so we helped erosion in its inevitable process and watched several of these great blocks gathering speed till they were leaping and bounding down the mountain for at least 2000 feet to disappear into the second growth on the gentler slope below. That evening Jim and his assistant returned to Atlin in their canoe. The following day was taken as "Sunday" in this lovely camp. Bob's cook, an Alsatian who spoke little English was busy labelling his food and containers and he marked one tin "Peabutnutter". Walking around to the south side of the Bay we saw a number of shallow ponds near the edge of the trees that had long strings of toad eggs and tadpoles in them. Also in Atlin we were told that there were toads around Warm Bay where some warm springs rise.

Willison Bay and the valley of Willison Creek resemble those at Ben-My-Cree except that of the two that of Willison Creek has a number of advantages. The stream is smaller than Swanson River and so could be confined to occupy a smaller part of the valley floor. The valley is somewhat wider with gentler lower slopes on each side, particularly on the north sunny side where there had been a fire in the past years and a considerable area could be used for grazing stock. Both places could be supplied with power from the abandoned hydroelectric plant of the Engineer Mine were it worth it.

On July 10th, a magnificent day, we returned to Atlin and said goodbye to Bob and his party. After supper Jim drove us to the old Ruffner prospect up Fourth of July Creek and then back to his camp on Pine Creek. The following day a visit was paid to the Nolan Placer Mine on the upper part of Spruce Creek. Here we were all taken underground and this was Charles' first experience of this kind. The working face was reached by descending a vertical shaft 280 feet in overburden and then travelling by tramway about three quarters of a mile. At the end of this we walked another quarter of a mile or more along drifts to the face. The gold was relatively coarse and the pay gravel was coarse, rusty and rotten. After coming to the surface again we visited the Enterprise Mine, also on Spruce Creek but this was a surface placer

worked by mechanical equipment. After supper in camp we went to call on Ross Peebler in Atlin.

On the 12th we drove up to see the Black Diamond Mine, a tungsten prospect and had lunch at the cookhouse, high on Mount Leonard. The bunkhouse, cookhouse, and adit of the mine were all connected by stoutly built passageways so that the men could walk between them all winter no matter how much snow accumulated. The adit was coated with beautiful large ice crystals. From it we climbed to the top of the ridge where the snow that still covered the upper workings had turned hard and was being blasted away. On the way back down Boulder Creek, Charles panned his first gold. The following day Jim drove us south to a fly camp of his party on O'Donnell River and back.

On July 14th Jim with one of his assistants took us with our canoe, motor and equipment to Johnson's Crossing, we thought, to start to the Pelly River over the Canol Road the next day. All our order had arrived safely at the roadhouse from Whitehorse but with the warm weather we had been experiencing after the snow and rain the streams were now all swollen. The Rose and Lapie bridges on the Canol Road had been washed away and so the road was blocked. I wired J.C. Wilkinson at Selkirk that we would go up the Pelly with him to meet Dick if he could wait for us three days but no answer came. There were now two choices: to try to get a truck to come out from Whitehorse and take us, canoe and all to Pelly Crossing or to go by river the whole way, down the Teslin and main river and then up the Pelly. I decided on the latter as I did not think the truck would be any quicker unless we were very lucky and I wanted to see the parts of the Teslin valley I had not been in.

Jim returned to Atlin after the canoe and our things had been put on the river bank just below the bridge. Charles and I got ready to start in the morning by mixing gas and packing and then stayed the night at the roadhouse. Going to breakfast the next morning Charles put his new pair of field glasses on top of his rucksack on a chair not far from our table but nearer the door. There were a number of people going in and out and when breakfast was finished the glasses were gone. In the morning we were up at 6, finished around the roadhouse by 7:20 and away in the canoe going down the Teslin by 8:45. As we found it that day the upper part of the river was wide and sluggish with muddy shallows, low banks and few if any bars or islands. There were a good many ducks and one eagle. As we went on the river narrowed, the course became more sandy and gravelly and the current increased. At the Roaring Bull Rapid, a feature that hardly deserves such a descriptive name the bed and banks are gravel. The rapid was just a swift place this day but Bartlett and others had told me that it had a strong eddy on the left limit below the high gravel cutbank that is dangerous in some stages of the water. No rock was apparent to us. We passed O'Brien's Bar where in 1931 we had picked strawberries on the nearby bare gravel. The brush had grown up all over it and also around the old Teslin Crossing roadhouse since 1931. Due to this brush and the steady rain that was falling we did not stop. At the big horseshoe bend the river had eaten deeply into the great silt cut-banks on the right limit in 21 years and a large block of silt slid into the water as we went by. A silt island had developed in the bend. We stopped to camp for the night at Mason's Landing. Here the place was hardly recognizable as willows, poplar and some spruce had grown up where there had been a considerable clearing with three or four cabins in 1931.

We were away by 8:40 the next morning in the rain and passed an Indian family camped on the right limit opposite Hoatalinqua soon after 10. We kept on steadily down the main river with rain off and on all day. Charles sat in the bow under tarpaulins much of the time and made our lunches as we went along. Carmacks was reached at 6:15 p.m. and we called on the Hayes in the telegraph cabin. Mrs. Hayes was at home alone and gave us the key to Lokken's cabin that Bill (A.R.) her husband, had moved down from Big Salmon. This saved us from putting up our wet tent in the rain. This was the cabin I had stayed in during my first visit to Big Salmon in 1931. After throwing our bedding in the cabin we had supper at the restaurant and went to bed.

The following morning after breakfast, mixing ample gas and oil for the day and buying all the gas we could carry in the canoe we said good-bye to Mrs. Hayes and we were off about 10:30. Heavy showers kept on coming off and on. I had not prepared Charles as I should have for the Five Fingers and this led to a little confusion between us when I saw he might get wet and tried to tell him what to do as we entered the steamboat channel. However, he didn't get much of a wetting. We kept going steadily, not even stopping for lunch as we passed the choice McCabe Creek campsite near which a black bear was swimming the river ahead of us. Skipping Selkirk, as a visit there would have taken hours, we turned up the reversing slough into the Pelly and reached the Farm by 6:30 feeling very tired of sitting in the canoe.

Mrs. Wilkinson, Ethel and Eddy were home and J.C. and Jared, after receiving my telegram had gone on up the Pelly as he was already late for the meeting with Dick and felt he should not wait. He had sent a wire to me at Johnson's Crossing but it had missed us. Mrs. Wilkinson invited us to stay the night with them and we slept in the attic which got terribly hot as soon as the sun rose in the early hours of the morning.

The plan now was to reach the foot of the Pelly Canyon before the Owl, Wilkinson's boat, came down in case we needed a tow up it. It was now July 18th. We left the farm at 8:40 and camped in front of the old Pelly Crossing roadhouse on the right limit below the ferry where my camp had been in former years. The day had been threatening although only one shower had fallen on us. We saw a brown bear near Bradens Canyon and a lynx above Gull Rocks. The next morning we were away by 9 and visited with the Van Bibbers for sometime. The Squaw Rapid was fast and rough but we had no difficulty sneaking up the left limit and reached the Needlerock campsite by 3:45 p.m. after a lovely day. We both needed a change from sitting in the canoe and as the Owl had not come down yet it was decided to take a "Sunday" there, where so many travellers have stopped since earliest times. Our average speed coming up the Pelly had been a little better than 4 mph and this was better time than I had ever made before so that I was now confident we could make the canyon without difficulty. We were nearly ready to start on the 21st when the Owl arrived. J.D. told us Dick's party was o.k. and he had told Dick we were coming up the Pelly, not down as originally planned, and he said if Dick moved on before we reached Harvey Creek a note would be left for us. On being asked how the canyon was he said "If you came

up Squaw Rapid alright you won't have any difficulty in the canyon.

We left Needlerock camp about 9 and reached the riffle below the big cutbank on the right limit above the canyon at 10:30. The mouth of the Macmillan was passed at 1:50 and at 6:15 p.m. having come about 31 miles we camped near Hodder's old cabin where he and the Indians had cut wood for rafts to take to Dawson in years gone by. The next day we camped in front of the abandoned, but not old, cabins of Kelly's Glenlyon Trading post close to the mouth of Tummel River. As usual after putting up the tent and cutting some wood I turned to mix the gas and oil for the next day's run. The gas was in 10 gallon drums. For river travel the wooden cases of years gone by, that held two 4 imperial gallon cans each were much more convenient to handle. Also both the boxes and cans when empty had numerous uses. Charles was getting our supper of potatoes, carrots, a small can of green beans, bully beef or such and prunes cooked the night before. I had most of the mixing finished and in doing so one of the full drums I had opened had slipped in my hands spilling gas all down my trousers and on the ground around. The other drums and containers were wet with gas and were strewn around me beside the canoe. Just then Charles came to the edge of the bank, saying "Supper's ready" and jumped down onto the gravel beside me. Like all boys he loved to strike matches. Putting his hand into his trouser pocket, pulled out a match saying, "Oh I had one left after lighting the fire" and immediately struck it. The only thing that saved us was that a strong breeze was blowing down the river and he was to windward. This was indeed a close shave.

The next day was another nice, sunny one on the river with cloud banks hanging around the Glenlyons and other high areas. Approaching the Detour a black bear was on the bank. Getting our lunches the last two or three days had presented a minor problem. We had lots of loaves of bread wrapped in waxed paper. As Charles sat in the bow preparing our lunches of bread sandwiches and opened new loaves many of them were found to be very mouldy. If when he cut a slice, and it was more than half green with mould, it went to feed the fishes. Otherwise the most mouldy parts were cut away and the rest was eaten. We still were uncertain how long it would be before we found Dick's party and we had no flour. We ate some pretty mouldy bread. We had been using about 8 gallons of gas a day so our load had been steadily lightening and we were making good time, better than 4½ mph against the current. We reached Harvey Creek at 4:35 p.m. on July 23rd, the ninth day since leaving Johnson's Crossing.

Dick's party was gone, rather as I expected but his canoes, on a pole rack high up on the bank in case the river rose showed that his camp had been here with certainty. We landed and Charles said with disgust, "There's no one here". We tied up the canoe and I told him to look around for a message for us. He walked along the beach to Dick's canoes and called out that there was nothing but an old tin can hanging in a bush. "That's what we want, I said". "Look inside it." He answered that there was a piece of paper with my name on it and brought it. On this Dick said he had had to give up waiting for us but if we did arrive we could follow the packhorse tracks up Harvey Creek where they would camp and then they would move over the mountain ridge to the south to a place he called Sandy Ridge camp on the head of the Tummel River. His brief message was clear so that there was no question of his locality on the map.

We unloaded the canoe and put it as high as we could, tying it to a good bush. The motor and gas were cached higher up the bank. Then we went up on the terrace on the south side of the creek overlooking the river. Here was the campsite, on a very good, well sheltered spot. By stepping to the edge of the terrace one had a commanding view of the river valley and behind was a grove of spruce. The only drawback was that it was a bit of a chore carrying overything including water up there. Tent poles were already for us and we set our tent up and had supper. As we went to bed a light steady rain started.

The next morning it was drizzling. We packed the things we were not going to carry, into a high cache Dick had had built where his spare equipment and supplies had been left. Taking our packs in which we had lunches, some food for supper and breakfast the next morning we started up Harvey Creek and for the last time I was following the packhorses' tracks to find camp. The trail they had made, if it could be called that was wet and soggy from the rain, slow, heavy going. We left about 10:20 and stopped for lunch at 1:30. The clouds were down to about 4500 feet on the mountains around us and the light rain continued. As we were sitting under a spruce boiling the billy, I seemed to hear far away up the valley a familiar faint sound of "plop, plop" of a distant horse bell. After a minute or so I was certain of it and asked Charles if he heard anything. At first he said "No". But after a few moments he said that faint "plop sound". We found the horses about half a mile farther on and were in Dick's camp by about 2:30 and very thankful to be there. Our sunny days lower on the Pelly had been rain with them here in the Glenlyon Range and stopped them from moving on. The two packers Ed Kohse Jr. and John Phillips with saddle and packhorses fetched our things from the cache and were back by 10:30 p.m. despite the rain.

The rain stopped in the night and on the morning July 25th we climbed south over the ridge and down to a campsite on Tummel River. The camp was actually a little above and opposite Sandy Ridge which is an esker on the south side of the river, here just a creek. This was a very good campsite with all the necessities for any kind of weather and had been used by Tuttle's topographical party too a few years before. The elevation is 3700 feet a.s.l. so it was less than 1000 feet below timberline. Coming over the ridge to it we saw a small flock of ewes and lambs and two caribou.

The following day the clouds were down again but we went for a short traverse in the afternoon. The morning after was still cloudy but there were signs of a change coming in the southwest and we went up in that direction onto the broad smooth, open gently westward sloping upland above 5000 feet. The sky was clearing all over the southwest now and after lunch in a sheltered hollow on that side we walked up the slope eastward toward where the upland was crowned by a rocky ridge. We could see another flock of ewes and lambs working their way up from the grassy surface onto the rocks and some 20 or so caribou. Dick's party had had hardly any fresh meat this season so two of his assistants had come with us prepared and I had brought my rifle. All

these caribou were cows and calves. After watching them for some minutes it was clear that one of the cows had no calf and I shot her. She was quite dry. After the butchering of the caribou the assistants loaded their packs with meat and set off down the slope all the way to camp. This single shot was the last I fired with my rifle that I had used for twenty years.

Dick, Charles and I went to the east edge of the upland where it dropped abruptly into an alpine valley that extended down from two cirques to the southeast. The big fleecy clouds touched with light and shadow were now dispersing as the sloping rays of the Yukon afternoon sun shone on our backs. We sat with our glasses looking eastward over the terrain before us. In the foreground below a steep side was a meadowy valley and beyond, patched with long shadows were lovely green, rounded slopes rising to some of the highest summits of the Glenlyons. The whole appearance of the valley evinced considerable modification by normal erosion since it was last glaciated. The denseness of the carpet of low growing vegetation was remarkable. Three rams climbed in stately file up onto a rocky prominence in the distance.

The next day Charles and I traversed southeastward into the lower end of the valley extending down from the summit marked on the topographical map 6780 feet a.s.l. and then turned northeastward through a windgap containing a long narrow lake and so down the next creek to a new camp at 4200 feet, very close to the top of timberline. This traverse was of particular interest in that as we entered the valley at about 5000 feet we crossed a delta kame of which the convex front faced southerly up the valley. The course of the creek coming out of the valley above entered a deep V-shaped gully around the west side of the kame. The top of the kame was sparsely covered by vegetation showing a poorly developed sandy and gravelly soil but after we descended the face of the kame and had gone some way up valley we were in low thick vegetation growing on a much older and more developed soil so that the upper level of the last glaciation that had pushed westward along the upper Tummel River valley was marked by the kame.

The following day we stayed in but moved again on the day after to camp on a branch of Sheep Creek coming down on the west side of Glenlyon Peak. Traversing eastward over the open slopes at about 5000 feet we saw a small group of caribou and a bull moose below us and more caribou high above us on the mountain to the south. Each day Dick and his party had been traversing the areas around.

The new camp was another nice one and July 31st was taken as "Sunday". It proved to be the first really settled day we had had in the Glenlyons. The others always provided a shower on us or close around but in this open country it was generally our feet that were wet.

Digressing for a moment, it may be of interest to those who have read Charles Sheldon"s "Wilderness of the Upper Yukon" that with the topographical map it was easy to plot exactly where each of his photographs was taken from and where he climbed up the mountains in the snow hunting sheep in 1905.

August 1st we all climbed Glenlyon Peak, 7184 feet a.s.l. From our camp the route was easy. The day was fine again and the view all around was magnificient but particularly northeastward and along the Tintina Trench southeastward. On the northerly side one could drop rocks at least 500 feet straight down the cliffs that formed the head wall of a cirque. On the way down we saw two or three caribou to the south of us. The next day we traversed around in a loop south, then west and north and back to camp. The following morning there was a frost and camp moved on again southeastward up Sheep Creek, over the divide and down Pass Creek valley to be pitched at about 3500 feet. On the way the only fairly fresh signs of a grizzly in the range were seen. No marmots were noticed where we went and this may be part of the reason grizzlies were scarce but it would be surprising if there aren't marmots in other parts of the range. Charles and I had lunch at the head of a meadow just over the divide with a view down Pass Creek. The meadow was a blaze of yellow flowers. A bull moose crossed over one of the spurs of the ridge to the northeast.

After a day in camp we traversed up the ridge to the southwest where we saw several more caribou as well as a cow moose and calf. On the way back to camp we were caught in one of the thunder showers that had been falling all around us during the day and when we reached the valley we became thoroughly soaked from head to foot going through the bush.

The days were running on and although Charles said "We could go on staying with this party for months and months", the time for leaving was approaching. The whole party had been particularly companionable to Charles and he was beginning to be useful around horses and camp.

It was now August 6th and we had to come down out of this lovely range of mountains. This day our traverse led us over the ridge to northeast and then down along the west side of the Glenlyon River to camp just below the Big Fishhook Rapid where Dick expected his next load of supplies any day. Though much of the rocks in the range were granitic I had seen some sections of sediments quite new to me.

In the valley it was considerably warmer than in the mountains, so much so that the shallow slough below camp was warm enough to swim in, a rare thing. The morning was spent in cleaning up. Ernie Manko, one of the assistants, made Charles a sling and taught him how to use it. More of this later.

Dick decided that as the supply boat had not arrived yet and some staples the cook was short of in camp were stored in the cache at Harvey Creek, he and an assistant, Glen Rouse, would go down to there on a raft and bring the food up with the canoes. Accordingly, in the afternoon the whole party built two rafts on the beach above the rapid where there was a fine grove of big spruce amongst which stood a number of dead trees. There is always the temptation to build rafts smaller than they should be in order to minimize the labour but this had to be resisted. Charles and I needed a raft to carry our equipment as well as ourselves high and dry through whatever riffles we might come to between here and Harvey Creek. The others thought I wanted ours unnecessarily large but I insisted on sticking to what I judged would be the right size. When the rafts were built they were brought down the rapid and tied up below camp.

After early lunch on the 8th we said farewell to the others and pushed off. Dick and Glen on their raft and Charles and I with our things on ours. We had about 21 miles in a straight-line to drift but the river meanders and the current was slow. The water being low, the channel was narrow so that

continual rowing was necessary to keep the raft in the current and off the bars. We had not gone far when the others found their raft was too small so Glen came onto our raft and some of our gear was transferred to Dick's raft in his place. But their raft was still too small and our things got partly wet. We reached Tay River about 4:30 and found Alec Coward there with his boat, Dick's mail and new supplies and also that he had brought everything from Dick's cache at Harvey Creek. Dan and Alec Van Bibber were camped there with three Americans they were taking sheep hunting in the Tay Mountain area with their packtrain. Dick and Glen decided to return to camp with Coward. The Van Bibbers kindly gave us all supper. Coward said he did not think he had ever seen this part of the Pelly so low. We lashed the rafts together putting all our gear on Dick's raft and sitting on our own.

It was about 6:30 when we said goodbye and left with some 14 miles still ahead of us. The evening was very still and the sky clear. The moon was about three days past full so I had no concern just then that we would have to land in darkness. As the sun set, however, the western sky had already become more or less overcast and the last rays shining directly up the Tintina Trench lit up the underside of the clouds in glorious rose tints with deep mauve shadows for about 40 seconds before they were gone. Charles was soon asleep and we drifted on in the absolute silence of the Yukon as the light faded. The rafts required continual rowing and I found the two together so much more sluggish to move than our own had been alone. As we approached Harvey Creek the sky had become completely covered and I realized this was going to be another landing in inky blackness like that of 1947 at Stewart River. This time too, the landing had to be made on a limited stretch of beach where the path led up the terrace to the campsite. If I landed too soon it might be difficult to get the two rafts off again in the darkness. If too late, we would ground on the wide, gravelly shallows that the creek had built out into the river and would have to carry our gear ashore through the water and thence someway along the beach to reach the path to the campsite. The trees on the banks of the river behind the shelving, relatively light, gravel beaches on each side showed blackest and beyond them the mountains, almost as dark reached to a sky not much lighter but the mountain skyline, though two or more miles from the river, was distinct. None of this part of it, however, was familiar to me before we reached Harvey Creek but I thought of one thing that should be a reliable if only general guide and that was the notch in the skyline formed by the valley of the creek. It was I judged, distinctive. Well, we made it, landing at 10:50. We put our tent up, got some supper, everything covered in case of rain and to bed at 1 a.m., very tired after incessantly rowing the rafts for so many hours.

In the morning we were up at 7:45 and went about getting off very slowly. We dismantled the rafts, taking the ropes off them, left our good canoe on the rack in place of Dick's damaged one into which we packed our gear, mixed the gas and oil and set off about noon. We made good time as far as Earn River, the motor running well. Then the channel became wider, less defined and shallower. In my misjudgement in choosing the channel as our old motor had no shock absorbers I broke two or three shear pins. In one place where the river spread out more than usual I carelessly ignored the golden rule "When in doubt head for the cutbank" and steered gaily down the centre into shallows, broke a pin and the canoe slewed around broadside to the current on the gravel. There was nothing to do but get into the water and work it into deeper water. Then the motor became balky and wouldn't start. After trying the usual minor cures without success, I changed the spark plugs. That was no better. So I washed out the needle valve and carborater with fresh gas, emptied the gas tank and put freshly mixed gas in before it would run properly again. This delayed us at least an hour and a half but we reached the good campsite Dick had told us of using on the right limit a few miles above the Saftypin Bend about 8 p.m. Poles and firewood were ready for us. The day had been exceedingly hot, even travelling on the river. The moon came up soon after nine and we were in bed before ten.

In the morning, another superb, clear day, roasting hot. We found the chute at the riffle below the big cutbank at the head of the canyon was the worst place at this stage of water and were at the Needlerock campsite by 4:30 p.m. The river had dropped at least four feet vertically here while we had been away and the water was so warm we had a swim.

August 11th was the day we were to meet Ed Kindle at noon at the Pelly Crossing ferry. It was another fine day. We were off at 10 and arrived at 12:20 p.m. at the Crossing. Ed had arrived exactly on time so had been waiting 20 minutes. We emptied our gear from the canoe into his truck and ran the canoe back up around the bend to the Van Bibbers at Mica Creek where we cached it with the motor gas and oil high on the bank and then went in to see Mr. and Mrs. Van Bibber.

We said goodbye about 2:30 p.m. At Mayo we picked up and sent off our mail and then drove on to Ed's camp at the old sawmill site below the Mayo Lake control dam, arriving about 6. Besides the party and their family lodged in tents Ed and Isabel had the use of a good log cabin. This was a very good central location for Ed's field work, gave a pleasant atmosphere for all and proved a good spot for the family for the summer.

The next day was taken as "Sunday" to clean up and attend to mail. We looked at the dam in the evening and at the end of the lake. The raising of the water level here had completely drowned the lovely shingle beach at the lower end of the lake, the site of Wernecke's summer establishment at the beginning of the river, as well as those of the row of cabins of Mayo and Elsa residents that had stood at the end of the lake on the level strip between the beach and the steep face of the low hills of till and silt behind. Now with this high water level, wave erosion was cutting a cliff in the hills rapidly. One hated to think what desolation must have come to the large low areas covered by vegetation and forest at the other two ends of the lake. At the east end well out from the delta of Edwards Creek had been a low dry bar frequented by many water birds, notably arctic terns. Here too on the south side had been numerous old Indian stumps. At the end of the Nelson Arm there had been a sandy beach in front of a large area of muskeg and forest. With the rotting of all this vegetation besides that of the area along the river between Minto Bridge and the power dam no wonder the water in the stream was foul during the first winters after the flooding.

On the 13th a number of calls were made including one on Alec Berry who told me of the Quill Creek nickel-copper discovery. I also checked my meeting with Pat Callison, the pilot who was supplying John Wheeler and his party in the Selwyn Mountains. He was to fly on the 15th and I planned to accompany him.

On the 14th Ed, Charles and I called in at the Elsa camp and also went over to the Onek mine where we went underground.

On the 15th it was raining but the distant southwest sky was clearing, so leaving Charles with the Kindle family, I was driven to Mayo where I met Callison about 10:15 a.m. and we took off from the Stewart River soon after. The weather was broken but stormy all around. Callison flew east to the north side of Hess River and then southeastward to near Keele Peak missing our objective, Arrowhead Lake, 3000 feet a.s.l., where we were to find John's party. He turned northeasterly and then north down the head of Rogue River where we found the lake. The lake is the shape of an arrowhead making its identity certain from the air. John's camp was there alright on the west side of it and we landed. I was very glad to see them all safely that far on their long exploratory journey. After the supplies and mail were unloaded John joined us on the plane sitting beside Callison. We flew over some of the country along the route the party planned to follow and then scouted the geology of areas around that John was interested in. The mountainous scenery was magnificent and appeared the more spectacular as we were flying under the broken clouds and below the main peaks that ranged between 6000 and 7000 feet with some of their tops in cloud. We dodged from valley to valley through narrow passes giving good views of the geology on each side. My memory of the valleys is that the lower areas were clothed by low, thick, dwarf birch and willow with some groves of spruce. Some terrace areas seemed to be carpeted by caribou moss (lichen) dotted with dwarf birch and scattered spruce. The spruce and alpine fir thickened upward on the valley sides to timberline from which green slopes stretch higher to screes and rock buttresses. There appeared to be a scarcity of meadowy or grassy areas for horses, and so routes and campsite had to be carefully chosen. Some granitic stocks could be seen in mountain groups near the head of the Rogue River but elsewhere the rocks appeared stratified. It was a most enjoyable flight. After about an hour we landed at camp and had some lunch while John went through his mail. When all was ready, the next supply lake having been settled between John and Callison we left this party to find their way westward through the mountains. They were now well past their farthest point and on their homeward course. On our way back to Mayo we flew on a northerly course taking us past the south side of Mount Joy where we had a fine view of its granitic stock with a light coloured core and rusty halo adjacent to the stratified rocks surrounding it. After we landed on the river at Mayo I returned to Ed Kindle's camp.

A brief sketch of the travels of John's party after they left Kathleen Lakes may be given here. From the lakes they worked northeastward intending to ford the Bonnet Plume River near Corn Creek but found the water too high and swung southward to Rackla Lake. Here Callison brought them their supplies and took John and Hank to Pinquicula Lake northeast of the Bonnet Plume. The Kohses and horses were left at Rackla Lake. Some days later Callison picked John and Hank up and returned them to Rackla Lake. From here the party worked eastward, crossing the Bonnet Plume farther up, over to and across the Snake River where a section was carried to the divide to the Arctic Red River drainage. From here they recrossed the Snake and Bonnet Plume rivers to Bonnet Plume Lake to be supplied again. Their next move was southeastward to Misty Lake in Selwyn Valley. When Callison and I met them at Arrowhead Lake they had found their way southwestward through a maze of mountains via Marmot Pass.

After we left them they continued southwestward, crossed the Hess River near the 132nd meridian where their mapping ended and they started their long homeward journey.

Shortly after crossing the Hess, Ed Kohse, Sr. was badly kicked on the knee and could not walk. Due to bad weather the party stayed by the Hess and when Callison came over looking for them he dropped a note saying he could not land on the river but would be at the west end of Fairweather Lake the next good day. Camp was then moved to a small round lake west of Schelly Lake, Ed riding. From here John walked overnight 26 miles to Fairweather Lake. On Callison's arrival there John guided him to the "round lake" where they picked up Ed and took him to Mayo. From here John drove Ed to the Whitehorse hospital. A few days later he met Callison at Mayo and they took the final load of supplies to a lake in the fork of Macmillan River. In the meantime Hank and Fred had brought the camp with the horses past Fairweather Lake, and down North Russell Creek to camp on the Macmillan below the fork. When the plane came over with John and the supplies one of them brought a horse over to the lake where it landed to bring the stuff and John to camp. The party now made their way along the north side of the trackless Macmillan valley winding through many miles of thick brush and deadfall. On reaching the Tintina Trench they turned northwest, passed Little Kalzas Lake, down Woodburn Creek and then took the trail westward past Last Glimpse camp to the road reaching it on September 20th. John hitched a ride to Mayo to fetch a truck while the others went south to Pelly Crossing. The horses were taken to the Wilkinsons at the Pelly Farm to winter and the party drove to Whitehorse. The return journey from the Hess which took three weeks is given by John, in his modesty, as 175 miles but measures nearer 200 miles on the new topographical maps and as the pack horse goes through deadfall was probably considerably more. In the whole summer, besides Callison, only three people had been seen, two prospectors at the very start on Kathleen Lakes and one on the Hess River.

Now returning to my own travels, on August 16th, Ed Kindle, three of his assistants, Charles and I visited the Calumet Mine on Galena Hill with Messrs. Brodie Hicks, general manager, and Bob Sedgewick, mine superintendent, and then had a delightful lunch with Margo and Kipper (Red) Taylor who was now the surface superintendent.

The next day Charles and I left Ed's camp where he and Isabel had provided such a happy base for us. John Fortescue, one of Ed's assistants who had been trained as a mechanic in the British Army, drove Charles and I to Whitehorse where Ed's truck was to be overhauled. On the way we lunched at the Israel's restaurant at Carmacks and went on to stay in the Whitehorse Inn.

The next two days were spent in Whitehorse, on a visit to Miles Canyon, and in seeing a number of people,

including Jack Meloy of Kirkman and Canadian creeks and Scotty McLeod, mining scout, and most important, Charles and I had tea with Mrs. George Black. Mentally she was as spry as ever. She was indeed one of the characters of Yukon history as when The Hon. George Black, M.P. became ill she, then 70 years old, ran in his place in the next election and was successful in being one of the first women elected to the House of Commons.

It was at this time that Charlie Taylor of Taylor and Drury Limited said to me, "Where do you get such men as you have? There is no other group we deal with like them, Poole, Wheeler, Campbell and the others on the Geological Survey. There is no other group of men we supply up to their standard. What they buy is good but not extravagant. Their orders are carefully checked as well as our prices. They picked them up when they say they will. There's no wasting time with them."

On August 20th Charles and I took the bus to the Upper Liard Bridge where Hubert Gabrielse and Dick Woodcock, one of his assistants met us. The weather was wet. We stayed the night at the roadhouse and in the morning drove in Hubert's jeep to his camp in the old police building at McDame Creek. No one else was living there in the abandoned settlement.

The next day it rained and we discussed the geology and mapping. Charles was very bored and asked if he could practice with his sling, that Ernie Manko had made for him. He was instructed to go well away from the buildings and to aim his stones across the river. The jeep was parked at the far corner of the building from where he went. We could see him a good 75 yards away through the window. Presently he came in very concerned and said he had hit the windshield of the jeep. As it had had its back towards him with the hood up this seemed extraordinary. It was more than 60° from the supposed directions of his aim. We went out to see. There was a round hole in the lower part of the windshield in front of the driver's seat. Hubert sat in it and comfortingly pronounced that it would not interfere with the view. The small plastic window in the back of the canvas hood had been broken long before so most of the window was open. So the jeep was parked facing upward on a slight slope, the gap in the window and the hole in the windshield were almost on a level. How someone of Charles' age could send his missile with such a velocity and flat trajectory from that distance as to go through the window and hit where it had was a revelation as to what a boy can do with a sling. Clearly, David did not have to be even a teenager to slay Goliath.

On the day after we visited the Moccasin Mines placer operation and then had lunch with Mr. and Mrs. Glen Hope and their four children where we did some panning on their claim. On the 24th taking our bedrolls Hubert drove us up to the Cassiar Asbestos Mine where development had begun. The switchback road up the mountain had been bulldozed out but still was pretty rough. The outcrop was being laid bare and sampled. The orebody and blanket of asbestos on the surface of the upper part of the slope below it was just as Leon Price had described in 1949. The Cassiar mill and townsite were being laid out but not much building had been done. We slept in Bob Wilm's cabin at Quartz Mining Camp.

The following day Hubert drove us part of the way and then we walked the last mile or so up to a small silver-lead prospect on Marble Creek. The next morning after we had seen something of the numerous small gold quartz veins in the valley where the presence of a huge tonnage of very low grade gold ore could be imagined, we drove up onto Table Mountain to see the prospects there and this also gave us a splendid view of the country around. We then returned to McDame where it rained heavily all the next day.

On August 28th we set out for the Rancheria Roadhouse, Mile 710, still kept by Mr. and Mrs. Simpson, to meet Bill Poole. The Cassiar road was wet and rain came down steadily until noon when it became intermittent but did not end until midnight. We stayed the night at the Rancheria but Bill did not arrive.

The following morning we drove to the Yukon Tungsten Limited prospect six miles north of the Highway. The jeep became temporarily stuck in the creek and we walked up the last part of the road. Returning from there to the Highway we drove to Swift River, Mile 733, picked up Bill and brought him back to Mile 710 where we all had supper together. After supper Hubert drove Charles and me in the pouring rain to the Watson Lake Hotel where we spent the night. In the morning he drove us to the airport and saw us off on the plane to Edmonton. This trip around the McDame area that he had conducted us on had been most interesting and instructive for us, a real privilege.

August 30th after parting with Hubert we flew in heavy overcast to Edmonton where we spent the next day and visited the zoo there. Monday, September 1st we took the C.P.R. train to Calgary and visited the Calgary zoo there again. That evening we joined Violet, Joan and Nibby on the C.P.R. train for Ottawa. They had boarded the train at Monte Creek. We reached Ottawa on the morning of September 4th. This was my last journey between any part of the west and Ottawa on the C.P.R. On arrival at our destination we had breakfast at the Union Station, took a taxi home, sent the children off to school and after settling Violet at home, I returned to the Museum.

## Section IV: 1954, A Supervisory Tour and escorting H.R.H., The Duke of Edinburgh, on his visit to the Yukon

The summer of 1953 was spent largely in the office except for one break during which I was one of a party from the Department of Mines and Technical Surveys including Drs. G.S. Hume, W.A. Bell, C.S. Lord, and Mr. W.K. Buck, which was taken by special plane to Sept Iles and thence north to Knob Lake. Here we were met by Dr. J.M. Harrison of the Geological Survey of Canada, and the staff of the mining company. We were lodged in a luxurious guest house, treated lavishly and taken on a most interesting tour of the orebodies and other developments of the area which had started in the last year or so. Here at about latitude 56°30' the soils and vegetation were strikingly inferior to those of the valleys in southwest and central Yukon between 60° and 65°.

The season of 1954 may be said to have begun for me in the early spring at the annual dinner of the Canadian Board of Geographical Names. It was always a friendly gathering and this year it was particularly gratifying to find that the Minister, The Honourable Mr. Prudham was interested enough in our work to attend. During the preliminary period before we sat down to dinner he said to me that he thought it would be a good idea if I were to accompany His Royal Highness, Prince Phillip, Duke of Edinburgh on his

tour north through British Columbia and the Yukon Territory. This was unexpected. Then he went on to say that he was planning to visit the Yukon too and would I meet him there? Well, these two duties would decide how my field season was to be arranged. I was planning a tour of the field parties of northern B.C. and Yukon much as in 1952 but less ambitious.

After I had received official instructions from The Hon. Mr. Prudham through the Director to accompany His Royal Highness, I called on Group Captain E.A. McNab, O.B.E., D.F.C., R.C.A.F., Canadian Equerry to His Royal Highness and Chairman of the Committee on Arrangements for the whole tour. In McNab's office I met Wing Commander W.J. Brodribb, M.B.E., R.C.A.F., Secretary to the Committee. McNab did not say much. He gave me the impression immediately that I was more extra baggage he was burdened with and that he could not imagine why I should be on the tour. All arrangements and directions regarding the tour came to me luckily through Brodribb who was always pleasant and informative. I expected there would be a meeting of those involved with the conduct of the tour so that we could discuss our parts together as a team but I was not invited to any. I don't remember seeing McNab in Ottawa again. Brodribb provided me with the necessary identifications, credentials and a program and was always most helpful in every way.

The first thing to be done was to design a geological guide book for H.R.H. As we had no idea what interest he took in geology it was a problem. After a good deal of discussion with Clive Cairnes we decided on its contents and style. It was to contain a number of simplified maps of the Cordillera and as far north east as Yellowknife and Fort Norman. The first page was a map of the major physiographic units and the subsequent left pages were geological maps. Legends and brief notes referring to each map were on the opposite right pages. All the colouring was done by hand. The last page would show a coloured photograph of a painting of Dalland Stone rams I had seen among the National Museum of Canada collection. In a pocket at the back was a copy of the Mineral Resources Map of Canada for 1953 showing the whole course of the Royal tour in Canada. After this the making of the guide book was turned over to Sandy Alexander, now Chief of the Draughting Division. Four copies were to be made, one for H.R.H., one for the Hon. Mr. Prudham, one for McNab and one for myself. When the question of binding came up Sandy said at once, "Leather with the title and names in embossed gold lettering, H.R.H.'s will be in Edinburgh green and the others in vermillion." The matter was then left entirely to Sandy.

Now we can turn to the question of Mr. Prudham's trip. One morning early in May I happened to meet Dr. Marc Boyer, our Deputy Minister in the Byward Market. He asked me what I was doing for the summer and I told him. When I mentioned Mr. Prudham's trip he exclaimed emphatically "Don't take any notice of Mr. Prudham. He will make a date for you to meet him and then when you are there waiting, send you a wire telling you he is not coming, that he had to attend some political meeting." I did just as Dr. Boyer said, forgot all about Mr. Prudham with rather amusing consequences later.

Violet had not been to the Yukon since 1933 and we planned to drive out west and north from Calgary into the Yukon, taking our two daughters, Joan and Nibby with us in our 1953 Ford. Then to return in the fall via British Columbia and Yellowstone Park. We left our house at noon on June 12th to fill up with gas at Beatty's service station opposite the N.R.C. building on Sussex Street. Beatty, himself, was there and when I told him we were starting on our trip west he said "You won't get far like that. You're right down to the axles." We returned to the house, took off at least 250 pounds and shipped much of it by express to Atlin. Finally we got away about 3 p.m. reaching Mattawa at 9:30 p.m. for the night, 201 miles. The next day we passed Blind River and the Sault and drove to Star Side, a motel in northern Michigan, 431 miles. On the 14th we passed through Duluth to Dear River, Minnesota, 447 miles. The following day on through Minnesota to Stanley, North Dakota, 459 miles and from there the day after to Chester, Montana, 458 miles. On the 17th we continued westward as far as Selby, Montana and then turned north through Lethbridge to Calgary, arriving there at 3 p.m., 300 miles, and stayed at the Hill Crest Motel.

On the 18th we stayed in Calgary, had the car checked over, shopped, visited the Survey office where I saw Drs. R.T.D. Wickenden and Helen Belyea and Leon Price. We spent the afternoon in a visit to Bob Wickenden's cottage in the foothills.

The next day we left Calgary early, had lunch in the southern outskirts of Edmonton and reached Lesser Slave Lake by 5 p.m., 372 miles. The road, not paved at all, was poor north of Edmonton and near High Prairie was soft but in spite of this and rain we reached Dawson Creek on the following evening and stayed at the Callison Motel run by a branch of the Cassiar Callison family, making 302 miles that day. The 21st we started up the Alaska Highway and put up our two tents at an abandoned construction camp at Mile 308. From Dawson Creek to approaching Fort Nelson, the Highway though greatly improved since 1943, was slippery, there being long stretches where there is a scarcity of good gravel. While we were getting supper ready a large black bear ran between our two tents. This caused a good deal of excitement among the ladies who then thought they would see lots of bears but that was the only one they saw all summer. The next evening the 22nd, we camped at the crossing of Albert Creek about three miles south of the Highway on the Cassiar Road which I had seen was a good spot in 1952, 340 miles. The following morning we were off about 10:30, had lunch at Sea Gull Creek bridge and reached Swift River where I received a note from Bill Poole telling me he was camped on the abandoned airstrip at Mile 717. So we went back 10 miles and camped beside his party for the night. In the morning we were off by 9 and after having lunch on the beach of Teslin Lake called on the R.T. Porsilds at Johnson's Crossing where we heard the Canol Road had become unusable. We reached Atlin at 6:30 p.m. where to our delight Ross Peebler and Lane Rudolph insisted on us staying for supper. This was doubly appreciated as we would not have had our own supper for some time. After getting supplies from them we drove 9 miles up Pine Creek and camped in the back of the pine grove where Jim Aitken had had his camp in 1952. This was to be our most settled headquarters for the summer. The cook and sleeping tents were up and so to bed about midnight.

On the morrow I went into Atlin, collected our express at Sands dry goods store, picked up our mail at the Post Office, bought some more supplies from Ross Peebler, got a fire permit and the Survey panel truck, a stove for Jim Aitken, and an old stove that

he had left there for us. The next day was spent on mail, straightening out camp and a trip up Boulder Creek to see the old placer mining. Nibby panned three small colours.

The 27th was Sunday. We went for a walk. There was a foot bridge across Pine Creek about half a mile down stream so it was not hard to stroll about on both sides in this beautiful wide valley of semi-open park-like dry belt country with the mountains rising around and down the valley westward a grand view of the ranges across Atlin Lake.

On Monday, leaving the ladies here in the wilderness, nine miles from the nearest habitations in Atlin, I drove to Whitehorse. There were very few tracks even old ones of any larger game animals around camp and the chance of any bothering camp was negligible. The Ford now was the ladies' car to drive to Atlin if they needed anything. The steering of the panel truck had to be fixed and that was the first thing to attend to in Whitehorse.

A resident geologist of the Geological Survey was to be stationed in Whitehorse and a space made for him in the new government building. This was one thing I was to look into. I called on the Commissioner of the Yukon Territory, Mr. W.R. Brown, to find out what was planned for the visit of His Royal Highness in Whitehorse. He told me that after a rest period in the V.I.P. house, H.R.H. would be taken on the Klondike, which had been refitted, on a trip down river and back. In the evening there would be a reception at the new R.C.A.F. officers' mess. Also he said that Northern Affairs had drawn up a guide book for the Royal Tour. This was the first I had heard of it and illustrated the draw back of having no gathering in Ottawa. No copy of it was in sight while I was with H.R.H. I checked my flight reservations to Vancouver for Wednesday, August 4th. I was particularly glad to find Ed Barker in Whitehorse. He was planning to return to Haggart Creek and told me Fred Taylor had had a good season on Dublin Gulch last year. Things were changing faster than ever in Whitehorse, and now seven or more major mining companies had offices there. I was back at Pine Creek after midnight.

The next day after attending to mail we drove to Otter Creek in the evening. Later than night rain started and continued through the following day. I called on Mr. Herman Peterson, the outstanding bush pilot of northern British Columbia, who had the contract to fly mail between Atlin and Telegraph Creek. In winters this flying was particularly hazardous and the weather had forced him to crash land along the uninhabited route three times. On every occasion he had brought down his plane without injury to himself or irredeemable damage to the plane. On one occasion it had taken him ten days to walk home to Atlin where he had been given up for good. There was no pilot in the north I would rather fly with. Today he was to take me with Jim Aitken's load of supplies to camp on Trout Lake and then take the two of us to the landing on the Taku River for the Polaris Taku mine. The weather, however, was too bad today but by the forecasts it should be alright early tomorrow morning and he set our time of departure from Atlin at 5 a.m.

The next morning leaving the ladies asleep in camp at Pine Creek I was ready on time in Atlin but we did not actually take off until nearly 6. We flew along Pine Creek valley, north to Gladys Lake and turned southeast to Trout Lake thus avoiding the mountains and areas of cloud. We had breakfast at Jim's camp and then the three of us flew by the valleys of Gladys, Nakina (Nackinaw) and Inklin rivers, to the great Taku River valley where we landed on the right limit of the main river just below the mouth of the Tulsequah River. Here there was the plane and boat landing and the end of the road leading up the west side of the Tulsequah valley to the Polaris Taku mining and concentrator mill camp. At this time the mine was not in operation. We were met by Mr. Abbot who was camp manager for C.M.S. We had known each other at the Sullivan Mine in 1923. Herman flew back to Atlin and we drove up to the camp where sports day was being celebrated. The sports proved very entertaining. We were most hospitably treated despite the rather limited accommodation of this isolated camp. The next day Mr. W.T. (Bill) Irving showed us around. First we drove across the Tulsequah River. Its bed here is more than a mile wide and occupied on that day by broad, dry, gravel bars and numerous braided channels, the larger of which were temporarily bridged. On the east side we were taken up to the Tulsequah Chief mine which was in production, the ore being trucked across to the Polaris Taku mill. After going through the mine we were driven down the valley and around into the Taku valley to the Big Bull property that was being developed and then back across the Tulsequah River to the camp.

In the morning we said goodbye and were driven to the landing on the Taku River. It had rained in the night but Herman arrived as planned. He flew Jim and me up to the Tulsequah valley to see the glacier and lake. The water of this lake is dammed up by the glacier and when it has risen sufficiently in the late summer or fall each year forces its way under the lower part of the glacier causing a catastrophic flooding of the whole Tulsequah River floodplain for a few days. As a result the road across the river from camp to the mines had to be rebuilt each year. From here we turned down the Tulsequah Valley and then rising gradually higher curved around up the valley with its precipitous mountain walls on each side until we were high enough to cut across eastward over King Salmon Lake and into the Sutlahine River valley where we circled north to the Inklin River and followed up it and then back to Atlin. Jim returned with me to stay in camp at Pine Creek about 10 p.m. Though the day had been a little hazy it was intensely interesting one. The huge valley of the Taku River alone is one of the great features of the Cordillera. It recalled to me things Forrest Kerr had told me of the Taku country many years before.

July 4th, Sunday, was spent largely in camp where Jim had a cache and some things not needed were put in it. In the afternoon we all went into Atlin and had supper with Ross and Lena. In my absence the ladies had been for walks, sketching and done some entertaining. It was not far to walk to Discovery on Pine Creek where some old cabins, the blacksmith shop and the old roadhouse were still standing though evidently a lot of buildings had been removed. Small yellow irises were scattered among the grass on the north side of the road where they had spread from a garden. The rusty red roofing made from old gas cans on the cabins, the snowy mountains across the lake all made this a good place to sit and sketch. An owl hooting and coyotes howling had been the only sounds of wild life around the camp.

Ice was on the water buckets when I got up at 6 on Monday morning and away by 9:15. Jim left about 9 taking his wood stove. He went down to Atlin and Herman took him back to his party. I was in Whitehorse at 8:30 a.m. Yukon time, where I left the truck at the garage of Clyde Wann Motors Limited for check up and storage during my absence. While in town I met Ted Chisholm of Prospectors Airways who told me the rusty conglomerate I had mapped in 1971 at the foot of Clarke's Peak had zinc traces in the water and soil around it which interested me as it was shown on my Mayo map. After finishing with poking around the new building I took a taxi to the waterfront where the float planes were moored along the river banks. Here I found George Milne, well known bush pilot who was taking Dick Campbell's supplies to Drury Lake that day; I was to go with him. Don Cannon and Ken Saunders, mining geologist were also coming on the flight. We landed at Dick's camp and after lunch with Dick we flew across the Pelly to land on Jack Knife Lake, of limited size and zigzag in plan. Its rock shores rise precipitously on all sides except the northwest which ended in reeds and a small meadow. We dropped abruptly down over the bluff at the angle to land on the northwest leg of the lake. Even in landing there did not seem to be any too much distance to spare. This lake was used because it was much the closest to the Vangorda lead-zinc prospect that had been discovered in 1953 and was now being explored by Prospectors Airways. Here while we were unloading the mail and supplies for the company Mr. Earle Raven arrived from their camp. The plane took off successfully with the others. Raven lead Dick and I over to the camp which was a mile or more away and consisted of a number of small frame buildings in various stages of construction. A bulldozer and drills were working on the area around the property. Raven sent a man with a horse to pack the things from the lake to camp and Dick went too. When Dick returned Raven took us down to the original discovery, a small outcrop in the northeast bank of Vangorda Creek. Here the stratified character of the ore could be seen in layers of varying mixtures of lead, zinc and iron sulphides. Its resemblance to some of the ore at the Sullivan Mine was striking. We then went over some bulldozer trenches in the drift around the camp but there was not much to see, just patches of hard, rust-cemented overburden. This with the Hudson Bay Mining and smelting prospects near Macmillan Pass, however, opened a new chapter in the history of mining in the Yukon as it brought recognition that there might be large low grade disseminated base metal sulphide deposits in this little known and long neglected part of the territory.

Tuesday, July 6th was a lovely sunny day with a light variable breeze. Bud Harbottle, another prominent bush pilot, arrived on Jack Knife Lake and Dick and I arranged to return with him. When we were on the plane the lake looked horribly short. The plane had to be airborne well before it approached the tree covered bluff at the bend. Harbottle, however, seemed quite confident though he said he would not take off with any more load than he had. He backed the plane up into the reeds where someone from the camp held it until the motor was well up to speed and then we started, the bluff and trees growing higher rapidly as we approached them. The moment we were airborne he gunned the motor and turned the nose up. For a few moments we were rising rapidly. Then as we were coming to the bluff a breeze suddenly ruffled the lake below us, we stopped climbing and only just skimmed over the trees with uncomfortably little to spare. Harbottle said the breeze had brought a down draft over the bluff.

We came down on Drury Lake and had lunch at Dick's camp. To stay a day was a temptation but I had to attend to the office accommodation in Whitehorse before construction progressed further. We landed in Whitehorse about 4:30 p.m. and after supper I wrote letters including one to the Chief Geologist. The next day I spent most of the time around the building and looked at the drillhole that had been put down for water. Here they were down about 150 feet through silts and had hit green andesite that might be bedrock or could possibly be a boulder. There was no good sand or gravel bed and the outlook for water was poor. I saw the architect and others in charge of construction. They did not have any idea what a resident geologist would need until we had discussed his duties. For one thing they had not thought that prospectors would consult him in confidence over their discoveries. Rocks and minerals would have to be tested by qualitative chemical and blowpipe analysis and these would require running water and could not be done in public in the men's washroom that was along the hall around the corner. I pointed out too that the office unit at the east end of the hall had a single wall between it and the washroom so that the plumbing for water and a sink could be put through the wall with little expense. Well, the end of the discussion was that they lent me a copy of the building plans and said that if I would draw a plan of what I believed was needed they would see what could be done about it. The next day was spent on drawing the plan and making copies for the Chief Geologist and myself. These showed a laboratory-storage room with water taps, sink and storage shelves along the wall adjacent to the washroom, entered through the geologist's private office, which in turn was reached through the reception room where his secretary's desk, reception counter, map, report and airphoto files, as well as tables with chairs where these items could be examined; and in addition bookcases all had to be made. In all I was asking for four office units instead of two as originally allotted as well as for the plumbing and the shift of position along the hall. All was granted except that the size of the reception room was left open as there was a question whether some of the books and the airphotos would be better in the mining recorder's office directly across the hall. I let it go at that and sent the plan off to the Chief Geologist. During the drive back to camp going past Little Atlin Lake sunset faded and gradually sunrise began to dawn giving lovely colour effects on the scattered clouds and the mountains.

July 9th we all drove around and up Spruce Creek in the car to the far side of Spruce Mountain that stood opposite camp. We climbed it and lunched on top. The day was sunny and warm except for the cold breeze on top.

The next two days, Saturday and Sunday, were spent in preparing to leave for Dawson and Mayo on Monday and storing some things in Atlin for our return. On Sunday at tea time we had a very pleasant surprise in a visit from Bill Smitheringale and Alec Berry. Also we called on Ross and Lena who had been so good to us.

Monday the 12th, the ladies in the Ford and myself in the truck, we set off. We had finished our errands in Whitehorse by 6 p.m. and were on our way to the old

100 Mile White Pass airstrip in the Nordenskoild Valley. Near Richthofen Lake a grader had left a winding ridge of sharp rocks on the road that had to be crossed more than once. The truck cleared it but the Ford driven by Joan behind me was too low and a hole was made in the gas tank. Luckily I was not far ahead and saw in my rear view mirror that she had stopped. The gas was gushing out. We caught what we could in our wash tub and put it into the truck tank. I had a tow rope with me. We then spent the rest of the evening with the truck towing the Ford back to Whitehorse and left it at Clyde Wann's garage. It was now late and all the hotels were filled up but we were finally given a room in the Regina and one in the Whitehorse Inn.

In the morning I went to the new building to see that the changes I had asked for were being made and then we started off again in the afternoon. On our way to airstrip we called in at the sawmill that John and Allan Brown and the Israels were operating on Braeburn Lake. Mrs. Israel (Leta) very kindly gave us coffee and delicious pie. The lumber was selling well in Whitehorse. We stopped at Vern Spence's Topographical Survey camp. He wasn't there but George Fallis showed us the airphotos by which I was easily able to pick out the way into the airstrip which I had never visited before. It was a lovely spot for camp, off the road, quiet and secluded. An abundance of young aspens were growing up which made handy tent poles. The only draw back was that though the stream was flowing well the water was slightly brown.

The next morning, Wednesday 14th, we were off again and gased up at Carmacks. Bill (A.R.) Hayes was still telegraph operator there and I was delighted to see him after some years. We had lunch at Tachun River and crossing Pelly and Stewart rivers by ferry reached McQuesten Bridge to camp for the night about a quarter of a mile up river on the left limit. A whiteman was running the Pelly ferry with Johnny Tomtom as helper. I knew them both and had much more respect for Johnny Tomtom than the others. When the cable ferry started to cross the river with the current the whiteman came to be introduced to the ladies but Johnny Tomtom stayed at the far corner of the ferry. We exchanged glances. I was uncertain what to do and did nothing. Afterwards I realized that I should have fetched him and introduced him too. I have always regretted that I did not do so. He who hesitates is lost.

The next morning we were off at 9. The road, still under construction was very rough and dusty particularly between Clear Creek and Barlow Lake. West of Strickland Lake desolation stretched away on both sides due to a forest fire started during construction. Ed and Isabel Kindle passed us near the old crossing to the North Fork power plant on their way back to Mayo after a visit to Dawson. About noon we arrived at our objective, the Jeckell's cottage opposite Rock Creek. It now belonged to Judge Gibben but had not been used for sometime and he had kindly said we might stay in it. Two of the truck tires were in poor shape so we all drove in the Ford to Dawson in the afternoon where I met Dr. R.W. (Bob) Boyle. His geochemical party was going over the Klondike to see if their work might be of any use there. It transpired that their camp was in the brush near our cottage and his assistants kindly returned there and brought the two bad tires off my truck into Hickey's garage, now Jack Colburnes for repairing and then took them back and put them on the truck. We had supper with the Homer Faldings, old friends of Violet's family and local manager of Clear Creek Placers Ltd. In the morning I brought the truck in to be checked over. Bob drove me in his jeep to the Yukon Consolidated Gold Corporation hydraulic workings on Paradise Hill up Hunker Creek. From there we went on to the Hunker summit to eat our lunches with the almost panoramic view of the Klondike and Ogilvie Mountains spread around us. Joe Fournier's Summit Roadhouse that Mr. Jeckell and I had lunched at in 1932 long since had closed but was still full of furniture with the curtains up. From here we drove down Dominion to Jensen where we saw the small dredge No. 12 with 2½ cubic foot buckets. The dredge was digging on the bench on the left limit. The discovery that this pay channel reached down from near the head of Dominion had been made in fairly recent years and refuted the idea that the old timers had found everything. True they had worked at its very upper end but had not traced it down stream. Its pay was richer and shallower than the remaining pay along the bottom of Dominion valley where several old timers were still working their claims. When the bench pay had been staked by the Y.C.G.C. and they were told of it, some of them wept. The bench channel lay under their cabins on the slope near the road. As one said, "Here all my life I have been working in the creek on $1.50 per cubic yard ground and the company stakes around my cabin $2.50 and $3.00 ground". They appeared, however, to be satisfied with the treatment the company gave them as we heard no grumbling in that direction. We drove into the Granville Roadhouse of many memories. Taddy had left it to Miss Gertrude Melhause, his housekeeper and famous cook, when he died. Now it was run by Alec McDonnell whom I had known as dredge master on Lower Dominion. We returned by driving up Sulphur and saw the tourist show in Dawson after supper.

On the 17th, taking the family with me to Dawson, I called at the office of the Y.C.G.C. and saw Mrs. Emma Seeley who had worked there many years and Mr. Arnold Nordale, the manager. When I asked him if I could take the family to see Dredge No. 4 on Bonanza he said he would meet us there and show them over it. The dredge was then on 43 below and it had been estimated that with the price of gold, values, in the ground and costs of mining remaining relatively stable it had 30 years reserves to dig ahead of it. Bonanza had first been worked by primitive methods in the early days and later dug by small dredges to comparatively shallow depth. Also hydraulic tailings from bench workings had spread over much of it. Still this great dredge with 16 cubic foot buckets and a ladder enabling it to dig 64 feet below the level of the pond it floated on could handle most of the valley bottom. Good values were being recovered from as much as 14 feet of bedrock where it was well fractured. When we arrived we all went on the dredge and Nordale very kindly gave up his time to show us around.

The next day with the family and Bob we were met by Nordale at Bear Creek where he showed us through the goldroom and then guided us all around the Paradise Hill hydraulic workings so that the ladies were able to see both types of the placer operations of the corporation. We returned to Rock Creek for lunch and later went to supper with Jack and Emma Seeley at their cottage near Rock Creek and afterwards some of the Y.C.G.C. officials with their wives and friends, including Mr. and Mrs. W.H.S. McFarland who

had brought it through its difficult times to years of success.

The 18th was spent at Rock Creek and Bob and his party pulled out for Keno. In the evening we had supper with the Faldings. The next morning I went into Dawson for the truck and met Messrs. J.J. McDougall, Allan Archer and Britton Francis and continued collecting information I needed for my map.

The ladies enjoyed the lovely day at Rock Creek which was a very pretty peaceful place. A grassy lawn extended along the bank of the Klondike River in front of the cottage around which stood large populars that gave shade during the heat of the day. Across the river were some fields and a house behind which in the distance the Ogilvie Mountains showed between the hills on each side of Rock Creek valley. After supper they drove into Dawson and saw the show, Klondike Nights.

I spent the 20th with Mr. John Dines, the Mining Recorder in his office. The following day I finished the maps I was working on in camp and sent it to Ottawa. As the weather cleared at noon we met the Faldings and drove in our two private cars around "the loop" going up Hunker and down Sulphur to the Grenville roadhouse in Lower Dominion for supper stopping to look at the dredges along the way. As we drove back up Dominion to the Hunker summit, rain started again but the best part of the day had been in sunshine.

This year besides the operation on Paradise Hill already mentioned, the Y.C.G.C. was working seven dredges making it still one of the biggest mining operations in tonnage handled per day that Canada had seen up to that time.

This year, too, there were still a number of major placer operations of other companies outside the Klondike. Clear Creek Placers Limited was still operating its small dredge on Clear Creek where 20 men were living at the camp at Barney Pup. The operation of the same company on Thistle Creek where it had installed the washing plant and dragline had not gone well but it had worked there from 1946 to 1952. The recovery had proved much less than that estimated. On Henderson Creek this company's small dredge had been working every summer since 1946 except last year which had been spent on stripping new ground. Its recovery too had been below the estimate but it was running again this year and employing 22 men.

The next day, the 22nd, while in Dawson the Hon. Mr. Lesage, Minister of Northern Affairs and his party including Mr. Lamontagne (now senator), his secretary and Mr. Gordon Robertson, Deputy Minister of that department had arrived and I was invited to a cocktail party and supper afterwards for them. During the meal I sat opposite Lamontagne and no one was farther from my mind than Mr. Prudham. I had not heard a word from him since he had spoken to me at the Geographical Board dinner in the early spring. Lamontagne suddenly remarked to me "I understand you are meeting Mr. Prudham in Mayo on the 25th." "Oh, yes, yes" I replied. This was certainly food for thought. Thank goodness Mr. Prudham was arriving no sooner.

On the following day Mr. Lesage's party came to Bear Creek and I was invited by Mr. McFarland to join them in a tour around the loop and then to supper at Bear Creek. When the ceremonies were over Mr. Glossley of the Y.C.G.C. kindly took me back to Rock Creek in a big truck and got mine started. It was continuing to give trouble.

At Rock Creek we started packing up in a hurry to get to Mayo the next evening, the 24th. In the morning both vehicles and the family were in Dawson by 9:30 to get gas and supplies. We were ready and left town just after noon but as we passed Jackson's Gulch the truck's gas tank sprung a leak. Our vehicles did not have a thick rubber sheet fastened under their tanks as most resident cars had. We returned to Colburne's garage as fast as we could but it was after 5 before the tank was welded and replaced. We had supper and left Dawson as soon as our vehicles were ready. About 7:30 as we approached Gravel Lake I spotted a bull moose in it. We stopped and sneaking as close as we could, watched him through the screen of brush for some 20 minutes. He was a big one with a fine head and it was a grand sight to see him completely unconcerned only about 30 yards away plunging in the lake for water lily roots. Finally he worked over towards the far shore and leisurely wandered into the bush. No vehicle had come along the road to disturb him and it seemed as though the occasion had been arranged for us. We stopped for the night in a doorless and windowless abandoned construction cabin just on the east side of McQuesten River.

Sunday, July 25th, we reached Ed Kindle's camp at the old sawmill site near Mayo Lake at 1 p.m. On the way two of the truck's tires had to be repaired at (Bud) Fisher's Services garage in Mayo.

When we drew up at Ed's camp there were several cars and trucks there. Isabel Kindle came out of the cook tent and told us that Mr. Prudham, Don Thomson, his secretary and Bob Boyle and his party were all having lunch with them, 15 in all. With imperturable hospitality and generosity she told us to come in, four more would not make any difference. As we were quite independently equipped this seemed an imposition on her but she would not have it and insisted that we join them.

None of us had received any prior warning other than what Mr. Prudham had said to me in the spring and Lamontagne's remark so there had been no one at the Mayo airport to meet him. Someone there, however, told him that Bob's party was at Keno so he and Don took a car there. On arriving at Bob's camp after 11 p.m. they found Bob and his party just getting up to go to breakfast at Pete's restaurant. Bob had to explain that the reason for late breakfast was because they were working at night when the temperatures of the water in the streams kept more uniform and so gave better results for heavy metals in geochemical tests than in daytime. After breakfast he had brought Mr. Prudham and his party to Ed's camp. I told Mr. Prudham of Mr. Lesage's visit to the Klondike and how my trouble with the truck had prevented me from meeting him at the airport.

Soon after lunch Ed, Bob and I, as well as all the assistants escorted Mr. Prudham and Don to the Mayo River hydroelectric plant which was now operating and then took him to join Mr. Lesage and his party at Elsa. Here under Mr. Fred Connell, President of United Keno Hill Mining Company Limited everyone was invited to supper and afterwards entertained at a gathering at which slides of the mining operations were shown. When that was over the ministerial parties stayed for the night at Elsa before flying outside the next day and we left for our respective camps.

Monday, July 26th we stayed at camp with the Kindles where we had put up our tents, washed and got generally straightened out. Here on warm days we could bathe in the river below camp. Tuesday, Ed and I drove to the Calumet tunnel camp where Bob met us and we went underground. Fred Bacon formerly my cook, had recently been employed as head cook at the Tunnel camp. A catering company had the contract to supply the meals at the Elsa mill camp. A problem soon arose with the advent of Fred as not only was everyone who could possibly find an excuse having his meals at the tunnel cookhouse, but Fred's management had brought the cost per meal there well below that charged at the Elsa. Unfortunately, however, as the catering company had a long term contract and Fred had to leave. After lunch Ed and I drove to Wernecke where we saw Bob's mobile geochemical laboratory which was up-to-date in every way and also went over some of his geochemical maps. While we were on these activities Isabel, Violet and their four daughters and the two Kindle sons drove to the top of Keno Hill, over 6000 feet a.s.l. where they picniced on the site of the old Keno Mine camp and explored its ruined cabins.

July 28th Bob and I went to Keno Hill in the morning to see some of the old workings and new prospects. In the afternoon I drove into Mayo to see Gordon McIntyre, Mining Recorder and then to the hydroplant. Here a small steeply dipping minor fault mapped by Ted Owen and me in 1950 passed diagonally under the lower end of the spillway at the dam. During highwater a large pool had been eroded beneath the lower end of the spillway and a wedge-shaped block of rock had fallen away from its base exposing a steep, smooth surface of the rocks behind the fault plane. The end of the spillway now projected, unsupported for several feet. The foundation for it appeared solid, more erosion did not seem imminent. If in the first place, however, the spillway had been put 10 feet or so further southeast into the canyon wall where a little more excavation would have been required this problem would not have arisen.

On July 29th, Ed taking the station wagon drove me to join Bob in his station wagon on a visit to Dublin Gulch. The road still led over the Lookout summit. The bridge over the South McQuesten built in 1942 by Neil Keobke was being redecked with planks. A sawmill was cutting timbers for the mines a few miles up Haggart Creek and all the tall spruces where the owls had hooted in 1948 were gone. We visited Fred Taylor at his workings. The road ended opposite Hugo Seaholm's former cut. Cliff Gregg was placer mining on Bawn Boy Gulch at 4300 feet a.s.l. Acheson, who had been at Atlin two years before was working part of Ed Barker's ground on Haggart Creek with a dragline and now as tailings were stacked up on each side the former picturesqueness of the creek had gone. For that matter so had that of the lower part of Dublin Gulch. On the 30th, I took Violet and the girls to see the hydro plant and I went to photograph the spillway of the dam to have a record of its condition. We then went with the family to supper with Margo and Kipper Taylor at Elsa.

On the 31st, Saturday, we said goodbye to the Kindle family and party who had made their camp such a hospitable base for us. In Mayo we called to see the George Reynolds formerly of Ledge Creek on Mayo Lake and picked up some oars and paddles that had been stored in Joe Longtin's barn for several years. At Minto we called on Alec and Mrs. Coward and reached our 100 mile airstrip campsite at 9:15 p.m. I happened to look over the truck before going to bed at 11 and found one of the tires flat.

We were on our way again by 9:30 the next morning, driving very carefully into Whitehorse where I bought two new tires for the truck at Clyde Wann's garage. We left Whitehorse at 3:15 p.m. town time or 5:15 Atlin time and reached Atlin at 8:30 where we had supper with Lena and Ross Peebler. We were back in camp at Pine Creek and to bed at midnight. The next day was spent on mail and preparing to leave the ladies while I went to Vancouver to join His Royal Highness, the Duke of Edinburgh, on his trip north.

I left Atlin for Whitehorse where among a lot of other things I picked up the mail including a letter from Group Captain McNab telling me we would probably fly up the Coast and that it would not be necessary for me to go beyond Whitehorse. These were not my instructions from Mr. Prudham and I was determined to be ready to go as far as I was wanted. I saw a number of people including Alec Berry, Bill Smitheringale and Radisich and also Ted Chisholm who was in charge of the operations at the Vangorda prospect. After finishing my jobs I stored the truck in the Forestry garage. The following morning, Wednesday, August 4th, I flew to Vancouver and went straight to the Hotel Vancouver where a room was reserved for me and reported to Wing Commander Brodribb. I saw him each of the next three mornings while in Vancouver. He tried to arrange for me to see McNab but McNab was too busy. Brodribb introduced me to Mr. R.C. MacInnes, Chief Information Officer but MacInnes never gave me a chance to talk with him nor did he mention that the press might wish to interview me. Brodribb also introduced me to Major J.M. Berry, R.C.A.S.C., Transport Officer and obtained two very good seats for me at the finals of the British Empire and Commonwealth Games on Saturday afternoon. Thursday morning I called at the Survey office to see Jack Armstrong and pick up the guide books for the Royal tour. In the afternoon I went to U.B.C. to see Harry and Frances Gunning who had invited me to supper. When I arrived it was still afternoon and Frances asked their daughter Pat to show me around the U.B.C. grounds which I had never seen. Together we strolled off. Pat had a great fund of information of U.B.C. and the Games. Many of the athletes were rooming at the U.B.C. and walking about. She knew a lot of them by sight as well as all their atheletic backgrounds. She was simply charming, bubbling with the unsophisticated exhuberance of a young teenager and kept up a continual, cheerful conversation. As I told Frances and Harry later I had not enjoyed an afternoon more for a long time. On Friday I attended the Canadian Club luncheon in the Hotel Vancouver where His Royal Highness was to speak. Clive E. Cairnes who had recently retired was there and full of enthusiasm over the Games which proved too exciting for his heart and brought his untimely end within two days. On Saturday morning I met Charles, my son, who had come down with my eldest sister, Marian, from Monte Creek and we went together to the Games where we saw Bannister run the mile in four minutes, a world record. Marian and Charles went on to Victoria in the evening.

After a poor night, as I was too anxious, I was up at 7 on Sunday, August 8th, had breakfast and was downstairs with my suitcases in good time to meet Brodribb. At 9 with the others of the Royal Staff, all strangers to me, we left for the airport in a large convertible Buick borrowed for the occasion. At

the same time H.R.H. attended the service during which he was to read the lessons at Christ Church Cathedral, across the street. After the service his timetable allowed him half an hour or more to return to the hotel before driving to the airport so we were well ahead of him, we thought. At the airport we stood around for a while with other passengers for the Royal Plane. The baggage plane was still loading. It was due to leave for Whitehorse half an hour ahead of ours. Wing Commander H.A. (Howie) Morrison, D.S.O., D.F.C., A.F.C., C.D., Captain of the Royal Plane, a C-5, came over and greeting Brodribb said the plane was ready for takeoff and we were going up the Coast on account of weather conditions, not as originally planned across to Fort St. John and then northwest and over to Whitehorse. After this we boarded the plane so as to be ready and out of the way when V.I.P.s who were expected to gather to see H.R.H. off, would arrive.

The inside of the plane was divided into three main sections. In the rear of the entrance was the Royal Suite, the central part was much like the passenger area of any other big plane and beyond it a door led into the control section and cockpit. The personal staff and those of senior rank sat on the rear nearest to the Royal Suite. I was guided to the very front and given a seat with a Slight Sergeant and Corporal, the mechanics of the plane. They were nice fellows, quite young, but we did not seem to have much in common to talk about. We had not been seated long when someone exclaimed with surprise, "Why here he is", and a couple of minutes later there was a bustle going on behind us inside the entrance. The next thing we were going onto the runway and off. The baggage plane was still on the ground.

The sky was overcast and we rose into the clouds heading into the Straits of Georgia. After awhile McNab whose seat was close to the Royal Suite came to say he would introduce me to Commander M. Parker, M.V.O.R.N., private secretary to H.R.H. Time dragged on and on as I sat ready to go at any minute. After awhile occasional glimpses through the clouds revealed we were entering Hecate Strait and I began to wonder if I would ever be called in to H.R.H. before we reached Whitehorse. Finally McNab brought Parker along and introduced me to him. Parker was very courteous and friendly and said that as H.R.H. had gone to sleep as soon as he had come on the plane they had decided to let him sleep. He had been up until 3 a.m. entertaining those in Vancouver who had been his hosts. However, H.R.H. would be pleased if I would have lunch with him at 12:30 when he would come and fetch me. This made me feel better. Later Parker returned saying lunch had been postponed until 1:30 to allow H.R.H. to have more sleep.

Sharp on time Parker returned and led me to the Royal Suite. I gave McNab his copy of the guide book as I went past him. From the door a short passage led past what seemed to be a kitchenette, washroom and bedroom, into a surprisingly spacious room containing tables and chairs on each side and a crescent shaped table with a few chairs around it at the far end in the tail of the plane. Unusually large low windows for a plane gave good observation on each side of the room.

Parker presented me to H.R.H. who greeted me with friendliness and a minimum of formality that put me at ease as far as anything could have. He introduced me to Squadron Leader, P. Horsley, A.F.C., R.A.F., his equerry. I presented H.R.H. with his copy of the geological guide book with the compliments of the Geological Survey of Canada. He received it with thanks and obvious pleasure and waved me to a seat saying "Let's have lunch". We sat at the middle of the table facing forward. H.R.H. sat in the centre, Horsley on his right and myself on his left. Parker sat opposite H.R.H., opened the guide book at the physiographic map on the first page and studied it for a moment, expressed his interest and started asking questions about the various sub-divisions, mountains and plateau, which I answered as best I could. Then turning to the first geological map, he saw that the legend showed the Coast Mountains to be largely composed of intrusive rocks. "What are intrusive rocks?" "How were the rocks intruded?" I found these brief direct questions hard to answer as I had no idea what background he had in geology, and the short answers he seemed to expect appeared quite inadequate to me. Also his questions switched suddenly from one thing to another bringing my explanations to abrupt unfinished ends and prohibiting any discussion. His questions, however, were often searching in character and showed a wide background of general knowledge but little of geology. In some answers I did not feel I was getting my ideas to him at all and as a result I felt nervous. Parker seemed to sense the situation and his diplomatic interjections in the conversation here and there were most helpful. Plainly the contents of the guidebook were focussed too much on geology as though for a visiting geologist to be really suitable for H.R.H.

Lunch was brought and H.R.H. ate his very quickly asking questions of all sorts about the country between mouthfuls. It was not large but included delicious steak - what I had of it. I was ravenous but did not get much chance to eat. H.R.H. saw this and every now and then either waited for me to finish my mouthful or talked to Parker to let me eat. In these little ways he was most considerate though he seemed fidgety and restlessly rubbed his face and eyes. Our subjects continued to range widely around mining, prospecting, glaciers, crevasses, lumbering, salmon canning and anything to do with the coast. The clouds were beginning to open more and the Wrangell Narrows could be seen on our right and then St. Petersburg, Alaska, a sawmill, log booms and a cannery. These I pointed out, and was thankful for my many trips up the Coast on the C.P.R. boats and that we were following almost exactly the route Ted Owen and I had in 1950 so that I knew instantly, what it was we saw. The views brought subjects of the conversation now that dealt directly with them. Some lineaments visible in the Coast Mountains led to describing the Taku valley and the occurrence there of mineralization at their intersections. By the time we were passing Juneau the sky, particularly to westward was opening giving splendid views of the islands and fiords. The trimline along the sides of some of the glaciers showed well and introduced the "Little Glaciation" of which H.R.H. had heard. One thing suggested another and so on into the Yukon, the unglaciated character of the Klondike to which the placers owed their preservation, some remarks about the current dredging there, silver-lead mining at Mayo, the nickel-copper prospect near Kluane Lake, the Hudson Bay Mining and smelting prospects near Macmillan Pass and the Vangorda prospect where Prospectors Airways' recent drilling suggested the presence of millions of tons of pyrite besides the lead-zinc ore. At this H.R.H. commented "It might be of value as the Commonwealth needs sulphur and I understand it can be obtained from pyrite." We

also talked of steamboats, the Yukon River, the forest, woodcutting, permafrost and local variations in climate. Now Mts. Crillon and Fairweather stood up magnificiently to the westward and I was glad to be able to point out these great peaks and that I remembered their elevations. For me time was going much faster now. Soon we were passing up the head of Lynn Canal. Skagway was right under us but the White Pass and the railway showed well and then on the other side Lake Lindemann which introduced the hydro possibilities similar to Kenamo which he had seen a few days before. The view of Carcross brought the origin of its name and so the caribou migrations. The sky was perfectly clear now and we could see the Alaska Highway eastward past Marsh Lake, then Miles Canyon and the Whitehorse Rapid and finally the airport and Whitehorse. All along Horsely was very quiet and seemed awfully tired.

The moment "Fasten your belts" showed, H.R.H. commanded "Fasten your belts" and dropped into a chair on the left side of the room fastening his. He had been interested in the views we had seen from the windows and more relaxed than at first. Now he seemed strained again. When the plane was being brought into place to get out, looking out of windows one could see that 15 or more press photographers had pushed around the area being roped off and guarded by R.C.A.F. sentries where H.R.H. was to walk to meet the reception committee. The sentries were trying to get them back behind the ropes without much success and general confusion was going on. H.R.H. exclaimed "Look at those fools. What a mess they are making trying to put up the ropes. The people all inside them." Then something more I didn't catch that sounded like "Get after them Parker". Parker started out of the room obviously not knowing quite what he was going to do. But before he had reached the door H.R.H. said, in a tired voice "Oh, forget about it Parker, I should never say these things". Three R.C.M. Police had come up quickly and sent the press back while the sentries got the ropes straightened out and into their places. This was evidently one of the results of our arrival at Whitehorse ahead of time. This momentary outbreak of human feeling revealed more than anything how awfully tired he was after the incessant round of functions he had attended at the Coast.

When things were settled outside H.R.H. rose and started for the door to leave the plane followed by Parker and Horsley. Then he turned back to me and said "Do you have to leave us now?" "Yes Sir" I answered "but if I can be useful I can go on to Fort Nelson". To which he said "Will it inconvenience you at all?" "No Sir, I am prepared to do so." "See you on the plane tomorrow then." As they left Parker said to me quietly over his shoulder "Very good." I followed close behind McNab who had joined them, but as soon as I was off the plane I waited for Brodribb while H.R.H. was received by the Commissioner of the Yukon Territory who presented the Mayor of Whitehorse Mr. H.G. Armstrong; the Commander of the Northwest-Highway System, Brigadier H.W. Love; the Commanding Officer, R.C.A.F. Station, Wing Commander C.L. Olson; and the Officer Commanding R.C.M.P., Inspector J.R. Steinbaur. H.R.H. and his personal staff were then driven off to the V.I.P. house on the other side of the airport.

I followed Brodribb and the other officers over to the Air Force quarters. I had been led to think I was to share a room but instead I was now given quite a promotion and ushered to one for myself between those of W/Cs Brodribb and Morrison. Morrison was very relaxed, friendly and congenial and we were soon sitting in his room talking and having a drink which did me the world of good.

Morrison told me of things that had happened during the tour. On August 3rd, H.R.H. was taken on H.M.C.S. Ontario to Kemano and Kitimat and then to Sandspit on Queen Charlotte Islands where he boarded the C-5 to fly back to Victoria. During this flight he was in the cockpit flying the plane a good deal of the way but on approaching Victoria to land, turned it over to Morrison and sat behind him. When Morrison tried to put the wheels down the hydraulic system failed and he ordered the Flight Sergeant to crank them down manually and be sure to get them locked. He then tried the airbrakes and they also, on the hydraulic system, would not work. There was nothing to do but to come in as slowly as he dared and touch down right at the very beginning of the runway hoping they would stop before they ran off the far end. They stopped just in time and taxied into the landing area. The tension in the control room had been high to say the least. As they got up to leave Morrison realized he had forgotten to put up H.R.H.'s personal ensign on the front of the plane before they started to taxi in. Forgetting H.R.H.'s presence Morrison said "Oh, give me that damn flag. We forgot to put it up". The Duke handed him his ensign without a word. As H.R.H. left the control room he made a remark to Morrison that showed he had taken in everything that had happened.

Morrison also said that the morning we left Vancouver it had still been undecided on account of weather which route was to be taken north until just before he had told us. This alone would make us two hours or so earlier than shown on the timetable. Then when H.R.H. arrived at the airport more than half an hour before he was expected, only Lord Alexander was there to see him off. So that after a minute or so H.R.H. had turned to Morrison and said "Is the plane ready?" "Yes Sir." "Let's go." As soon as we were airborne Morrison told Vancouver to warn Whitehorse of our very early arrival. As a result the reception committee had been ready but the rest of the Whitehorse timetables was not changed and H.R.H. now had at least two extra hours to relax before the functions started. We went on to discuss the points of interest along the route we had just come up the Coast. Things Morrison knew little of. When I mentioned that as we had time to spare and the sky had been clear over Atlin Lake we perhaps might have circled over in that direction to see the placer creeks, settlement and the glaciers, he said "No one has told me there was anything of interest to be seen up here". Then we went over tomorrow's flight,planning a course over Atlin and the Cassiar Asbestos mine on our way to Fort Nelson in the event of the weather being suitable. From our point of view how valuable it would have been if we could have met in Ottawa. I had supper in the R.C.A. Officer's mess.

At about 9:30 p.m., deliberately late, as after all the reception was for the Yukon people and I wished to miss the line up, I went over. I knew a large proportion of the people there. They came from every strata and part of the Territory and were presented to H.R.H. The function was a great success. He looked relaxed, pleased and was having many good laughs. He seemed to be able to find questions for everyone and their answers amused him. One was repeated to me by a friend who stood near part

of the time. Johnny Johns from Carcross in all his native moose and caribou skin costume was in the line. H.R.H. asked him "Where were you born?" Johns replied "Under a spruce tree". H.R.H. asked "Do you know which one?" Johns said, "Oh, sure". H.R.H. asked "What do you do for a living?" Johns answered "Guide hunting parties". H.R.H. said "I might come out with you in a year or two". "O.K., Duke".

MacInnes came up to me and said that the account I had given Reynolds was the best the reporters had had so far on the trip. This made me feel a lot better about it. I had a short talk with Parker who said as he left "You had three very tired men to deal with today. Tomorrow we shall be rested and ready for you". The reception did not go on very late and I went back to my room.

The guide book had been disappointing. It should have been more graphical, having one or two physiographic diagrams of western Canada such as those Prof. A.K. Lobeck had published. Also simple geological maps convey little to those outside the profession unless they are accompanied by cross-sections. It was late but with pencil and four colour crayons I happened to have I drew a much simplified caricature of structural cross-sections of the geology from the Coast eastward onto the plains on a piece of letterhead paper to show H.R.H. in the morning on the plane.

Perhaps being awfully hungry at supper I had eaten too much but my night was rather sleepless. I was up at 6 and my suitcase was picked up before I was fully dressed, after breakfast I was ready at the airport shortly before 8. As I remember again we went on board first and H.R.H. and his personal staff last. McNab beckoned me to sit beside him. This was a very unexpected additional promotion. The sky was clouding over destroying any ideas of our course over Atlin and the Cassiar. Sharp at 8:30 we took off southward and almost immediately curved away easterly.

We had hardly settled on our course and were still climbing when Parker came for me. As we were going in I asked him if H.R.H. would sign my guide book. I did not know then that H.R.H. had said in Quebec he would not give any more autographs. Parker said "Leave it to me". H.R.H. greeted me cheerily. Today there was none of the nervous fidgets of yesterday. He was refreshed and natural, his open frank manner was very friendly.

Today at first we could see something of the landscape below, Marsh, Tagish, Little Atlin, Teslin and Wolf Lakes, then solid cloud to Fort Nelson.

The conversation flowed more easily this morning and again ranged over many subjects some of which were introduced by my brief remarks of yesterday. H.R.H. took up his guide book and looked through it. I brought out the section drawn last night and explained it. It proved of more lasting interest than the book and was the basis of discussion for sometime. Parker and Horsley went forward and left us alone. The mineral resources and potential of the Territory was a main theme brought up by H.R.H. so we roved over those possibilities. Prospecting, mining in remote areas, geological field work, the use of geological maps in prospecting, were all among the subjects he asked about, as well as big game and particularly caribou. Later I described the prominent features he might see on his flight from Fort Nelson to Fort Simpson and Fort Radium, the Mackenzie Mountains, the thrust ridges of the Franklin Mountains so conspicuous north of the South Nahanni River and the Mackenzie Valley. After about three quarters of an hour's absence Parker and Horsley rejoined us and one subject we got on was log cabins and Panabode buildings that were now being used at Elsa. These were a new idea to them and they were all interested in the prefabrication, portability and easy construction of these log buildings.

After awhile H.R.H. took the Mineral Resources map from the back of his guide book and examined it. It had his flight routes marked conspicuously in red and his stops on white inlays with large black print. Then after a minute he asked Horsley if he had a map. Horsley produced a large geographical wall map of Canada and spread it on the table before us. On it only the main rivers and lakes, provincial boundaries and a few towns were marked but the streams were in lines at least 1/16 of an inch wide and the lettering large and bold. The background was light buff and the mountains, badly placed, in brown hachures. One could read any part of it without moving from one's chair. "That's a good map" said H.R.H. The map had been printed in Britain and its errors and omissions showed its compilation had been made before 1920 at the latest. This was a little humiliating but perhaps was a good instance of what a visiting V.I.P. needs on a tour.

After awhile H.R.H. went to another table, picked up a book there and started looking through it. Parker and Horsley were talking to me when he said "If you fellows haven't had too much reading I'd like to read you this. It's good." Then he read aloud Robert Service's poem, "The Ballard of Casey's Billgoat", reading extremely well with expression as though he knew it beforehand when as far as I had seen he had only just glanced at it. Obviously he liked to read aloud. After it he read "Madame la Marquise", chortling over it.

His valet now brought him his clothes to change for his flight to Port Radium and he changed into them quickly while he was talking to us. Parker picked up my guide book and going over to him said something and put it open on the table beside his. After this H.R.H. went to the front of the aircraft and was there for the landing while we remained in the sitting room. As soon as we had landed he returned, took out his pen and autographed my guide book - "Phillip 9th August 1954" - and handed it to me. "Oh, thank you Sir", I said. "You are the one to be thanked" he responded with the sincerity that makes him charming. Then "Goodbye" and turning, went out.

After leaving the plane H.R.H. went straight to where some Brownies and Cubs were lined up and spent all of the time he was at Fort Nelson with them. The moment he came up to them he called them around him. There he stood talking and laughing with them all around him. Certainly here was the place for the children to see him almost mobbing him. They were having a wonderful time.

On landing I picked out my suitcase, put it in the C.P.A. office and then went to where the Canso that was to take H.R.H. north was parked. We had arrived on the C-5 and I hung around with several others who had come on it. Morrison came to me and said he was very sorry but he had missed holding the R.C.A.F. "Sked-flight" for me to return to Whitehorse on but that the officers here would look after me and arrange for my return as soon as they could.

After about 45 minutes H.R.H. boarded the Canso and it left for Fort Simpson and the C-5 for Yellowknife soon after with all the others of the staff and I was left alone. I looked around for some officer but the orderly sergeant was the only person about and I followed him. A few minutes later Flying Officer Coghill came running up and introduced himself, took me to a car and drove me to the officer's mess. Here I met Squadron Leader Woods, the officer commanding the base and several other officers and was invited to lunch. It was now pouring with rain.

After lunch I felt like a rest and was given a spare bed in one of the officer's rooms where I stayed until 7 p.m. Then I attended the cocktail party and supper in the officer's mess where I was well looked after. It was relaxing and enjoyable. The next morning, Tuesday, August 10th, after breakfast I fussed around and wrote a brief account of the trip for the Chief Geologist. Woods had arranged for a U.S.A.A. Force transport plane that had stopped there to take me to Whitehorse. After thanking and saying goodbye to Woods, Coghill saw me off at 1:30 p.m. The plane was a transport that had been used for freight. It was empty except for a few seats in front where some G.I.'s were. A seat was fixed up for me alone near the middle. This seemed a long lonely flight. I thought of all the things I had intended to say and how serious our conversation had been as a whole. If only I had told H.R.H. of the telegraph line Dick Gooding's love of criticizing the Royal Family and how he had hit the American Communist in Atlin on their account; of Leslie and Stevenson, and so on. Actually the plane made very good time to Whitehorse.

From the airport I took a taxi down to the hotel and changed my clothes, picked up a sack of things and the mail and took another taxi up to the Forestry garage to get the truck. Then I took it to Clyde Wann's garage to be checked over and filled with gas. I spent the night in Whitehorse. The following day I inspected the work on the office in the new building and called on a number of people. I was back in Pine Creek a little before midnight. All serene and peacefully asleep.

During my absence the ladies picked Lena up and they went out for the day to visit the hotsprings, 17 miles south of Atlin. Besides attending teas in Atlin they had some of their friends out to camp. Aaro and Sylvia Aho called in for a visit. Violet and the girls sketched, picked wild strawberries that were not abundant, watched the beavers at the dam they had found up the creek, investigated old cabins and placer workings as well as the old farm near Surprise Lake.

The next four days were mainly spent on mail, accounts, getting in some walks, sketching and picnics. The weather was lovely. If only the 8th and 9th had been like this. On the 15th we all drove up Ruby Creek to see Kraft's placer workings. All the time we had camped on Pine Creek he had been the one regular driver up and down the road and always sounded his horn as he passed, one long blast for Violet and two short ones for each of the girls as he said. He was then in his 80s and continued placer mining until he died in Atlin in his late 90s. His pay gravel was particularly interesting as it lies under a basalt lava flow of Pleistocene or older age. The next two days I visited other prospects.

In Atlin at 6 a.m. on the 16th, I happened to meet Herman Peterson and knowing his rate was $50.00 per hour and one could see a good deal in that time, I asked him what he was doing today. He replied that he was shortly taking two prospectors to a nearby lake and then had nothing to do until he went to fetch them in the evening. It promised to be a perfect day and I said I would be grateful if he gave the ladies a $50.00 flight over the lake and glaciers but that as nothing had been arranged and I had an early appointment to make in Deep Bay, word would have to be sent to them when to come to Atlin. I thought he would give a note to Kraft. He answered that he would be glad to and would look after them. When I got back in the evening Herman had fetched the ladies to town. First he took the two girls up for about an hour and a half going across the lake over Taku Arm to Ben-My-Cree south over the icefields and glaciers making steep banks and turns to allow them to take photos around the Llewellyn Glacier and so on. Returning he took his wife and Violet up on a similar flight and afterwards they all had tea at the Petersons. When I went to thank and pay him he insisted on nothing more than the $50.00 saying what an enjoyment it had been to him and that they were the first flying tourists he had had.

We spent August 17th packing up camp, and making farewell visits on our friends in Atlin who had been so wonderfully kind to us. The following morning we left Pine Creek for good and drove to Whitehorse where we stayed in John Phelp's cabin up at Jackson Lakes. We left the Ford for the night at Clyde Wann's garage for a complete check up it was due to have. We met Ted Chisholm and Aaro among a number of others. I visited the new building and decided on the location of the phones for the resident geologist and his secretary. When I went to get the Ford the next morning the night mechanic was still there and he said with glee that the car was running like a bird, that he had had no other car in all night and had spent the whole time playing with it. Only the normal charge was made. After that the car ran better than it ever had and the mileage per gallon rose to over 25 for the whole way back to Ottawa where it had its next check up and never ran quite as well again. While in Whitehorse the ladies visited Miles Canyon and the Whitehorse Rapid with Aaro and Sylvia.

On Saturday the 20th we drove west to meet John Wheeler at Mile 1056 at the end of Kluane Lake. The day was lovely and the view of the mountains west of Haines Junction were particularly grand. We found John living alone in the hut used as the Ranger's Cabin in the abandoned construction camp just across the Highway from the lake shore, a few miles beyond Silver Creek. He had disbanded his party a day or so before. After supper we all spread our bedding on the floor of a large store room for the night and were comfortable.

The next day was the red letter day of the summer. Under John's guidance we all set off to climb nearly directly up the mountain behind camp for 3000 feet as our objective was the upland at 5550 feet a.s.l. The day promised to be good from the start. We took ample food and warm clothing and, of course, John took his alpine pick. Reaching the top we were on a great gently undulating terrace - like the area that lies between the Shakwak Trench on the northeast and the Kluane Ranges of the southwest. The timberline was far below us and we were on the beautiful, open, upland

surface that was clothed by turf and alpine plants but the flowers were over. I had looked longingly at this area in 1945 but as its general geology was shown both on R.G. McConnells' and D.D. Cairnes' maps I had no excuse to traverse it. Once up there, to the southwest the great valley of Slims River cut through the Kluane Ranges right below us, and beyond it to the westward, the front of the Icefield Ranges formed a precipitous wall. Southward the snowy and icy chisel-like peak of Vulcan Mountain rose beyond the upland to more than 9000 feet a.s.l. and with its satellites walled off the view. Below to eastward and spreading around to the northwestward was the broad Shakwak Trench. The Kluane Hills lay in it, directly east and farther to the left from nearly under our feet Kluane Lake spread like a map into the distance. The panorama was magnificient and had everything. The day was superb. On reaching the top we searched the broad, open expanses of the upland with our glasses for game but not an animal could we see. One felt there should be flocks of sheep and bands of caribou. Here we lay in the sunshine enjoying the views while we ate our lunches. After lunch we walked northwest along the edge of the upland to obtain a better view of the Slims Delta when coming over a slight undulation, there on the other side laying down were seven big white rams not a 150 yards away. They saw us as soon as we saw them and getting up, trotted about 100 yards to the rim of the steep funnel-shaped draw from which the slides that blocked the highway in 1945 had come. After stopping to look back for a moment, as sheep do, they filed over the edge and out of sight. When we came to where they had disappeared they were not far below us crossing a scree and climbed up onto a rocky buttress where they stood looking back and then three lay down. We watched them for sometime. In our photos taken from here they show distinctly so they cannot have been more than 100 yards away. For the ladies this was a unique and wonderful experience. From here making a number of stops to admire the views we wended our way down to camp reaching there at 8:30.

The next day we all drove to Duke River at Mile 1098, for a picnic supper. The return journey in the quiet evening was particularly lovely. The following day John drove me to the Quill Creek nickel-copper prospect and the ladies called in at the Silver Creek store and then went picnicing. The next morning I checked over the truck and rotated the wheels on the Ford. That afternoon we all drove to the bluffs above Sheep Creek to see the grand view up Slims Valley to Mt. Maxwell.

August 25th, Wednesday, we packed up and left Mile 1056, John driving his vehicle with us to Whitehorse. On the way at Haines Junction we called to see Bob Swanson and the Baches formerly of Dublin Gulch in the Mayo area, and had refreshments in their restaurant and cocktail lounge. In Whitehorse, after depositing John's equipment some of which I had brought in my truck in the building at Takini, we took a cabin at Tourist Services, $8.00 for the night for the four of us. After supper we called on the Bill Emerys. The next day was spent in Whitehorse and we heard of Clive Cairne's death in Vancouver through John. We visited the Phelps in the evening.

The following day we said goodbye to John who had given us such a happy visit to Kluane and started for Hubert Gabrielse's camp in the Cassiar. Stopping to see the Porsilds at Johnsons Crossing on the way we reached the Mile 717 airstrip, where Bill Poole's camp had been, and slept under the stars. The next day we called in at the Rancheria roadhouse and had coffee with Mrs. Simpson where the girls were much amused by "Captain Hook", the children's pet eagle. We lunched at our June campsite at Albert Creek bridge where the ladies were left while I went to Watson Lake. There I met Mr. Dalziel, a well known hunting guide of the Dease Lake country and saw Louis Pospiscio about a visit to his placer claims on Liard River above the bridge. Going on to the airport I called at the American Smelting and Refining Company's camp to see Mr. Cecil J. Coveney and arranged to visit their prospect on Quartz Lake on September 3rd. After this I returned to Albert Creek for tea and we drove south on the Cassiar Road to Hubert's camp at Mile Post 1 on the new Stewart Road, south of Troutline Creek arriving about 7 p.m. The Cassiar Road had been greatly improved since 1949.

The next day, the 29th, Sunday, was spent in camp which had a fine view of the mountains around and the girls dubbed it "The McDame Country Club". The ladies got their own breakfasts and lunches and we all had supper together under Hubert's cook with the party including three assistants and the packer. The following morning the ladies in the Ford and Hubert taking me in his jeep, we drove to the Cassiar mill townsite. Here the mine geologist took us through the mill which was under construction and then we all went up to the asbestos mine on the top of the mountain in two jeeps. The steep switchbacking road was a thrill in itself for the ladies. The girls collected specimens from the orebodies. Later we went around the spur and up into the cirque on the northeast where great blocks of ore covered the surface. More specimen hunting. The girls had a great time climbine and jumping from rock to rock. The mine geologist, our guide standing with Violet, Hubert and me watched them and then said to us. "Those aren't daughters you have. They're mountain goats." This was a fine day and from the mine the view of the mountains was lovely. For the day after Violet's diary reads, "Another thrilling ride on hair raising grades up Table Mountain. The girls went riding on the horses with the packer." On September 1st, Hubert and I visited Wilms property. The next day we drove up to the bottom of the asbestos mine and leaving the jeep, we climbed the opposite side of the valley where we examined the intrusive contacts and had a splendid view of the whole mine operations. The weather was showery and the girls played bridge with the assistants.

On September 3rd, taking my truck I drove to the Liard Bridge to see Pospiscios claims. Going up stream in a canoe he showed me where he had found on the bars remarkable quantities of black sand with a little fine gold. From here I drove on to meet Coveney on Watson Lake at 4 p.m. We flew into Quartz Lake arriving about 6:30 p.m. and slept at the camp there. The next morning we went over the showings, exposures of rusty conglomerates, but nearly all of the claims were covered by deep drift. Drilling was in progress and geochemical and biochemical tests were showing traces of base metals over a considerable area. I was back at the "Country Club" that night. While I had been away the packer and one of the assistants with some of the horses left to hunt for meat and under Hubert's wing the ladies had visited the old McDame Post. After my return Hubert took me south along the Stewart Road to Cottonwood River where the bridge was being built. This year the road had progressed astonishingly under a well managed, small

construction crew. The following day was spent sorting and packing as the Survey tents and equipment I had and my truck were to be left with Hubert and he was to use my truck to carry his equipment out for storage.

September 5th, Monday, we said goodbye to Hubert and his party who had given us all such an interesting and enjoyable time and set out on our homeward journey all in the Ford. We lunched at Albert Creek and stopped for the night at an abandoned construction campsite in the narrow part of Toad River valley about Mile 437 in the Rockies. These old campsites had been cleared of buildings and refuse some years before. Willow and poplar brush was taking over making them good places to pull off the Highway and conceal camp from view. Now, motels, service stations and other service establishments occupy practically every one. We put up our nylon, preserved fly as a lean-to and slept under it with a fire in front. The weather was good, the night crystal clear and a very cold breeze came down the gulch across the Highway. There was little sound of traffic to disturb us as the frost began to settle and the fire burnt low. It was cold shaving in the morning while the ladies got breakfast. We were off at 8:30 and reached Callison's Motel at Dawson Creek that night having come from near Fort St. John with only one headlight as the other had been smasked by a rock as we had no guards which are really essential on these gravel roads. Also we had been lucky that only one pebble had broken a small, round hole in our windshield in all the summer. We all enjoyed hot baths, the first for sometime. The next morning as the front wheels were pulling sideways the car had to go to a garage and the wheel alignment took until noon.

We got away at 12:30 p.m. and drove westward over the new Hart Highway through Pine Pass to stop the night at the Mule Train Auto Camp at Quesnel at 9 p.m. After breakfast in the motel we were off before 9, through the Cariboo and Kamloops to Monte Creek at 4:30 p.m. Very glad to get back to the Ranch again and Jean and Nan who were making such a success at managing it. Charles had spent most of the summer between my brother Norman at Neds Creek and my sisters at Monte Creek and now joined us on our homeward journey. After two day's rest here we drove to Nelson going through the Okanagan, over Anarchist Mountain and through Grand Forks. In the dark between Trail and Nelson, via Salmo, suddenly cattle were all over the road ahead of us and we had a very close shave with a cow. Three days visiting with Violet's family, the Hamiltons, and then on again in rain south and east to spend the night at Missoula, Montana. From there we drove through the famous mining camp of Butte where we shopped and on to the west entrance of Yellowstone Park. Today the fall weather was lovely and the scenery grand. Here Father and Mother had stopped on their honeymoon in 1892. The cabins built of rough lumber with open cracks in the walls, contained the bare necessities, electric light, a wood stove with wood for cooking and warmth, and bunks. Washing facilities were in another building. The luxurious motels were outside the park. The hotel nearby, overlooking Old Faithful, was closing for the season but the souvenir counters were still open. We spent the next day in the park looking at the buffalo and other game animals and photographing Old Faithful. The fall was coming on and the nights were cold in this high dry country.

The next morning, September 17th, we drove slowly through the park looking at other geysers and the river canyon. In places bears were lying beside the road hoping to be fed and we saw some people were crazy enough to do that. We left by the northeast, the Silver Gate. From here the highway was bordered first by tall pine forest and then by a park-like valley of ranching country. Then from the valley it began to climb and it climbed, up and up far beyond our expectations. We passed through forest again and out above timber-line to open alpine country on top to stop at the summit of the Beartooth Pass 10940 feet a.s.l., the highest we had ever been on land. A splendid panorama is spread in all directions as the pass is a shallow saddle in a broad rounded ridge whose summits are controlled by an old gently undulating surface. On each side the surface is cut by cirques into biscuit board topography that shows particularly well to the north. To the northeast and east one looks over timbered ridges and spurs and far out to the open plains beyond. Then on we went down, down and down by winding curves, blasted from a precipitous mountain spur, cutting around its end to switch back down the other side passed frequent view points as well as turnouts with reverse grades for those whose brakes fail. And still we went on down along a steep timbered slope into a forested valley with scattered farms and finally out of the hills onto the open plains to spend the night in a good motel in Billings, Montana, a town that still has a distinctly western air about it. The next day we reached Mandan, North Dakota after a brief stop on the way to look at an area of badlands. From here we made Iron River, Michigan, 529 miles by our speedometer that day. The following day the drive was shorter, to Newberry, Michigan. Tuesday, September 21st, we arrived at Mattawa for the night and by noon on Wednesday we were home in Ottawa. Hewitt had already left in his old Austin, loaded with all his belongings, his bicycle on top, to drive to Vancouver to take his M.Sc. at U.B.C. On Thursday Charles and Nibby went to Lisgar Collegiate and Joan took the train to Kingston to go to Queens. With the exceptions of 1944 and 1953 I had been on fieldwork every year since 1924 in British Columbia or in the Yukon. After this there were still visits to British Columbia and the Yukon in 1958 and 1960 before I retired and finally during 1966, 1969 and 1978 after retirement from which changes in the country have been noted here in places.

Appendix I

## PLACER MINING

Frequent references to placer mining methods and equipment in the preceding pages call for explanations for those unfamiliar with the terms used.

The placer workings of the Yukon that present the most human interest are not so much those of a large scale, the huge dredges and big hydraulic operations supported by all the sophisticated experience and inventions of their day described in mining texts and other books, but the small workings on distant creeks of isolated and lonely miners and partnerships. Here, far from consultation with their fellows, these indomitable men faced the innumerable, subtle variations found in the beds of streams and creeks and surmounted the problems before them by their own wits and skills. It is beyond the scope of this short section to recall the many, often intricate and ingenious devices applied by them to trace their pay-streaks and recover their gold. Many of the workings have, however, been mentioned.

An attempt is made in the following few pages to give an account of the simple principles and methods that are the basis of placer mining. It may be pointed out that these methods were in vogue even before Jason and the Argonauts took the golden fleece from the placer workings near the eastern shores of the Black Sea.

The simplest way of separating a small quantity of matter of high specific gravity, whether of gold or other minerals, from lighter material be it soil, sand, or gravel, is by placing the material in a pan, immersing the whole in water and shaking it up and down as well as giving it a rotary motion causing it to swirl around. The heavy particles then sink and the light ones rise. In this way a concentrate of heavies gathers on the bottom of the pan and the lighter material can be roughly washed and sloughed or scraped off the top until the heavies form an appreciable percentage of what is left in the pan. Then the panning requires increasing care.

The concentrate of heavies may include any minerals present such as gold, platinum, native copper, cassiterite, magnetite, pyrite, arsenopyrite and in some places precious gemstones. Materials in stream deposits, however, unless they are very hard or malleable like gold and native copper are quickly ground to dust by abrasion as the water moves its load of sand and gravel downstream. Malleable minerals stand more abrasion and may be gradually flattened. Naturally the harder and tougher the mineral the more abrasion it will withstand before being rounded and finally ground up. Also the coarser and heavier the particles, the more readily they sink through the lighter material. The finer the dust, even when gold, the more difficult it is to separate by placer methods from the unwanted lighter materials referred to generally as tailings.

The common gold pans used in placer mining and prospecting are stamped from sheet iron and vary in size and shape. In North America, the large "standard" pan is about 16 inches in diameter, two and a quarter inches deep with sides that slope at 40°. It has a capacity of about 140 heaped pans per cubic yard while the usual smaller "prospector" pans carry some 325 pans per cubic yard. Knowledge of the capacity of the pan is important as it enables an approximate evaluation of the ground to be made on the spot, if the amount of the heavy concentrate is dried and weighed. Many experienced miners can make remarkably good guesses of the value of the gold in a pan just by looking at it. Before gold was revalued, some regarded a grain or "colour" heavy enough to be heard when dropped in a pan to be worth one cent. Thus, ground yielding a cent to the standard pan carried $1.40 per cubic yard or more in the case of a smaller pan. Nothing, however, is better than a good pair of portable balances and these were often to be found in ruined cabins in the Yukon.

The late Don Cameron, well known all over Canada as one of the leading prospectors of his day, often carried in his pocket a "two egg" frying pan with the handle cut off and a small mortar. Using the pan he panned gold or heavy minerals from dirt or chunks of vein matter that he crushed with his hammer in the mortar. From the concentrate or colours made in the "two egg" pan he was ready to give an opinion on the value of the material he had panned. The astonishing thing was how near he often came to the measured value.

After the pan, the smallest mining implement used is the rocker. This generally consists of an open box about four feet long and 16 inches wide and 16 inches deep mounted on transverse rockers. It is set on a slight slope. The lower end of the box is left open. A handle projects upward on one side by which the box is rocked. A square sieve four inches deep fits over the top of the box and has a perforated iron plate or coarse screen for its bottom. In the box, short boards with riffles, described below, slope downward towards each other with the lower end of one a couple of inches above that of the other and slightly overlapping it. Riffles are also placed along the whole length of the bottom of the box. When all is ready, dirt is shovelled into the sieve and water is poured over it while the rocker is rocked. The water carries the finer materials which include all the heavies except pebbles and nuggets too large to pass through the sieve down the system; the heavies settle between the riffles and the lighter material is washed out of the open end of the box. The sieve is then removed, and the washed coarse gravel is dumped from it before it is replaced. The process is then repeated until it is judged that the riffles are sufficiently filled with heavies for a "clean up". The riffles are then taken out, washed with care to remove all fine gold into a pan, wash tub or other suitable receptacle.

Another device for small scale mining is the longtom. This is an open box about 12 feet long having its lower end partially obstructed by an outward sloping perforated plate or screen. Below the screen is a second box of about the same length and rather wider with riffles in it. The pay dirt is shovelled into the tom and worked along it with the aid of water flowing in at the upper end. The coarse material is then taken out while the finer material is washed through the screen down into the second box where the heavies are caught by the riffles. Only a few rockers and long-toms were seen in the Yukon. Their virtue is that they need less water than sluice boxes but they require much more labour for the quantity of dirt handled.

Sluice boxes are open flumes lined with riffles along the bottom. The dirt is shovelled into the upper end, washed along the boxes by a stream of water and finally out down the trailrace to some place where the tailings will not be in the way. The whole set up generally consists of at least three or four boxes in sequence; often the flume continues much farther to carry the tailings well out of the way.

The individual boxes are generally about 12 by 12 inches in section and 12 feet long, a figure commonly referred to as a "box length". They are often made with a slight taper so that the lower end of one fits a few inches into the upper end of the next enabling them to be dismantled, moved and set up together again. However, sluice boxes may be two or even three boards wide and two or three deep or even made of sheet iron where a large yardage of dirt is to be handled by hydraulic or mechanical means.

The great percentage of the gold and heavies is caught in the riffles in the first few feet from where the dirt is shovelled or washed into the boxes. Indeed the coarser pieces of gold accumulate in the first yard or so and only the finer particles are carried any distance.

The riffles are removable obstructions on the bottoms of the boxes designed to hold the heavies. They may be of several kinds. In the first two or three box lengths at least, they must be easily removable for "clean up" which takes place when shovelling in from a chosen area of ground is finished, or when the riffles are well filled with heavies or at the end of the season.

The riffles may be made of whatever is at hand and suitable. Better materials are used where warranted. For instance, the most primitive riffles are made of small poles. When sawn lumber is available they are made from it, or iron.

The pole riffles are formed of a number of small, thin, skinned poles about six feet long placed an inch or so apart parallel to each other and fastened together into frames by cross pieces nailed on the ends. These are laid end to end along the bottom of the boxes and can easily be removed for clean up. Another form of riffle is made up of short pieces of small tree stems set upright in the bottom of the boxes. These are laborious to remove for clean up and when used they are usually placed in the boxes of the tail race in larger operations as they withstand a lot of water abrasion.

The most common riffles consist of frames of cross pieces and are referred to as "Hungarian riffles". They are made of slats about one and a half inches square laid about two inches apart and cut to such a length that with one inch strips four or six feet long nailed on their ends they form a frame that fits into the bottom of the sluice boxes like the pole riffles. In a prolonged operation the wooden riffles become worn down and strips of rubber, old rubber belt or pieces of old tires are sometimes nailed on them or where warranted the riffles are made of two inch angle iron fastened together with strap iron.

Where the gold is largely in fine particles (real "gold dust") goat fleeces, bullock hides, carpets, blankets or such suitable hairy textured materials were used in the past on the bottoms of the sluice boxes under the riffles. The fine gold worked in among the hairs and was retained. For clean up the hides, etc. were washed in a tub where the gold settled and could be recovered, hence the Greek fable of "The Quest of the Golden Fleece". When cocoanut matting became available this was used instead as it is a more durable and more readily washed. The matting is often covered by expanded iron which holds it in place and makes good but small riffles itself.

The slope or grade used for the sluice boxes was a frequent subject of discussion and argument among the miners. Generally it was one in twenty to one in twelve but everyone had his own idea. Many maintained that to recover fine gold a steeper grade was needed than for coarse gold.

The gravel and dirt tailings are often difficult to dispose of but if not kept clear of the workings they choke the operation. The steeper the grade of the creek the better, but usually the very first phase of the work is digging a ditch to carry away the tailings and water. The ditch is started on the creek below the area to be mined and is given sufficient grade to carry away the tailings. As the "pay" in the Yukon is normally in the lower few feet above the bedrock the ditch is designed to intersect the bedrock where work is to be started. As a result of its use and position the ditch is often called "a bedrock drain". In the upper part the sluice boxes lie in it and indeed in some cases it is necessary for the drain to be lined by a flume for long distances.

From time to time a clean up is carried out. Shovelling-in stops and the water flow through the boxes is shut off. The riffles are lifted out and thoroughly washed so that every scrap of gold is collected in the smooth bottom of the boxes and then washed to the lower end where the heavy concentrate is gathered into a tub.

The concentrate is then cleaned as far as possible by panning, often using a tub of warm water as handling a pan in the cold water of the Yukon streams particularly at the end of the season is a tough job. When the gold concentrate is as clean as it can be made with a pan, it is dried. Where all the gold is relatively coarse, about a half of the size of a grain of wheat, as in much of the Klondike, this procedure may be enough and it is ready for the bank. Where it is finer, however, it can be cleaned further by using a blower.

A blower is a small triangular pan usually of sheet copper. In plan it is an isosceles triangle with the apex cut off. The sides are three quarters of an inch high and a little higher at the base. They slope steeply inwards. The base is about seven inches wide and the distance to the apex is about eight inches where it is cut off giving an opening of about three quarters of an inch. Blowers differ in size and shape but generally have about the same proportions.

In using a blower to clean fine gold, a little is put in it at a time. Then with the blower held between the hands over a large, clean, dry pan, the gold with the undesirable heavies is given a little toss in the air and a puff of breath. The gold falls almost directly back onto the blower but the grains of lighter mineral are blown over into the pan. Should any gold escape it can be recovered later from the pan. The process is continued using a little material at a time until the gold is satisfactorily clean and ready for the bank. In the old days it was then poured into a poke, a small cylindrical moosehide bag.

An appliance which may be mentioned here is the porcupine boiler which was commonly used in the Yukon for thawing frozen ground in placer mining and is still used in some Canadian towns for thawing street drains. The boiler is narrow, upright cylindrical and with a number of short, capped pipes radiating around it and a steam pipe projecting near the top. It is enclosed in a casing which includes the firebox for wood or coal at the base and a conical top ending in a chimney pipe. Such boilers were used to force steam along hoses into iron pipes or "points" that were driven into the frozen ground. In the early days their great feature was their small size so that they could be transported on a dog sled or toboggan.

Water moves more dirt if it is applied in rushes than if an even flow is used. This is particularly important where the water is scarce in which case boomgates are often used in placer mining and lode prospecting. Between the rushes the larger rocks are thrown out of the excavation. The water is impounded by a dam or reservoir whose outlet is occupied by one of these gates. The gate may be opened and closed manually or it may work automatically. An automatic gate consists of a board door pivoted on a horizontal bar less than one third of the distance from the bottom but weighted to make the lower end slightly heavier. When closed, the gate is at a steep angle holding the water back. When the water rises sufficiently it overbalances the gate and escapes under and over it in a rush. As water goes down in the reservoir the gate swings shut due to the weight of the lower end. Nearly every miner had his pet variation suited to the circumstances of his ground, flow of his stream and materials available. He also had his own ideas of how his gate should be balanced. Considerable skill was required to make it water-tight and work well with only rough lumber at hand.

Description of many variations of the appliances and methods mentioned here are described in mining papers and books such as Peele's Mining Engineers Handbook but those referred to here were the ones seen in the Yukon.

## Appendix II

## EARLY SURVEYORS IN THE YUKON

The exploration and mapping of the Yukon Territory by the Canadian Government began in 1887 with the expeditions of Dr. G.M. Dawson of the Geological Survey and of Mr. W. Ogilvie, D.L.S. of the Department of the Interior. Dawson entered the Yukon by ascending the Liard River about June 24th and Ogilvie crossed into the Territory along Lake Bennett about July 15th. They arranged to meet on July 20th at the junction of the Pelly and Lewes rivers, (Lewes being the name used for the main head-water of the Yukon River above the Pelly until about 1948). Neither knew much of the difficulties they had to face.

Dawson followed the old Hudson's Bay Company route to Fort Selkirk ascending the Liard and Frances rivers, portaging to the Pelly River and descending that stream to its mouth opposite Selkirk. The ascent of the Liard and Frances proved more time consuming than he had expected and the portage to the Pelly delayed him even more so that it was not until August 11th that he reached the meeting place at the junction of the Pelly and Lewes.

Ogilvie too found unexpected obstacles in starting his traverse and in crossing the Chilkoot Pass. He carried his traverse from Pyramid Island whose latitude and longitude had been established by the U.S. Coast Survey in 1869. The traverse was carried from there into Canada and along the lakes at the head of the Lewes and thence down that river. He reached the mouth of the Pelly on August 13th where he found Dawson waiting.

Dawson's main party consisted of four white men who remained with him for the whole journey and included Mr. J. McEvoy, his technical assistant. This party made a "track survey", and sketched in the topography with form lines on each side. Dawson did the geology and evidently some of the sketching of the topography but in the note of "Sources of Information" on the map of the Pelly (Sheet II Edition of January, 1898) he gives McEvoy credit for some of the topography.

Ogilvie had a larger party and much more equipment and food as he planned to spend the winter in the Yukon. Also as he was to establish the position of the 141 meridian on the Yukon River, his instrument traverse was necessarily more accurate than Dawson's. Ogilvie seems to have made no attempt along his route to put in the topography which was sketched in by Dawson on his way out of the Yukon. Ogilvie's traverse map only shows the course of the Lewes and Yukon rivers. The two traverses joined amazingly well.

After parting with Dawson at Selkirk on August 17th, Ogilvie continued down the Yukon River and reached the 141st meridian, the International Boundary with Alaska, on September 14th where he established an observatory and settled for the winter.

In the meantime Dawson's party proceeded up the Lewes by canoe taking Ogilvie's mail and food brought down for them by Ogilvie for their journey upstream. This party arrived at the head of the Lynn Canal on September 20th by the Chilkoot Pass and returned to Ottawa.

Mr. R.G. McConnell started his journey by accompanying Dawson as far as Lower Post on the Liard River. From there he descended the river and after exploring the region south of Great Slave Lake wintered at Fort Providence. In the spring he travelled with dog teams down Mackenzie River over the ice as far as Fort Simpson. From there he continued down the river by boat after the ice had begun to clear. At the head of Mackenzie Delta he turned up the Peel River to Fort McPherson. From there he crossed the Richardson Mountains by the Peel River Portage into the Yukon Territory and descended the Bell and Porcupine rivers with one man to Fort Yukon on the Yukon River in Alaska reaching there on July 24, 1888.

From Fort Yukon with two men he ascended the Yukon River again entering the Yukon Territory and arrived at Fortymile River in fifteen days. On August 14th the party left Fortymile and ascended

the Yukon and Lewes rivers to their head, arrived at the Chilkoot Pass on the 15th of September, Juneau on the 21st and Victoria, B.C. on the 1st of October 1888. This had been indeed an outstanding journey and while McConnell's pioneer geological explorations in the Yukon were confined to the traverse from the summit of the Richardson Mountains to the Alaska Boundary on the Porcupine River and from the 141st meridian to the mouth of the Pelly on the Yukon River they, nevertheless, with Dawson's traverse of the Liard, Frances, Pelly and Lewes rivers filled in the broad picture of the geology of the Territory except for the regions northeast of the Pelly and southwest of the Yukon.

In the spring of 1888 Ogilvie began his homeward journey. In this he carried a track and compass survey from the Yukon River to Fort McPherson on the Peel River. There he started a micrometer traverse up the Mackenzie River to join his former surveys at Fort Chipewyan on Lake Athabasca. This was an ambitious and great undertaking. He set out very early in the spring, with Indians and their dog teams, ascending the Tatonduke River and crossed to the head of the Porcupine River. This was one of the few times dogs were used for the exploration of the Yukon. He waited there for the ice to go and then descended the Porcupine to its eastern tributary the Bell River. He ascended the Bell River and crossed the Richardson Mountains by McDougall Pass to Fort McPherson on the Peel River. From there he carried his micrometer traverse to the Mackenzie River and up that stream and the Slave River to Fort Chipewyan. There, as soon as the ice on the rivers was strong and the snow sufficient he left Fort Chipewyan on the 27th of November with dog teams for Fort McMurray. He went on from Fort McMurray on December 5th to Lac la Biche and from there travelled by horses and sleighs to Victoria on the Saskatchewan River. From here he used a wheeled vehicle arriving at Edmonton on the evening of December 23rd and driving on with a wagon to Calgary which he reached on the morning of the 29th. Here he evidently took the train to Toronto where he spent some days before arriving in Ottawa on the 15th of January 1889 having left there on the 20th of April 1887.

While Dawson and McConnell laid the foundation of geological knowledge for the Yukon it was Ogilvie's traverses and observations that determined the position of the Yukon Territory as well as the courses of the Yukon and Mackenzie rivers. In making the topographical maps of the Whitehorse, Laberge, Carmacks and Ogilvie areas, 1922 to 1935, it was Ogilvie's traverse that was used for putting in the Yukon River.

In 1891 Mr. C.W. Hayes of the U.S. Geological Survey accompanied an expedition led by Lieut. Frederick Schwatka on its way to the interior of Alaska. They ascended the Taku River, crossed to Teslin Lake and descended Teslin and Lewes rivers. They separated at Selkirk and from there Hayes carried a pace and compass traverse southwestward across the Yukon Territory to the St. Elias Mountains and thence into Alaska and the seacoast. On the whole of this journey Hayes sketched the topography and recorded the geology giving the first definite information on the Taku and Teslin rivers as well as of the southwest Yukon Territory.

In 1897 the Department of the Interior sent Mr. J.J. McArthur into the southwest Yukon to explore and map. He put in the Dalton Trail as far as Selkirk and his map besides being published by his department was copied in compiling the maps published with the 1898 edition of Dawson's report. The other maps the writer and his parties had occasion to use were those of Mr. Arthur St. Cyr of the Teslin, Nisultin and Big Salmon rivers and the map compiled from surveys by the International Boundary Commission 1893-95, J.J. McArthur 1900, A.C. Talbor 1899 and J.B. Tyrell 1898, of the Kluane, White and Alsek rivers region published 1905. St. Cyr's map was a good one and one gets the impression that the better parts of the Kluane map, excluding the International Boundary, were done by Talbot though I never heard anything about him.

The writer met men who had seen St. Cyr, and later came to know Mr. C.H. Taggart who had served his D.L.S. apprenticeship under St. Cyr. St. Cyr was a conscientious, hard working surveyor, exceedingly careful of detail and had a gift for sketching topography well. In the field with his party he kept very much to himself and generally instead of giving his men verbal instructions wrote notes of what each man was to do during the day and handed them out at breakfast. In 1898 he ascended the Teslin and Nisultin rivers in canoes, portaged to Quiet Lake and at the end of the season descended the Big Salmon River to the Lewes just as freeze-up was taking place. Close to the mouth of the Big Salmon a large ice dam had formed over which water was cascading.

Appendix III

## THE DRAUGHTING DIVISION

(This was the name on its door in the Museum)

In exploratory geological work the maps are the graphical representation of the results of field, office and laboratory researches. They present in a form that can be readily grasped from single sheets of paper what would otherwise take hundreds of pages of print to describe in words. Reports may be needed to explain details but maps are by far the most valuable products of these studies. To make such maps was the prime purpose of my work.

Being convinced of the superiority of the use of maps and figures over words wherever possible led me from the beginning to a keen interest in all phases of the production of accurate, clear and artistic maps. Through this I learned how necessary it was to make manuscript maps and figures as close as it was feasible to the final printed product as I conceived it should be. The nearer the geologist can come to this the closer the draughtsmen and printers will come to his desire and the better the ultimate results will be for those who use the maps.

The Geological Survey is much indebted to the men of its Draughting Division who have turned out complex, multicoloured maps and figures with clarity of line and characters and artistic shades not surpassed anywhere. Throughout the years my own publications have benefited immeasurably from their skills applied with such pains to my manuscripts so that here a brief picture of the Division as I remember it in my first years is warranted.

Late in 1929 after Dr. Young had seen my thesis "The Geology and Ore deposits of the Nickel Plate Mountain" (Sum. Rept. A, 1929) he called me to his office and asked me to take the map and diagram to Mr. Alexander Dickison, Chief of the Draughting Division. He wished me to inquire if they could be printed in colour. The map was done on the huge sheet of linen-mounted, paragon drawing paper at least 6 x 8 feet referred to in 1926. The scale was 100 feet to the inch and many details were as small as a tenth of an inch wide. This large size had been necessary to allow the whole triangulation to be plotted on a single sheet. The area actually covered by geology was less than one third of the length and breadth. The diagram showed the mine workings and tabular ore bodies lying on echelon over each other drawn on an isometric block grid on a sheet of tracing linen, 3 x 4 feet. Both were rolled up and I took them to Mr. Dickison and told him why Dr. Young had sent me.

This was not my first meeting with Mr. Dickison as I had called on him in 1925, when a student at home for Christmas in Ottawa, to find out how Dr. Dolmage's map, Tatla Lake to Bella Coola, of which I had drawn the topography was being reproduced and I had seen him several times since, notably to ask advice on plotting the manuscripts of my Okanagan and Similkameen maps.

Messrs. Alexander Dickison, Arthur Joannes, and Stanley G. Alexander were map craftsmen who came from Britain to the Draughting Division of the Survey then under Mr. C.O. Senécal, geographer and Chief Draughtsman before the first war, Mr. Dickison before 1910, the other two later. Joannes had been trained in the Royal Hydrographical Survey in Southampton and the other two in Bartholemew's Map and Atlas Company in Edinburgh. Mr. Dickison followed Mr. Senécal and was made Chief of the Draughting Division of the Survey and Joannes and Sandy Alexander became his right-hand men; subsequently they followed him in succession as Chief. These men so raised the standard of multicolour map printing in Canada that about 1935 a delegation came from Japan to learn their methods. The Japanese were particularly interested in learning the system Mr. Dickison used in the mixing of inks and the choosing of grids to obtain the numerous clear shades of colour shown on our maps. The head of the delegation told Mr. Dickison that no other organization in America could produce such clear, complex, multicoloured maps and that he doubted if any in Europe could surpass them.

The Draughting Division occupied the whole of the west end of the fourth floor of the Victoria Memorial Museum building. It was one great hall with a 16 foot ceiling, except for Mr. Dickison's private office in the southwest turret and a large fire proof vault in the opposite northeast corner. Beside this vault stood a vast steel map-filing cabinet. The main part of this extraordinary cabinet was formed of drawers, the largest at the base for the widest manuscripts and over them tiers of drawers receding to smaller sizes upward like a pile of unequal blocks, not just long stairs, but steps that one trod on first forward and then sideways to climb upward. In this irregular way one could gain access to any of the drawers in the blocks and to the row of cupboards at the top that reached to the ceiling. The contents of every drawer and cupboard was shown by labels with large Roman characters, all beautifully hand drawn and easily readable from the floor. This huge file was at least 20 feet long and 8 feet wide.

The tables and desks of the draughtsmen and engravers and other filing cabinets were distributed in orderly rows with ample spaces and aisles over the floor of the hall. Where work was laid out but nobody there, large signs also in hand drawn Roman lettering read, "Do not touch" above and "Ne touchez pas" below. The drawing of such labels and signs was commonly the first task of a new draughtsman. When he could draw them perfectly to Mr. Dickison's satisfaction he was promoted to other work.

Mr. Dickison was generally to be found at his draughting table outside his office. Here he stood with his sleeves rolled up looking over some map or other that he was examining with a large hand lense. All the while he kept an eagle eye on his staff. He was a stern disciplinarian and suffered no waste of time. While in this he was a hard and meticulous taskmaster, the tremendous pride he had in the work of his division and the pains he took to train and instill industry and excellence into his craftsmen brought him their respect and admiration. Indeed, as years went by men trained by him were to be found in many of the choice positions open to their profession in both government and commercial organizations.

Mr. Dickison had a commanding presence. He was about six feet tall and of athletic build, with massive shoulders and arms. His long, bald head was typically Scotch in form, and his face was strong with a sallow complexion. In his youth he had been a county rugby player and was proud of it. In addition he had a fine tenor voice.

But returning to this visit to Mr. Dickison, he unrolled my huge map on his draughting table and looked it over in silence for several minutes and then called, "Mr. Joannes". Joannes was at his table nearby and came promptly. He, in turn, looked over the map for some minutes and measured it. Mr. Dickison said "I think we can print that on 300 feet to the inch without losing the detail Mr. Joannes." Joannes agreed and showed me how large the printed map would be and how the detail would be kept clear. Mr. Dickison turned to me. "Will that suit you, Dr. Bostock"? I said it certainly would. Indeed I was delighted, as I had thought it could only be printed in a simplified form.

Mr. Dickison rolled up the map, unrolled the tracing of the diagram and looked it over for some time. Then he turned abruptly to me and asked "And who did this?" I answered that I had drawn the figure. "But", he said at once, "you did not do the lettering?" "No", I said "another geology student, named Rudolph at Wisconsin University did it for me". "I thought so", returned Mr. Dickison and after Joannes also had looked over the figure, Mr. Dickison said to him. "This needs no redraughting, Mr. Joannes. We can photograph it as it is". Joannes agreed. Then Mr. Dickison wrote a note to Dr. Young. When he wrote his pen seemed to move at a snail's pace as he drew each individual letter of each word right to his signature beneath. When he had finished his note in his characteristic, clear script it was concisely worded and to the point. He turned to me again. "Tell Dr. Young we can print the map and the figure in colours." Then as I turned to go he said to Joannes, "At last, the geologists have produced a draughtsman."

I was and am particularly proud of my isometric, block diagram of the Nickel Plate Mine. It was, I believe, the first multicoloured block diagram published by the Survey and I know of no such figure printed in the professional journals before it. When I had been faced with the problem of illustrating my thesis I had the good fortune to attend Prof. A.K. Lobeck's course on block diagrams and to see his picture of the Mammoth Caves of Kentucky which suggested to me how the form of the tabular orebodies of the mine might be portrayed. I discussed the matter with Dr. Lobeck whom I liked very much. He told me how his isometric diagrams had been drawn by locating scattered stations of traverses throughout the caverns and by sketching in the shapes of the intervening spaces of the caves. My mine maps on a scale of 30 feet to 1 inch based on Knowles (1926) mine surveys provided far more detailed, accurate and continuous information of the dimensions and forms of the orebodies than Dr. Lobeck's surveys had. They included not only level maps at 100 foot intervals but also a horizontal projection of the whole mine workings on which the outline of each orebody was shown in a different coloured ink. On a large sheet of drawing paper I drew in pencil the isometric scaffolding for my diagram in two separated blocks so as to reveal the overlapping of the orebodies. Then starting with the lowest level and working upward the outlines of the levels were drawn in one above the other and joined by using the data on the projection. This involved much erasing of the concealed parts of lower levels as those above were drawn over them and so up to the glory hole on the surface of the mountain side. Finally, the paper drawing was traced in india ink on linen.

Among my visits to Mr. Dickison was another that portrays how he ran the Draughting Division. He had some ink erasers that would remove india ink and leave the surface of the drawing paper almost as good as new. There were not available from anywhere else. When I took the manuscripts of my five Okanagan and Similkameen maps up to Mr. Dickison I submitted a single combined legend for them all as I wished to be sure that each formation would be shown in the same colour wherever it occurred throughout this group of maps. After looking over the manuscripts and legend for awhile he said, "Dr. Bostock, could you let me have separate legends for each of these maps. It would enable me to distribute them among my staff". Here was my chance to get a couple of his good ink erasers. I knew he was proud of being a Scot. I said "Mr. Dickison, that is going to take me some time. Bostock is a Cheshire name but there is Scotch blood in me, as in you it appreciates a bargain". He was looking at me intently. I went on, "You have some ink erasers that are better than I can get anywhere. I would like two". "Mister Dessaint", called Mr. Dickison in his strong, measured voice, Dessaint was his 'general secretary' and was sitting at his desk about halfway down the hall. He rose promptly from his work and came quickly. Mr. Dickison drew the keys of the vault from his pocket and handing them to him said, "Bring me two erasers, number XY, please." Dessaint went to the vault and returning gave the keys and erasers to Mr. Dickison, who handed the erasers to me saying "Will that satisfy you, Dr. Bostock". "Thank you Mr. Dickison" I answered. "You shall have the legends just as soon as I can get them drawn". As I left and passed Joannes, he turned slightly towards me and gave me a wink with a bright twinkle in his eyes. I liked Joannes and Sandy very much. Both had a sense of humour. A day or so later downstairs Joannes told me he did not think Mr. Dickison had ever let any of those erasers out of the Draughting Division before.

APPENDIX IV

# FIELD SEASONS IN THE YUKON

by

H.S. BOSTOCK

To my wife who patiently bore the loneliness of many long field seasons. With the advent of radio, helicopter and plane, such long, inaccessible separations have gone forever.

*Oh! Dearest one, the summers now are gone,*
*When through those weary months*
*From May's fair evening to October's dawn,*
*With anxious heart and stifled cry*
*You watched the postman pass you by.*

NOTES

I left Ottawa about May 20th and returned about October 4th to 10th. Before long trips, some lasting six weeks without mail, the trading posts such as Fort Selkirk (now abandoned) were instructed to send on any urgent telegram by Indian carrier. An emergency return, until 1943, would have meant catching a river boat to Whitehorse and thence travelling down the coast and across to Ottawa.

## THE WORK

### THE GEOLOGICAL MAPPING

*T'was from the early thirties and through the forties too,*
*Northwestward was the trail that led me far from you.*
*From Ashnola's crystal torrent to Laberge's stony strand,*
*They sent me forth a'mapping with a hammer in my hand.*
*With rocky explorations I traced the contacts through,*
*On Yukon's upland surface their twists and turns I drew.*
*The quartzite's rough formation I followed 'cross the hills,*
*And schist and limestone outcrops among the mountain rills.*
*I found the "Ammonites" in the sandstone by the creek,*
*I broke the andalusite on Black Ram's lofty peak;*
*I mapped the rugged syenite near Little South Klondike,*
*Any many a granite stock and boss, and many a sill and dyke.*
*I climbed Volcano Mountain, and marked its latest flow,*
*Beneath the drift I dotted in just where the faults should go,*
*I traced the glacial limit round many a nunatak,*
*And where the ice fronts long gone by began their melting back.*
*On Scroggie where the mammoth browsed I found his mouldering tusk,*
*And plotted on the manuscript, by firelight in the dusk;*
*On Klotassin's alpine meadows, to fill the flora list,*
*I dug a small "Claytonia", new to the botanist.*
*And so across the country the map began to change,*
*O'er the broad plateau it spread, it spread from range to range.*

NOTES

Ashnola River: in southern B.C. where we were together in 1930.
"Laberge": pronounce "Lebarge".
Ammonites: pronounce here Ammonitēs, Mesozoic fossil.
Andalusite: metamorphic mineral, $Al_2SiO_5$.
Black Ram: mountain in McArthur Range.
Nunatak: a mountain that stood or stands above surrounding ice.
Scroggie Creek: tributary of Nisling, Donjek and White Rivers.
Klotassin River: tributary of Nisling, Donjek and White Rivers.
Claytonia Bostockii: Porsild, A.E.

## *THE MINING INDUSTRY TRIPS*

*And onward still and wider it was my part to roam,*
*Where golden grains are being dug around Dominion Dome;*
*Where virgin claims of untold wealth were traded for a song,*
*Where Keno's ruby silver still leads the miners on.*
*From where on Miller's deepest bench, pay carries cinnabar,*
*To where on Teslin's lonely bank was once O'Brien's Bar.*
*I sought for tin and scheelite high up in Dublin Gulch,*
*And where Kluane's waters flow down from Kaskawulsh*
*I traced a mighty movement along St. Elias front,*
*And marked it as the border for the copper prospect hunt.*
*I hailed the bearded miner, upon his placer claim,*
*We panned around his rock-walled cut, up from his bedrock drain;*
*We pondered on his paystreak, and why two kinds of gold,*
*And while I jotted down my notes, strange yarns of life he told.*
*I met the first prospector of Freegold's castled dome,*
*It was among these untouched hills that he had found his home.*
*He combed the drift and outcrops and washed out many a trench,*
*No disappointing assay could his dauntless spirit quench.*
*I found the ruined cabins in Maloney's distant vale,*
*No one that I have ever asked could tell me of their tale.*
*I talked to Hot Stove Douglas, his silver vein was faulted,*
*Which way to dig he couldn'g guess, his prospecting was halted;*
*I showed him slickensiding, that made the movement plain,*
*He placed me on a giant's head and raised my name to fame.*

NOTES

Each summer one of my duties was to keep in touch with the mining developments. This took me to all the prospecting areas.

Ruby silver: prospectors name for mineral pyrargyrite, $Ag_3SbS_3$.

Miller Creek: tributary of Sixtymile River, richest gold bearing stream in the Yukon before the discovery of the Klondike creeks.

Pay or paystreak: stratum of gravel carrying gold.

Cinnibar: mercuric sulphide, HgS.

O'Brien's Bar: a placer mining locality above old Teslin Crossing.

Kluane Lake: pronounce "Klewarney".

Kaskawulsh Glacier: main source of water of Slims River and Kluane Lake.

Mighty movement: fault.

St. Elias front: northeast border of St. Elias Mountains

Rock-walled cut: in many small placer workings the boulders are piled in beautifully constructed dry stone walls to get them out of the way.

Bedrock drain: in the Yukon, where the paystreak is generally on or close to bedrock, a long ditch is required to carry the water and tailings from the cut. This is called a "bedrock drain" as its upper end must start at bedrock.

Two kinds of gold: many placer workings carry dark, worn gold and fresh, bright, unworn gold and also, in places, other varieties that provide endless discussion of their different possible sources.

Freegold: mountain northwest of Carmacks. The man referred to here is P.F. Guder, discoverer of gold on Freegold Mountain. In the Yukon, prospectors often use boom gates that automatically let the water come in rushes to cut trenches down hillsides; Guder is an artist at this.

Maloney Creek: in 1933 I found the ruins of three cabins on this creek but I have never heard their history.

Hot Stove Douglas: when my interpretation of the displacement of the fault proved right Hot Stove found the continuation of his vein. He then told many that I was right whereas Livingston Wernecke, the outstanding geologist of the Mayo camp, had been wrong. This made a great reputation for me. Hot Stove got his name about '98 in Dawson where he was employed in a confectionary store. When his employer told him to stay until the last customer left, he decided to clear the store by making it unbearably hot. This melted all the chocolates etc. and got him fired - and his name. The name stuck to him all his life. He sold his claim on Keno Hill for a good price and lived his last years in comparative wealth.

Slickensiding: the scratches on a fault surface that may indicate the direction of movement.

## THE PARTY

### THE STUDENT ASSISTANTS

Without supporting company, the work I could not do,
Assistants, cooks, packers and horses, they all made up the crew.
The chief assistant led his mates by wit and high example,
Full many a careful note he wrote, collected many a sample.
They punched the pacing tally and took the strikes and dips,
They carried in the samples and marked the rocks and chips;
They pitched the tents, they set the stove, they built the cook tent table,
They helped the cook and packer too, whenever they were able;
They cut the trails' winding ways, through spruce and through the deadfall.
Companions of long traverse days and helpers wherewithall.

### THE COOK

The cook tent was his kingdom.
The grub his constant care.
He baked our break and kept us filled,
Though plain was oft the fare.
His morning call awoke us,
He cheered us in at night.
Late! Supper left upon the stove
We found by candle light.
He made his tent our clubhouse
Where we could dry our gear,
And sit and plot or shoot the bull
And talk of horse or bear.
He had his panniers balanced,
Whenever they were needed,
He rode behind the packtrain,
The packs and horses heeded.
"Now what's behind yon mountain?
We've been here full two days,
When are we moving on again?"
He oft was wont to say.
The night before the post was reached
He had his grub list ready,
And on the party generally
His influence was steady.

### THE PACKER AND THE HORSES

At crack of dawn I heard him shake
The frost from off his bridle,
His running footsteps died away,
While I lay dozing, idle.
Soon came the thumping sound of hooves,
Of horses running steady.
Before the cook's loud clarion call,
The packtrain saddled, ready.
The packs were on, the diamonds thrown,
And they were off a jingle,
Across a land without a trail,
Save where the wild mingle.
He found their way o'er bog and ford,
Across the rocks and rubble.
His eye forever watchful,
Lest they might suffer trouble.
At first they hated to be caught,
His lightning loop their puzzle,
But as the season went along,
They crowded round to nuzzle.
He shod their feet, he healed their scars,
Their grazing grounds he scouted,
He gave them salt, and sugar too,
Their pests of flies he routed.
On many a move he sighted game,
His aim was simply deadly,
The meat was packed, the coyotes
Had the offal for their medley.

NOTES

The party generally consisted of a cook, a packer, three or four student assistants and myself, with nine to fourteen horses. I was often lucky in having a strong party. One year it contained four who now have Ph.D. degrees. One of the best balanced parties was that of 1939 when Bill Bacon was chief assistant, Jack Young, Fred Pierce and Tubby Anderson were juniors, Bill Duncan was cook and Clarence Reinertson was packer. "The season's end" refers to this party. We accomplished a great circle tour of the Mayo map-area and were finally driven in by the snow. I was fortunate in having two outstanding cooks - Fred Bacon two years, and Bill Duncan four years. Fred was a wonderful cook and he produced all kinds of cakes, pastries and tarts, Bill's cooking was very plain but he knew how to keep us contented. Both were good cooperators. Bill and Clarence formed a superb team. Bill was always ready to move and loved seeing new country. Clarence was a first class horseman and outstanding among the packers I have know. I was lucky to have them together for three years.

Where the wild mingle: means game trails.

## THE GODDESS OF THE YUKON

*The way was seldom quite the same*
*As season followed season,*
*The weather cold, wet, hot or dry,*
*A woman was the reason.*
*The goddess of the Yukon, she*
*Her nature ever fickle,*
*Hail, fire, smoke or rain she sent,*
*Her fancy just to tickle.*
*She bred mosquitoes in their clouds*
*To bring us ceaseless sorrow,*
*Blackfly, no-see-ems too she sent,*
*Then would relent the morrow.*
*And she would raise her insect veil*
*To give her coyest smile,*
*Her deepest secrets she laid bare,*
*Set here and there the while.*
*The tiny orchid in the moss,*
*The gentians 'neath the birch trees,*
*The wee azalea in the cleft,*
*The campions on the rock screes.*
*These gems of priceless beauty,*
*Her cold so long concealed,*
*Just for the summers briefest span,*
*She bashfully revealed.*
*And oft in twilight of the night,*
*A great deep stillness fell,*
*T'was she would listen to the thrush,*
*And none should break the spell;*
*Then she would hide her face again.*
*Our tents were overheating,*
*While small invaders crawled and bit,*
*And found us tender eating.*
*But with the coming on of fall,*
*When we had turned to leather,*
*With darker and with longer nights,*
*She gave us cooler weather.*
*And now between the sleet and snow*
*She split the storms asunder,*
*In glorious sunshine she was bent,*
*To paint her land's fall wonder.*
*She spread her colours far and wide,*
*Magnificient landscaping,*
*She knew that she would hide it all*
*So soon with snowy caping.*
*Southwest, high in the crystal air,*
*Her mighty peaks she floated,*
*Vast icebergs riding on the haze,*
*In purest whiteness coated.*
*Below the haze far and around*
*She spread her lesser brood,*
*With early snows she capped their tops,*
*Then tinted to her mood.*
*Far down below the forest slopes,*
*In blue and purple shades,*
*She touched with shafts of light and dark,*
*The valleys and the glades.*
*Then with a spirit free and bold,*
*Her open plateau treated,*
*In hues of rust to copper red,*
*In sweeps for miles repeated.*
*And here and there the highland draws,*
*She splashed with golden yellow;*
*This upland was her real joy,*
*It showed her heart's true mellow.*

NOTES

I have tried to describe the changes of the weather, the flies, the beauty of the little plants, the thrushes singing in the night stillness, and then the coming of the early snows and the fall colours.

Her mighty peaks: refers to the St. Elias Mountains that can at times be seen above the haze from hundreds of miles to the northeast.

Draws: here meaning gulches as used in the west.

## THE GRIZZLIES

*From Mount Hinton's quartzite ridge*
*We looked across and saw,*
*Two grizzlies on Mount Albert,*
*A sow and silver boar.*
*The second day thereafter,*
*My traverse route would go,*
*Over Mount Albert's summit;*
*First I must spot them though.*
*I climbed the ridge to eastward,*
*Ever so watchful, slow,*
*Until I spied the monsters,*
*Down in the cirque below.*
*I travelled round the cliff tops,*
*So near, so quiet though,*
*I reached old Albert's summit,*
*And never let them know.*
*Now scarce three hundred feet above,*
*My notes and lunch completing,*
*I watched them heaving boulders out,*
*For roots and marmots digging.*
*They nosed around and dug again,*
*Their strength and skill employing;*
*They cuffed and wrestled, off and on,*
*The solitude enjoying.*
*Then all at once, they stopped and stood,*
*Their giant size apparent,*
*They sniffed the air, they gazed around,*
*Their peace no longer present.*
*"A foe was close. Yes! Somewhere near",*
*Clearly expressed their feeling,*
*Their ambling gait, so leisurely,*
*Fast sent the miles unreeling.*

## THE CARIBOU

*The mist was rising from the hills,*
*The sun was breaking through,*
*The Klaza upland teemed with life,*
*It was the caribou.*
*A hundred here, a thousand there,*
*A score down in the hollow,*
*Spread far and wide in countless bands,*
*As far as glass could follow.*
*They lay around in noonday,*
*Up on the open moors,*
*Then afternoon, their feeding*
*Resumed without a pause.*
*They grazed along, a ravening hord,*
*By numbers driven onward,*
*They grunted, squealed, a vulgar mass.*
*Their smell blew miles to leeward.*
*The first ones to the ridge's end,*
*They feared the downward sally,*
*They milled around 'til hundreds strong,*
*They charged across each valley.*
*The wolves in timber took their toll,*
*While circling in the sky,*
*The eagles, taloned thunderbolts,*
*At straying calves, let fly.*
*Three days we camped there in their midst,*
*Our work around completing,*
*Though all northwestward held their course,*
*We noticed no depleting.*

NOTE

The account of the caribou is exactly as we saw them in July 1933 around the head of the Klaza River. I have used the terms "calves", "bull", and "horns" for caribou and moose as these terms are used in the country, rather than "fawns", "bucks", and "antlers" as would be strictly correct. The big herds could be smelt from at least 20 miles away on a hot day.

## THE MOOSE

*The shadows lengthened on the hills,*
*The aspens glowed like fire.*
*The bull moose knew the time had come,*
*To stir his fighting ire.*
*His huge horns glittered in the sun,*
*He thrashed the brush with fury,*
*His muscles bulged with mighty strength,*
*He shone in life's prime glory.*
*He pawed the ground; the rut was on;*
*He craved to use his power,*
*His grunting challenge roared abroad.*
*Soon brought his fatal hour.*

NOTE

Except for the account of this bull moose who appeared across the Stewart River opposite camp just before supper one September evening the whole poem is based on incidents etc. that occurred when using the packtrain. Working with canoes was less romantic.

## THE SHEEP

*The clouds were breaking on the crests,*
*The peaks began to show,*
*Far up the slope there stood the rams,*
*Like statues in the snow.*
*Their saddles black to grey, near blue,*
*Their fronts and rumps were white,*
*Their curling horns of amber hue,*
*Their movements fairy light.*
*They climbed the rocks with grace superb,*
*No game e'er had such beauty;*
*The stalk was on, and up we went,*
*To shoot one, was my duty.*
*High on his ledge, so grand he stood,*
*The view serenely scanning,*
*He failed to glance the crag above,*
*His meat revised our planning.*

NOTE

The sheep hunt was in the McArthur Range in 1939 before it became a game preserve. The sheep of the region are "Ovis Fannini", between "O. Dalli" and "O. Stonei".

## THE WOLF

*The peaks were touched with rays of gold,*
*The sun sank down to rest,*
*Just where the others pitched the camp,*
*Was my consuming quest.*
*A dog wolf raised his massive head,*
*Along my evening trail,*
*His infinitely lonely cry*
*Would slowly down the scale.*
*At first his howl, so far away,*
*Was music on the air;*
*But coming nearer, nearer,*
*His bass note struck my ear.*
*No pup, no lonesome bitch was this,*
*It was the master of the pack;*
*He sent the shivers down my spine,*
*He made the hair rise on my back.*
*Beyond the frosty shadows,*
*Beyond the moonbeams glisten,*
*Each time his great, deep voice arose,*
*I could not choose but listen.*
*He claimed his lordship of the night,*
*With absolute defiance,*
*He called the very stars above*
*To join his wild alliance.*
*The faded light hid well the camp,*
*Within the mountain fastness,*
*Ah! Yonder, there! The spruce tree torch,*
*My beacon in the darkness.*

NOTES

In 1932-34 the caribou regularly came along the Dawson Range and the area was full of wolves. I had only one assistant in those years and we traversed alone. To be followed by wolves that howled behind us was not uncommon, but the stanza refers to a particular evening in September 1932 when a wolf with a fairly bass voice followed me to camp. He stayed around camp for three days calling up other wolves. The third evening at about 11:30 p.m. on a crystal clear, frosty, moonlit night the wolves came down into the willows 15 - 25 yards from our tents and gave us a serenade for 45 minutes. One had now joined them who had a tremendous bass voice. We turned cold in our eiderdowns when he howled, and I could feel the hair up the back of my neck tingle each time, yet we craved to hear him again as his howl died away. I said to John Johnston lying beside me, "Isn't that wonderful." He said, "Yes, but he makes me shiver." In these years we had no base map and camp was often hard to find when we moved. So when one of us was late, those at camp built a teepee-like pile of dead wood around a big spruce and set it on fire. This would make a huge column of flame that rose as a great torch and lasted for some time.

## THE CRANES

*The ice was in the river's edge,*
*The frost was on the willows,*
*Full on the hillside shone the sun,*
*The cloud banks stood in billows.*
*Out of the lower clouds they came,*
*Yes, thousands upon thousands,*
*Their leaders sensed the rising air,*
*And broke their long formations.*
*A croaking crowd of circling cranes,*
*Up, up and up they flew,*
*'Til tiny specks far in the sky*
*Against the azure blue.*
*Their flocks then sorted out once more,*
*Their long V's now reforming,*
*Again they headed on their way,*
*Their southward flight performing.*
*From Alaska's swampy deltas*
*To Caribbean's boggy land,*
*Before ever man had dreamt such things,*
*They had their flyway planned.*

NOTES

Though every fall we saw great flocks of cranes at intervals of a day or so, we only once saw them coming out of the clouds in such concentrated masses as described.

## THE SEASON'S END

*As week by week we watched the snow*
*Creep down on Kalzas Twin,*
*The horses too now felt the time*
*Was near for heading in.*
*Their winter home, it was the ranch*
*Beside the Pelly River,*
*And we would cross McArthur's Range,*
*Ere we could travel thither.*
*We scanned the range's rocky ridge*
*To spy its snowy passes,*
*But we could find no thoroughfare*
*Revealed by our glasses.*
*So we must climb its southern end,*
*In storm and through the snow,*
*Along a route a mile high,*
*As we did homeward go.*
*The weather cleared just for five days,*
*And then the storms returning,*
*We had no choice but drop the work,*
*And heed the horses yearning.*
*Each morning saw us shake our tents*
*To free them from the snow;*
*Each evening found us pitching camp*
*Five hundred feet below.*
*At last we reached the outward trail.*
*They knew the way to follow,*
*To hold them was the problem now,*
*For five nights from tomorrow.*
*The shoes were off, equipment stored,*
*And horses turned out grazing,*
*We lay upon the river bank,*
*In grand and glorious lazing.*
*I looked upon the boys in June*
*Who had been in their places.*
*Then "all aboard" and we were off,*
*The paddle wheel churning,*
*We listened to many a pilot's yarn*
*By river bar and turning.*
*Whitehorse, Skagway, on we went,*
*'Til leaving shipboard started,*
*When with a pang and casual clasp,*
*We oft forever parted.*

NOTES

Kalzas Twin: mountain north of Big Kalzas Lake. In August 1939 we received our last supplies by plane at Big Kalzas Lake. It was about 100 miles in a straight line to the Pelly Ranch (or farm) but at least 140 as we travelled.

It was a wonderful feeling to board the steamboat and enjoy the leisurely upriver journey of five to seven days to Whitehorse, without a care in the world, as nothing now could be done about anything. There were no transmitters or even radios on the boats until their last years.

*This was my work,*
*And this our livelihood;*
*But vain was all this life,*
*Were it not for coming home to you,*
*My constant, loving wife.*