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Yukon General

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REPORT ON GEOLOGICAL FIELD WORK

by

R.W. Baker

In Yukon Territory - 1952

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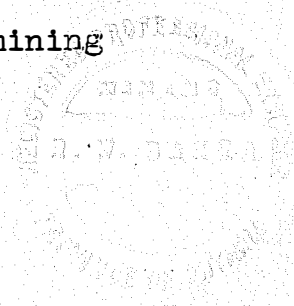
R.W.Baker

In Yukon Territory - 1952

General Recommendations:

Although results were negative in the search for iron ore, iron protore or areas of intrusive rock in the eastern part of the Wernecke Mts. and the northern part of the Selwyn Mts., and a search for a reported copper showing in the McArthur Range was likewise disappointing, four areas in other parts of the Yukon Territory appeal to the writer as being of more than average interest. These are submitted for possible consideration in the 1953 field season.

1. Some ultrabasic rocks occur in the area southwest of Mayo and west of the Mayo - Whitehorse road, and are shown on the preliminary map by the Geological Survey of Canada. A piece of float containing some asbestos is noted in the report. The overburden mantle is described as heavy, but the ultrabasics occur at elevations where this is not a problem.
2. Silver-lead mineralization is described as occurring on Spotted Fawn Creek, a tributary of the Little Twelvemile River north of Dawson City. The Twelvemile (Chandindu) River country is on the southern fringe of the Ogilvie Mts. The area as whole is still unmapped topographically, but aerial photography was done in the summer of 1952, and prints should be available in the new year. Little exploration in a mining



2. General Recommendations Cont'd.

sense has been done in the area.

3. The Glenlyon Batholith occurs south of the MacMillan River between Houle Canyon and the junction of the Pelly River and the MacMillan River. The fringe of this batholith as well as the Anvil Mts. to the north, which are also an intrusive core, were mapped in a river reconnaissance by the G.S.C. about twenty years ago. Interesting mineralized float occurrences are said to have been found in the area. During the past three years a party of the G.S.C. has been engaged in detailed mapping of the intrusive areas which appear to range from granite to peridotite; last year, the loss of the initial part of a pack-train in a swamp retarded the work, but it is possible that the map was completed this year.
4. The examination of claims held by J. Hawthorne on Keno Hill, Hyatt Creek and the Silver King section in the Mayo district is a short job which was hindered this year by snow above timberline. Hawthorne claims that United Keno Hill Mines have shown considerable interest in his Hyatt Creek ground which he says is a gold showing of merit. He says that United Keno Hill Mines tried to stake over his ground, for which reason he does not care to do business with them. He is said to be a hard man to deal with, in that his terms are usually high, and he is hard to reason with.

1 and 2 can be best accomplished by packtrain as there are no lakes in either area from which to work by air. Mr. L. L. Brown of Mayo is a packtrain operator, but as he is an ardent


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3. General Recommendations cont'd.

amateur prospector, his interests are liable to conflict with those of the company. Mr. E.Kohse, wrangler for J.O.Wheeler of the G.S.C. during the past season, has expressed interest in working for the company next year should the Survey not require his services. He is capable of fully organizing a packtrain; his son is a good cook and hunter. They reside in Victoria B.C. in the winter. Mr. Wheeler has told the writer that the Survey finds it best to own the horses and equipment, and to sell them at the end of the season should they no longer be required.

The Glenlyon - Anvil batholiths are accessible by air, packtrain or boat up the MacMillan River.

Toronto, Ontario,

October 14, 1952


R.W. Baker

1.

2. A Reported Copper Showing in the McArthur Range

Seven days in June and and nine days in the latter part of August were spent in the McArthur Range, about forty miles south of Mayo, in a search for a reported copper showing. The range is in the southwest corner of the Mayo Sheet, Map 890A.

Traverses were made in the area in which the showing was reported to be, using aerial photographs for ground control. The aerial photographs show lineaments which seemed to substantiate the reported location. However, the area proved to be within the boundaries of a coarse, grey biotite granite which forms the core of the mountain peaks; the lineaments proved to be free of introduced mineralization, and no sulphide was seen in the granite.

Conclusions:

The area was carefully traversed on the second trip in August, and two alternative conclusions may be drawn:

- (a) The showing is so small that it was missed. In this case, as it is reported to contain nothing but copper, it is of little economic interest.
- (b) It is located in an entirely different section of the range. This is possible but difficult to believe, in that its location was vouched for by responsible people.

Recommendations:

As this appears to be another case of a "lost" showing, further endeavours toward finding it are not recommended.

Toronto, Ont.,

October 14, 1952.

R.W. Baker



COMMENTS ON SOME TYPES OF EQUIPMENT USED IN MOUNTAINOUS COUNTRY

The following pieces of field equipment are designed to keep weight at a minimum; in some cases the lightness of the article is offset by its limited use in the field.

1. Two-man Mountain Tent, American Army

This is a war-surplus item of which there are still a few to be had. It has a serious weakness, i.e. it is impregnated with a waterproofing material which prevents the moisture-laden air created by the occupants from passing through the fabric. As a result, condensation forms on the walls and floor, drips on the occupants and eventually soaks the bedrolls. A sail-silk tent of the same design would be satisfactory, but this one can not be recommended. It is a low tent, designed only for sleeping; one can not work on maps or notes inside it.

2. Aluminum Cooking Kit for Four Men

The unit is satisfactory when an absolute weight minimum is necessary. It has to be supplemented by a 10" steel frying pan as the one in the kit is about the size of a saucer.

3. Reflector Oven

This is a good piece of equipment, weighing about five pounds, which takes the place of a stove for roasting meat, baking bread, beans etc. The one in storage at Whitehorse is designed and made by Nelson's Ltd. of Whitehorse.

4. Sleeping Robes

Summerweight cotton-filled sleeping robes were found to be too light even in midsummer, and especially above treeline. One can get by through keeping on full clothing. The winterweight type of robe, although heavier to carry, is the best guarantee of getting sufficient sleep.

R.W. Baker, Toronto, Ont.
October 14, 1952.

List of Company Equipment Stored at Campbell's Ltd., Whitehorse Y.T.

by R.W.Baker, Sept.13, 1952.

<u>Article</u>	<u>Condition</u>
1 pc.canvas,10'x4'.	good
2 brown duffel bags,Pioneer brand	"
1 30-06 Husqvarna rifle	"
56 rounds 180 gr. ammunition	
3 light axes (pulpwood type)	Two need re-wedging
2 90x90 winter eiderdowns	Good
2 summerweight,cotton-filled sleeping bags	Good
2 8'x9' waterproof tarps	Good
1 8'x9'x3' sail-silk tent	Needs door fly-bar
1 Two-man mountain tent	Good, but poor performance
1 Belt axe	"
2 bed mosquito fly-bars	"
1 flashlight	"
1 small pc. vinylite plastic	
14 sample bags	Second-hand, mostly
2 Li-Lo air mattresses	
1 smal/cook stove, pipes,damper etc.	Good
1 reflector oven	Partially heat-tarnished
1 open-fire cooking rack	Fair
1 stovepipe tent guard	Good
1 No.2 packsack and board	One strap needs repairing
1 No.3 " " "	Good
1 butcher knife	Good
2 aluminum,4-man cooking kits	One good;one fair
1 rifle-cleaning kit	Partly used
1 small aluminum saucepan	Good
1 firstaid kit	Needs iodine
1 small wash-tub	Good
2 hanks of sash-cord	
6 bottles 6-12 fly dope	
1 water bag, 2 gal.,Pioneer brand	Good
2 tea towels	
1 egg flipper; 1 cooking fork	Handles slightly burnt
1 frying pan (steel)	Good
1 large gold pan	Good
Cutlery for 4 persons	

REPORT ON GEOLOGICAL FIELD WORK

BY

R. W. BAKER

IN YUKON TERRITORY - 1952

1. The Iron Range in the Wernecke and Selwyn Mountains



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REPORT ON GEOLOGICAL FIELD WORK IN THE YUKON TERRITORY IN 19521. The Iron Range in the Wernecke and Selwyn MountainsIntroduction:

From the latter part of June until mid-August, field liason was made with J.O.Wheeler of the Geological Survey of Canada in the reconnaissance of a reported iron range in the Wernecke and Selwyn Mountains. Mr. Wheeler was initially contacted at Kathleen Lake, about seventy miles northeast of Mayo, on June 27th. As his proposed route for the season was open to changes depending on what he found from time to time, and as he had reached the western edge of the area of interest at that time, it was decided to move in by air in order to get on the ground quickly. It is doubtful if contact in the field could have been established by packtrain, as initially planned, for the reasons noted above. The air liason worked satisfactorily in that the writer met Mr. Wheeler at points designated for re-supply by air and also spent several days in the field with him; considerable ground reconnaissance was done in areas showing possible iron horizons and intrusives, working from base points established by air.

The Wernecke and Selwyn Mountains are on the western flank of the Mackenzie Backbone Ranges, and with the Hess Mountains form a front extending southeasterly to the headwaters of the South Nahanni River. The strike of the sedimentary strata which forms the endless array of peaks is, in general, northwest-southeast and the dip is to the east. The upper reaches of the Bonnet Plume, Wind and Snake Rivers follow valleys which parallel the strike of the tilted strata.

The major streams of the area are fast, clear and quite cold as they are fed by the melting snow of the mountain peaks.

The valley floors have become charged with soft, flakey gravel through the fast erosion of the sedimentary strata. The streams are braided with gravel bars, and several watercourses may be present in one river bed. These braided streams generally show greyish-white in the aerial photographs. In parts of the Bonnet Plume River near Rackla Pass, remnants of ice were present on the gravel bars in mid-July.

Game is in sufficient supply to maintain a crew in fresh meat, if time is taken to stalk. It was found that geological work and larder supplying could not be carried on at the same time as picking and climbing around rocks scared game from the immediate vicinity. Dall sheep are present above timberline and are the most difficult to obtain. Woodland caribou pasture in open sections above timberline where bunch grass is found; the animals have little fear of man and are the easiest to obtain. Moose are present in the valleys where they feed on willow and bunch grass during the summer months.

Grizzly bears are occasionally seen above treeline where they dig out gophers for food. These bears are somewhat smaller than the ones found farther south and in Alaska, and in general they have a mangy appearance, due possibly to a leaner diet and a shorter season out of hibernation.

Ptarmigan are present at the higher elevations, and spruce partridge in the wooded sections of the valleys offer a change of diet. There are the usual grayling or "Arctic trout" in the streams and small lakes; these can be obtained with a piece of string and any trout fly attached to a willow stick. Pink-fleshed lake trout occur in the larger lakes.

Black spruce is the most common tree in the area and it is found in consistently large tracts below four thousand feet elevation. Above this elevation it occurs in isolated clumps, the individual trees twisted and knotted by the strong winds. White spruce is also present at the lower elevations in the valley floors, and this variety attains heights of fifty to sixty feet and diameters up to two feet. Juniper bush is also found in association with the other conifers.

Deciduous trees are represented by poplar, balsam poplar (balm of Gilead), willow, white birch, sitka alder and buck birch (buck brush). The last-mentioned occurs usually as a belt between the edge of timber and the open country of the higher elevations; it is sometimes difficult to get through as it grows in very close fashion and six to eight feet high.

Summary:

Within the sedimentary strata of the area investigated, - in the Pinguicula Lake, Kathleen Lake, Bonnet Plume Lake triangle, there are shale horizons which develop a chocolate-brown weathering surface from the iron content of the rock-forming carbonate. The surface oxidation is only paper thin on the rock as the product is carried off almost as fast as it is formed by rain and melting snow. The interior of the shale is aphanitic and medium to dark grey in colour. Narrower horizons are also present which are purplish-red to deep maroon throughout; these appear to be clay-like in character and the material powders readily with a knife. Neither jasper nor compact iron oxide is present in these horizons. Mr. Wheeler has informed the writer that in the course of his

reconnaissance work he did not find any positive indications of commercial iron in the red beds of the mountains. The traces of impure iron oxide found on Iron Creek south of Pinguicula Lake were initially thought to offer clues on the formation of hematite in the area; the quartzite member which contains the iron oxide is about seven hundred and fifty feet thick, and the impure iron oxide bands contained therein less than a foot in total thickness. The iron oxide is thought to be the alteration product of carbonate bands through dynamic metamorphism; silica grains are disseminated through the alteration product, and the density of the material is considerably less than that of hematite.

Conclusions:

The horizons of sediments, which develop brown surface stain in some cases and which are altered throughout in the manner of red beds in other cases, are of interesting possibilities when viewed from a distance or from the air. However, they are not of commercial iron interest and have a different genesis from the banded iron formation, taconite or hematite found on the Precambrian Shield.

Some reports of hematite float being found in the area can be attributed to trappers and placer prospectors who have mistaken boulders of the stained sediments for hematite. Pieces of float on record as being good grade hematite may have a concretionary or hot-spring origin, and may have been moved long distances by glaciation. The writer has seen several specimens of botryoidal hematite in other parts of the Yukon Territory; the smooth, nodular surfaces on the specimens are suggestive of precipitation from hot

aqueous solutions, as at the fringes of hot springs.

In view of the shaley and argillaceous nature of the iron-stained horizons, and the fresh appearance of the enclosing strata, one would expect at the best, an oolitic (Clinton) type of iron ore. No concentrations of this type were seen.

As very few intrusives were seen in the area, the chances of finding introduced mineralization are not good. A few granite boulders were seen on the slopes of the valleys, mixed in with the talus; their well-rounded outlines indicate that they were moved in by glacial action.

Recommendations:

As the country rock is essentially tilted and thrust-faulted strata of probable Paleozoic age, and as the nature of the reported iron range has been determined, no further geological field work should be done in the eastern part of the Wernecke Mountains or the section of the Selwyn Mountains north of the Hess Mountains.

Geology:

The sediments which form the mountains consist of limestone, shale, grits, argillite, pebble conglomerate, quartzite and slate. None is consistent enough to serve as a horizon marker, and each interfingers with the others to such an extent that they can be treated only as an assemblage. Detailed mapping of a purely scientific kind on contoured work sheets would be necessary to produce a map showing each interbedded sediment.

Horizons of cryptozoön up to twenty feet thick were seen in the sediments. These are roughly circular in outline and are made of concentric laminae of carbonate; they were precipitated at the base of colonies of microscopic algae in the sea bottom. These fossils

are characteristic of the reefs of the Cambrian period of the Paleozoic. They occur to a lesser extent in the Lower Ordovician. A piece of shale float containing small brachiopods was found by the writer in a valley west of Bonnet Plume Lake, and given to Mr. Wheeler.

Very little intrusive rock was found in the area. Several small diorite dikes occur in the Pinguicula Lake section. Two are present on Iron Creek, cutting across the notched stream course and creating dams against which erosion material and banks of ice have accumulated. In the west branch of the creek the narrow, siliceous bands of impure iron oxide occur in a stratigraphic horizon of quartzite about seven hundred and fifty feet thick.

The red beds of the sedimentary strata are comparable to certain horizons of the Catskill Mountains of New York State. The red beds are of the Devonian period in this case, but they have likely been formed by the same processes as those in the Wernecke and Selwyn Mountains. It is thought that they were deposited above sea level by aggrading streams. The red colour suggests repeated drying and oxidation of the sediments under semiarid conditions. The complex assemblage of sediments in the Wernecke and Selwyn Mountains suggests the edge of marine deposition where horizons of marine sediments have become interbedded with shoreline erosional material. There has been sufficient exposure of the latter to semiarid atmospheric conditions to create the red horizons. Bright red or maroon shales occur in the "Painted Desert" of Arizona and the "Great Red Valley" of the Black Hills; in this case the rocks are of the Triassic period and occur in what is called the "Arid Cordilleran Basin".

Laccolithic forms said to occur in the area, and a basic sill near the Bonnet Plume River, the latter tentatively identified from the air, are quartzite horizons. The quartzite is unstratified and weathers in spire-like forms suggestive of columnar jointing. The occurrence near the Bonnet Plume River is named Cathedral Peak by the writer and a photograph accompanies the report.

East of the Bonnet Plume River toward the Mackenzie Backbone Ranges, the peaks are uniformly grey in colour and well stratified, these features suggesting limestone and shale. They occur in continuous array like rows of saw teeth as far as the eye can see.

Structure:

The strike of the rock strata forming the mountains chains is about north - south in the Rackla River section and between 140° and 160° azimuth in the Bonnet Plume country. The dip varies from 30° to 45° to the east. In the immediate vicinity of Bonnet Plume Lake there appears to be a major drag-fold which has shifted the strike of the strata to a northeast - southwest direction. The valley which Bonnet Plume Lake occupies follows this strike.

There appears to have been considerable thrust-faulting although the complex stratigraphy of the sediments makes structural interpretations difficult. Forces which caused the initial mountain-building have thrust segments forward causing vertical repetitions in the stratigraphy. The thrust-faulting probably supplied the heat and pressure which produced the traces of impure iron oxide on Iron Creek.

Mineralization:

Numerous pannings were taken by the writer and his assistant in the creeks of the area to determine if any heavy residuals are present in the gravels being brought down from higher elevations. Positive findings would indicate igneous intrusions, or at least hydrothermal activity, toward stream sources. No encouragement was obtained from the panning work, the fines being of the same light sediment as the coarser material.

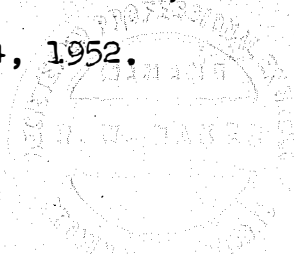
Small carbonate stringers, parallel to the strike of the bedding, are sometimes present in the shales and limestones. They appear to be due to solution and re-deposition of the primary carbonate by circulating waters, rather than to hydrothermal activity. The secondary carbonate is as ferruginous as the original shale in some cases, and presents a chocolate-brown weathering surface. No sulphide or quartz occurs in the stringers of medium to coarse grained carbonate.

Reports of "copper mountains" in the vicinity of Gillespie Lake and Fairchild Lake have circulated for several years, and have been checked by field personnel of other companies. Small quartz stringers, weakly mineralized with chalcopyrite grains, have developed malachite stain which has migrated on to the adjoining rock; an illusion of stronger mineralization than is actually present has been created by the stain.



R.W. Baker, Toronto, Ont.

October 14, 1952.





Typical peaks of the Wernecke Mts. still showing vestiges of snow in early July.



Base camp at Pinguicula Lake. A shale horizon showing brown surface weathering is visible above the talus slope in the background.



Peaks a short distance east of the Bonnet Plume River showing red-beds.



View looking across Pinguicula Lake toward the east. Red-beds and shales showing surface oxidation are visible above timberline in the background. Dip of the strata is about 35° east.



A talus slope a short distance east of the Bonnet Plume River. The picture is taken looking up the 40° slope. All the fragments are ferruginous shale showing brown surface oxidation.



Red-beds exposed in a creek valley; the dip is to the east. Taken in a pup feeding a tributary of the Bonnet Plume River.



Red-beds showing above timberline in the distance. Taken near Rackla Pass.



Looking west across the Bonnet Plume River. Note braided river bed. A ferruginous shale horizon is present in the mountain peak in the background.



Cathedral Peak, composed of spire-like columns of quartzite, is in the distance across the valley of the Bonnet Plume River. This was tentatively identified as a basic sill from the air. In the immediate foreground there is a tight anticlinal fold in a red-bed.



A remnant of snow in a creek valley at about 6000 feet elevation. Taken in early August.



Looking east up the valley of Iron Creek. Note feeder tributary valleys in the background. Ferruginous shale horizons outcrop on the slope in the mid-distance to the right.



View of Bonnet Plume Lake looking southwest. As the elevation of the lake is about 3600 feet, the edge of timberline is not far above the lake.