

115. 0'

Harry Fromme Submission
Keondike Area Y 1

UU4677 Jan 16 1973

REFERENCE MEMORANDUM

DATE Feb. 23 1973

THE ATTACHED PAPERS ARE REFERRED

TO YMH

BY Paul

- | | | | |
|-----------------------|--------------------------|---------------|--------------------------|
| PLEASE REPLY DIRECT | <input type="checkbox"/> | PLEASE HANDLE | <input type="checkbox"/> |
| PLEASE SEE ME RE THIS | <input type="checkbox"/> | YOUR COMMENTS | <input type="checkbox"/> |
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My experience in the region makes ~~me feel~~ ^{suspect} that the conglomerate does not contain enough gold to be economic as a lode mining operation even at today's attractive prices.

Paul.

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

J.H.S.
P.M.K. ✓
G.M.H. ✓
R.D.S.
B.C.B.
I.D.B.
M.D.R.
J.H.F.
(E.C.J.)

To..... W. M. Sirola..... From..... G. M. Hogg.....

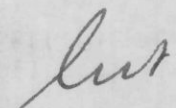
Subject..... Harry Fromme Submission, Klondike Area, Y.T..... Date..... March 16, 1973.....

We discussed the auriferous Eocene conglomerate situation, brought to your attention by Harry Fromme of Whitehorse, here in Toronto.

It is an interesting occurrence, and being of a near-unique character is very difficult to assess. However, we reached the conclusion that it is of very doubtful economic interest, and that we should decline further involvement.

I am attaching a Xerox copy of Paul's note on the matter.

GMH:lfr
Encl.


G. M. Hogg

GEOLOGICAL REPORT
ON
THE HAD GROUP OF MINERAL CLAYS (HAC 1-16)
BARREN N.D. NEON DISTRICT

WDS: 115 0-11

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COMINCO LTD.
GEOLOGICAL REPORT
ON

THE MAC GROUP OF MINERAL CLAIMS (MAC 1-16)
DAWSON M.D. YUKON TERRITORY

NTS: 115 0-11

630 42' N. 139° 07' W.

W. P. ARMSTRONG GEOLOGICAL ENGINEER

SUPERVISED BY J. RICHARDSON, P. ENG.

AUGUST 13-18, 1968.

COMINGO LTD.

EXPLORATION

WESTERN DISTRICT

GEOLOGICAL REPORT

ON

THE MAC GROUP OF MINERAL CLAIMS (MAC 1-16)
DAWSON N.D. YUKON TERRITORY

MS: 115 C-11

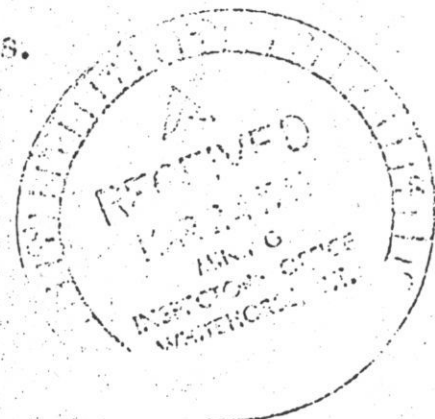


Located claims on which assessment credit is requested:

<u>Claim</u>	<u>Record No.</u>	<u>Date Recorded</u>	<u>Assessment Credit</u>
Mac 1	Y 15385	June 18, 1968	1 year
Mac 2	Y 15386	June 18, 1968	1 year
Mac 3	Y 15387	June 18, 1968	1 year
Mac 4	Y 15388	June 18, 1968	1 year
Mac 5	Y 15389	June 18, 1968	1 year
Mac 6	Y 15390	June 18, 1968	1 year
Mac 13	Y 15397	June 18, 1968	2 years
Mac 14	Y 15398	June 18, 1968	1 year
Mac 15	Y 15399	June 18, 1968	1 year
Mac 16	Y 15400	June 18, 1968	1 year

Total: 11 years

Work was done on these claims from August 13-18, 1968.



REPORT BY

W. P. ARMSTRONG

GEOLOGICAL ENGINEER

WPA:ma
February 26, 1969

This report has been examined by the Geological Evaluation Unit. Approved as to technical worth by:

[Signature]
RESIDENT GEOLOGIST

Approved as to cost in the amount of: \$ 1124.00

[Signature]
RESIDENT MINING ENGINEER

Accepted as representation work under Section 53(4) Yukon Quartz Mining Act.

COMMISSIONER OF YUKON

GEOLOGICAL REPORT

ON

THE MAC GROUP OF MINERAL CLAIMS (MAC 1-16)
DAWSON N.D. YUKON TERRITORY

NES: 115 O-11

1. INTRODUCTION

Reconnaissance geological mapping was carried out over the Mac 1-16 mineral claims in order to ascertain the nature and distribution of the auriferous conglomerate reported there. The mapping was conducted for Cominco Ltd. between the dates of August 13-16, 1963 by W. P. Armstrong, Geological Engineer, University of British Columbia and by H. Copper, an Exploration Technician.

The property is located in the Dawson Mining Division, Claim Sheet 115 O-11, at a latitude of $63^{\circ} 42' N.$, $139^{\circ} 07' W.$ The claims lie in the McKinnon Creek valley between elevations 2,000 and 2,500 feet. The bridge across the Indian River near its confluence with McKinnon Creek has been washed out; access to the property is gained by helicopter from Dawson City.

The terrain is of moderate relief, thickly forested in places with spruce and willow, with large areas of muskeg and swamp in the creek bottom. The area is nearly completely covered with overburden and muskeg; and in many cases, lithologies of bedrock are inferred from the presence of rubble and float boulders in the overburden. This should give a reliable picture, since the area escaped Pleistocene glaciation and movement of rubble has probably been restricted to downslope fanning.

The control method used for geological mapping was altimeter and compass triangulation.

2. GENERAL GEOLOGY

According to a geological survey map, Ogilvie sheet 711 A by H. B. Bostock, the property is underlain by a sheet of indurated Eocene conglomerate, capped and intruded by sheets of andesite and rhyolite. The conglomerate rests upon a basement which is not exposed on the property but is presumed by Bostock to consist of Yukon Group metamorphic rocks and intrusives. Bostock proposed that the conglomerate was deposited as an extensive sheet in the Haystack Mountain area. Later volcanics covered much of the conglomerate and produced two prominent andesite cones in the basin. Other workers, including Helcan, feel that the conglomerate was deposited as a beach deposit on both the Yukon Group rocks and on Tertiary volcanic rocks, since the conglomerate appears to overlie volcanic rocks in the McKinnon Creek valley. Andesite occupies the lowest level to which workings have penetrated in the McKinnon Creek valley, that is at the bottom of the Winchester shaft. Bostock apparently regards the presence of volcanic material in the creek bottom as a dike. The author considers it to be a remnant of a flow which occupied the creek valley.

A typical geologic section in the McKinnon Creek valley would be as follows: Basement rocks, which do not outcrop on the property, are composed of Yukon group metamorphics, chiefly gneisses and quartz-mica schists. Overlying the basement unconformably is the Eocene conglomerate, which is the formation of interest in the Mac claims. The thickness of this unit is unknown. Deposited on top of the conglomerate are intermediate to acid Tertiary flows of the Caraskas group. Extensive benches of Tertiary and recent stream deposits lie along the lower reaches of McKinnon Creek in the valley of the Indian River. The writer has seen no better evidence for suggesting the conglomerate constitutes an extensive beach deposit than that which could

also suggest that the conglomerate was formed by water courses which drained the Eocene topography.

3. GEOLOGY OF THE MAC PROPERTY

The oldest rocks in the property are the conglomerate rocks of Eocene age. The large size fraction of the conglomerate is composed mainly of well rounded white quartz pebbles of variable size. The maximum size of quartz grains would be about two or three inches found on the east side of the property in the trenches in claim Mac 16. Sand sized quartz particles comprise the coarse grained fraction in the conglomerate on the dump of a shaft to the west of claim Mac 3. Average size of the particles would be about $\frac{3}{8}$ " to 1" in diameter, other material making up the coarse grained fraction are well rounded fragments of micaceous quartzite, presumably derived from the underlying Yukon schist. These have a purplish to bluish cast and comprise up to 10% of the coarse grained fraction. No pebbles of volcanic rocks occur in the conglomerate.

The matrix of the conglomerate is quite variable. Occasionally the matrix consists of sand to silt sized elastic debris, and is moderately indurated, presumably with a silica cement. This type of matrix is found on the east side of McKinnon Creek in the trenches on claim Mac 16. Another type of matrix is characterized by an abundance of bluish finely divided mica giving the rock a dark purplish colour. The matrix has also been silicified and the rock is indurated to a variable degree.

Strong silicification of the matrix has taken place in the conglomerate on claims Mac 4 and 6. Here the conglomerate is so indurated that it resembles a quartzite.

The ratio of amounts of matrix to coarse fraction is quite variable, and in some cases, such as where the matrix consists of blue micaceous material, the matrix may constitute 30% of the rock. Although a sieve analysis has not been done on the conglomerate, a distribution of sizes appears to the author to be bimodal, that is, there is an abundance of pebbles and there is an abundance of fine grained fraction, but there is little material of intermediate sizes. This suggests that the conglomerate was once a well-sorted gravel, and the matrix settled into the interstices some time after the conglomerate was deposited.

4. STRUCTURE

Due to a lack of outcrop, structure in the property is difficult to ascertain. The conglomerate is not graded and rarely exhibits any banding which could be construed to be bedding. No cross-bedding or imbricate structures were found. Directions of stream flow, evidence of wave action or other features which could shed light on the origin of the conglomerate were not noted. Grade banding was observed in two localities. A northwest strike and moderate dip northward was seen in a trench to the northeast of the property. A similar strike but gentle dip in the opposite direction was noted at station N 11.

This evidence for direction of flow of paleo streams is conflicting.

Little tectonism has occurred since Tertiary time; one would not expect any major folding or faulting of the rocks in the property.

5. ECONOMIC CONSIDERATIONS

The average tenor of surface samples taken from the conglomerate in the Mac group range from Trace to 0.1 oz. Au/ton.

The shaft on the Britannia claim was filled with water so samples from deeper levels of the conglomerate could not be obtained.

The gold is apparently present in an extremely finely divided state in the matrix. This, together with the fact that the conglomerate would need to be crushed prior to treatment, indicates that recovery of the gold may be costly.

5. CONCLUSIONS AND RECOMMENDATIONS.

Gold is present in the indurated Eocene conglomerate which underlies the Mac claim group. Associated with the conglomerate are volcanic rocks of the Carracks group. It is the writer's opinion that these volcanic rocks were deposited later than the conglomerate, and cover the conglomerate in certain areas, so that the dimensions of the conglomerate as shown on the map likely do not indicate its true general extent. The presence of volcanic material in the McInnonn Creek bottom is not a dike as implied by Bestock, nor is it basement rocks as Holoan suggested, but merely the remains of a late flow which followed the drainage. The thickness of the conglomerate is, therefore, a matter of speculation, and examination of the dump material of the Britannia shaft suggests that these workings did not penetrate to the base of the conglomerate.

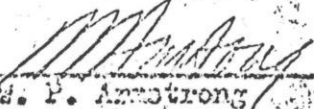
REFERENCES

- 1) Geological Survey of Canada Memoir 284. Klondike District by R.G. McConnell, pp. 217-237.
- 2) Indian River Tertiary Rocks in Gold Mining in the Yukon Dept. of Mines Bull. 222, pp. 62-74, by T.A. Holoan.

ATTACHMENTS

- 1) Statement of Qualifications.
- 2) Statement of Expenditures.
- 3) Statutory Declaration Relating to Expenditures.
- 4) Geological Plan - Mac Cp. 1" = 500'.
- 5) Cross Section, Mac Cp.

Report by:


S. P. Armstrong
Geological Engineer

CANADA
PROVINCE OF BRITISH COLUMBIA

STATEMENT DECLARATION RELATING TO
EXPENDITURES ON A GEOLOGICAL SURVEY
OF CERTAIN CLAIMS LOCATED IN THE
DAWSON MINING DIVISION, YUKON
TERRITORY

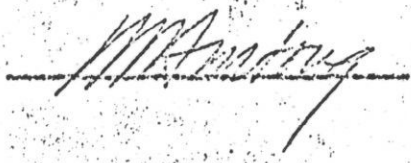
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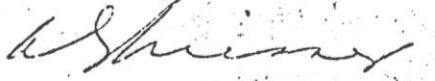
I, WILLIAM PAUL ARMSTRONG, Geological Engineer, of the
City of Vancouver, in the Province of British Columbia, DO SOLEMNLY
DECLARE:

1. That I am the person who performed a geological survey and prepared a geological report as a result of said survey on certain mineral claims for Corinco Ltd., the owner of the claims.
2. That copies of this report are being filed with the Mining Recorder at Dawson.
3. That attached hereto and marked with a letter "A" upon which I have signed my name at the time of declaring hereof, is a statement of expenditures incurred in connection with the geological survey of said claims.

AND I MAKE this solemn declaration conscientiously believing it to be true and knowing it is in the same force and effect as if made under oath and by virtue of the Canada Evidence Act.

DECLARED before me in the
City of Vancouver, in the
Province of British Columbia
this 28th day of
February, A.D. 1960.




Notary Public in and for the
Province of British Columbia

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

STATEMENT OF QUALIFICATIONS

W. P. Armstrong was responsible for carrying out the geological survey on the Mac Group of claims and for the preparation of this report. Armstrong graduated from the University of British Columbia in Geological Engineering in 1965 and has been working in a responsible capacity with Cominco Ltd. since that date.

I consider him to be an experienced and capable geologist.

J. Richardson, P.Eng.

CONTINCO LTD.

EXPLORATION

GENERAL EXPENDITURES

1968 GEOLOGICAL SURVEY EXPENDITURES
MAC GROUP OF MINERAL CLAIMS
BARREN H.D.

GEOLOGICAL WORK

Geological survey performed by W.P. Armstrong
(Geological Engineer) and H.M. Copper (Exploration
Technician) August 13-18, 1968, and office interpre-
tation and compilation, W.P. Armstrong - 2 days
in February, 1969.

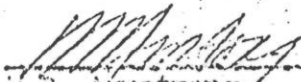
\$ 980

TRANSPORTATION

Helicopter charter

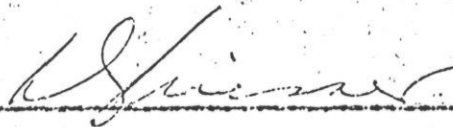
\$ 544

\$ 1,124



W.P. Armstrong
Geological Engineer

This is Exhibit "A" to the Statutory
Declaration of W. P. Armstrong,
declared before me the.....
day of A.D. 1969



Notary Public in and for the
Province of British Columbia

DESCRIPTION AND DATA RE THE
INDIAN RIVER CONGLOMERATE PROPERTIES.

The Indian River conglomerate properties are situated on Indian River, 20 miles from the main Yukon River. The properties include an area 8 miles long and 3 miles wide, and are located at a point on Indian river approximately 30 miles from Dawson City.

This conglomerate property was first discovered and staked by the McKinnon Brothers who hold their original group of claims under Crown Grant lease up until the time of their death. Following the death of the McKinnon brothers the properties, under their Crown Grant Lease, was kept up and maintained by the Public Administrator of Yukon Territory.

Previous to the death of the original discoverers there were in the neighborhood of 200 claims held in good standing by the McKinnon brothers and others. However, since the war, many of the claims were dropped owing to the cost of keeping them up.

In addition to the conglomerate there are coal deposits on the property that could also be developed.

From the "Britannia" claim, owned by the McKinnon Brothers, a great many assays were taken prior to the death of the owners. In 1911 a mill run of 2½ tons were made from the "Britannia" claim but only 10¢ to the ton was caught on the plates. At that time those making the test had no experience in milling previously. Upon consultation with Mr. Horace Freeman, Assayer for The Canadian Bank of Commerce, Dawson, he advised that the ore should be treated by cyanidation. Mr. Freeman subsequently made a run covering 85 lbs. of ore by means of the cyanidation treatment. The first lot so treated assayed \$3.30, the other values rated from the former price of gold of \$20.67 per oz. The second lot treated yielded assayed \$7.15, this ore having been taken from the 60-foot level on the "Britannia" claim.

Most of the conglomerate can be mined by open pit or quarry and easily milled. Milling and cyanidation is all the treatment needed and this can be done cheaply. There is no copper associated with the conglomerate but there are traces of platinum. Mr. Dulok, an assayer of Victoria, B.C., years ago assayed a sample of the ore taken from the 60-foot level on the "Britannia" claim that ran \$6.00 in gold and \$1,500.00 in platinum to the ton. Indications of platinum have also been found on other adjacent properties to the "Britannia" claim.

There is also a shaft down 100 feet on the "Andromeda" claim which adjoins the "Britannia" claim. Assays from this shaft average \$3.40 to the ton at the old price of gold (\$20.67) and there is a tunnel into the hill 150 feet long on the "Andromeda" claim that averages \$3.50 to the ton. Assaying on this property was done by the Colorado School of Mines. A shaft 100 feet deep on the "Arctic" claim, close by, yielded assays averaging \$2.10 to the ton. The ore from the bottom of the shaft assayed between \$3.00 and \$4.00 to the ton, and these assays were done by Mr. Milton Horeay, of Montreal, Canada. Numerous assays have been taken at different times on the conglomerate properties. There are no drill holes on the properties as yet. There

is no doubt but that rich ore would be reached with depth. In all holes sunk so far the values increased with depth. Dr. Hugh Postock, Government Geologist, Ottawa, who has examined the conglomerate, has stated that the property was deep, probably a thousand feet.

One of the main reasons why no action was ever taken in connection with the Indian river conglomerate properties was the fact that the McKinnon brothers, being somewhat eccentric, refused to sell out their interests. Many offers were made to the two brothers, all of them lucrative but all of those they refused, believing the property to be worth an enormous sum. In August, 1911, they had an offer for their claims from MacKenzie and Lam, the railroad contractors, for \$50,000.00 for the "Britannia" claim and \$10,000.00 each for all their other claims, totalling approximately 30 claims. The prospective buyers agreed to deposit \$50,000.00 in the Bank for exploration work with a 12-months option and pay the brothers \$5,000.00 down. The McKinnon brothers refused the offer, stating to the Agent of the purchaser that in their estimation the "Britannia" claim alone was worth \$3,000,000.00. Other adjoining claims were optioned, but these options were not taken up because the purchasers could not acquire the McKinnon interests as well. Many other offers were made for the conglomerate properties by big interests outside but all efforts to negotiate were blocked by the refusal of the McKinnon brothers to come to terms.

There is undoubtedly a wonderful opportunity in this conglomerate property for a large Company to make a huge cleanup as the property is so conveniently located. The Indian river runs right alongside the property and it is connected to Dawson by a good government road. Introduction of drilling methods on the conglomerate would undoubtedly lead to the discovery of values hitherto uncovered.

3

These conglomerate deposits have never been properly drilled or tested. (Only a few potholes were dug and the odd shaft put down. Practically all the work that was done was on the surface. Naturally, there should be better values on bedrock. Most of this ground is open, only a few claims being held. The following are a few things I know about this ground:-

The McKinnon brothers, who own claims on McKinnon Creek had at one time been around the Rand in South Africa, and they thought a great deal about this conglomerate. Mr. F. T. Cogdon, one time governor of the Yukon Territory, told me that he made out papers for a company offering the McKinnon Brothers \$20,000 cash and good payments to follow, for their ground, but they figured that was not enough.

A government expert made a test of this ground as follows:- He crushed the ore to a pulp, amalgamated, panned the pulp and strained the quick through a piece of chamois leather, and threw away what was in the leather. I had saw this test made.

Mr. Bill Gibson had a piece of conglomerate about 50 lbs. weight that had more than 50 small colors.

I made the following amalgamated 20% 4 lb. sample tests for John N. Spence:-

Dec. 1st., 1928-two 4 lb. tests averaged \$3.50 each
Mar. 8th., 1931-100 lbs. quartered to 4 lbs. \$.75
Jan. 6th., 1932-4 lbs. Scotia claim \$6.20
Dec. 7th., 1932-4 lbs. \$.45

I did not take the above samples myself.

3.82 The government mill, years ago, tested a few tons averaging \$2.24 in free gold.

The following are some other assays of this deposit:-

Dr. Everett returns averaged \$5.00 per ton
Mr. Miller tunnel 30 ft. average \$5.00 per ton
Mr. Adams, Bank of Commerce assayer, \$5.00-\$7.50 per ton
Mr. F. T. Cogdon, governor of Y.T., \$13.26 per ton
Calodonia and Ontario claims \$4.00-\$7.00 per ton
Glyde and Excelsior claims on Indian River \$3.00-\$22.00 per ton
Annie surface \$2.00 per ton
Mr. Lewington, N.A.M. & T. Co., -23 assays all showed gold
The values in all these tests and assays were figured at the old price of gold

joined the rush to the Yukon that was in full swing in that year.

4

GOLD STRIKE OF 1900 JUST LEAKS TO ENGLAND

VANCOUVER:- The statement made in the Liverpool Post that "it is whispered one reason for the chancellor of the exchequer's present optimism is a vast discovery of gold on the British side of the Yukon", possibly refers to the discovery made by Donald MacKinnon, of Vancouver, in the early spring of 1900. This is, at least, the claim of Mr. MacKinnon, who, in a statement, says that the field is one of the richest in the world, and in his own words, "one of the claims alone will produce as much gold as ever came out of the whole of the Yukon". Mr MacKinnon states that word of the discovery has just been sent to England.

Claim Names
Mentioned

Britannia 60' shaft
Andromeda 100' " , 150' adit
Arctic 100' "
Sestia
Caledonia
Ontario
Clyde - on Indian River
Excelsior - " " "
Annie

" Mr. Miller's tunnel - 30' "

... returned to this province and
joined the rush to the Yukon that was in full swing in that year.

Apr 1919

INDIAN RIVER IS COMPARED TO RAND

VANCOUVER: - The Star of December 14 says:-

Of all the stories which are told of pioneering days in this country, none grasp the imagination or hold the human interest as much as those which deal with the discovery of gold. The precious metal has been sought for time immemorial and the pursuit of it will continue until the end of time. Often has the desire for untold riches resulted in tragedies, which have never seen the light of day, many the men who, having gone in search of the elusive ore, has never returned to his home.

Recently the chancellor of the exchequer of Great Britain has been quoted as being optimistic with regard to the payment of the national debt, and possibly such optimism may be traceable to the fact that he has been made acquainted with the discovery of a gold mine in British Columbia which, according to Donald MacKinnon, of Vancouver, is capable of producing more gold than has ever been forced from the land of the Yukon. Assays have shown this mine to be a portentous bonanza and the evidence tendered by the discoverer would seem to justify a hope that in a very short time something in the nature of the biggest boom ever known in this country is likely to take place.

It is a long cry to South Africa, but in discussing this find with Mr MacKinnon the other day it was pointed out by him that in that country, on the Rand, it was necessary to dig down some 3,000 feet before gold was discovered and as Africa was the biggest gold producing country in the world it was only natural that in the words of the speaker, "that here where the ore is fully exposed to the eye that the production of gold would be easier and capable of larger exploitation. In Africa it often took six or seven years to reach the gold."

Mr. MacKinnon has already refused an offer of \$500,000 for his claim on account of this proposition emanating from a quarter other than British. Arrangements are now being made with a British syndicate for the sale of the property at a much better price. The discovery of this mine, which was christened "Britannia," savors of romance. It was in 1898 that Mr. MacKinnon who had been prospecting in South Africa, returned to this province and joined the rush to the Yukon that was in full swing in that year.

For two years he prospected without success, but one day whilst 1900 wandering afield was amazed to see a huge mass of gold rock which had been laid bare to the naked eye by a swift running stream or caused by some upheaval. The intrepid prospector had only one frying pan in his kit which he, of course, used chiefly for the necessary purpose of cooking his bacon (when he had any-or when he was minus this delicacy used for the making of sourdough or hard tack.) Using this utensil he took samples and after having staked his claim returned to Dawson City, which was then but a town of tents. He had the gold assayed and got the satisfactory result of \$5 to the ton. This, said Mr. Mackinnon, in quartz gold is very good paying proposition as the cost of running such a mine never exceeds \$1 per ton.

The usual rush took place and the find was a nine days' wonder. Upwards of a hundred claims were staked, but as all the owners were but prospectors, and as such were not possessed of much of this world's goods, the development of this field was never proceeded with. For perhaps two years the claimants remained on the ground but gradually but surely they all gravitated towards civilization with the exception of Mr. Mackinnon ~~who, with the exception of three short visits to Vancouver, has stood his~~ ground all these years. 1900 - 1919

Last summer the present deputy minister of mines visited the discovery 1918 and reported to Mr. Mackinnon that the find was the biggest thing in Canada and was worth, his claim alone at least between three and four million dollars. At the time of the discovery prospectors were obsessed with the idea that there was nothing else on the face of the earth but placer mines and refused steadfastly to even consider quartz mines, and this, said Mr. Mackinnon, to some extent explained the reason why further development was not proceeded with. He pointed out the assay showed that at \$5 per ton the claim would yield between six and billions' worth of gold, and however tremendous these figures may seem the possibility of such a yield being forthcoming would seem to be borne out by the report of the mining experts who have visited the property. ?

Mr. Mackinnon is a very old pioneer, having been in this country for upwards of sixty years, first settling west of the Portage at Winnipeg before the city was even thought of, and having had a large experience of mining, both in this country and South Africa.

INDIAN RIVER CONGLOMERATES.

(By Chris. Fothergill)

The Indian River Conglomerate deposits have received attention for years by a number of persistent prospectors, including the McKinnon Brothers, L. Campbell, C. Fothergill, J. H. Spence, and others.

The conglomerates lie along Indian River, near the mouth of Quartz Creek, only twenty-five miles from Dawson, and comprise a huge deposit of solidified or cemented wash-rock. They cover a known area three by twelve miles, paralleling Indian River. The northern edge lies along a bench 160 feet high facing Indian River flat. Surface assays practically all contain some evidence of gold or silver, and the few tunnels and shafts run show similar returns. It is believed that the properties run to a considerable depth and that if drilled with a diamond drill or otherwise they might show much higher if not extraordinary values at a depth. Some believe these solidified gravels have a paystreak at the bottom something like that of the wash gravels of this country.

1919 Approximately 200 claims are kept alive on the conglomerate by various owners.

One fine coal seam has been discovered, and partly opened, on the property.

The deposit, many believe, may become another Rand in size and importance.

A number of assay reports which were submitted to the Yukon Council this month in connection with the petition of the large number of owners for assistance in getting the properties developed, are as follows:

A letter from W. G. Haldane, Acting President of the Colorado School of Mines, under date of June 21st, 1915, to C. Fothergill, gives the following reports:

"Your letter of April 27th, and samples for examination received and I beg to report on same as follows:

No. 1 - ^{.481 m.} 48.100 oz. gold per ton; ^{.16} 16.100 oz. silver per ton; value of gold \$9.60; silver 8 cents.

No. 2 - ^{.057 m.} 5.100 oz. gold per ton; ^{.211 m.} 21.100 oz. silver per ton; value of gold \$1.00; value of silver, 10 cents.

No. 3 - ^{.101 m.} 10.100 oz. gold per ton; ^{.181 m.} 18.100 oz. silver per ton; value of gold \$2.00; silver 9 cents.

No. 4 - Trace of gold; ^{.221 m.} 22.100 oz. silver per ton; value of silver, 11 cents.

No. 5 - ^{0.031 m.} 3.100 oz. gold per ton; ^{0.291 m.} 29.100 oz. silver per ton; value of gold 60 cents; of silver, 14 cents".

The following is a copy of assays from the Britannia group of conglomerate in the Indian River District at various periods:

INDIAN RIVER CONGLOMERATE

(The Dawson Daily News of Monday, March 3, 1919)

(continued)

Year 1900: - Assayer - August Dietric:

Assay No. 1	\$ 5.65	0.2825	"60"
2	Trace		"16.95"
3	22.00	1.10	"66"
4	7.26	.323	"79"
5	8.85	.4425	
6	7.92	.396	
7	Trace		
8	1.15	.0575	
9	2.25	.1125	
10	4.55	.2275	

Average per tons - \$5.973

Assays - Year 1900

Assayers: - Dr. Everette - several assays; average value \$5.00.

R. McIsaac:

Assay No. 1	3.00 per ton
2	5.20
3	5.85
4	7.00
5	1.20
6	1.00

Average value \$4.95

Adams (Canadian Bank of Commerce)

Assay No. 1	\$ 7.50 per ton
2	5.00
3	6.40
4	Trace
5	3.75
6	Trace

Average value \$4.90

Year 1901

Joseph Miller - 100 assays averaged per ton \$5.00.

Year 1902

Government mill run of two tons - average value per ton \$2.24. as per Bestocks Compilation, McConnel 1905 report.

Year 1904

Fifty pounds taken from shaft by R. Coutts; Assayer Rogardies, Seattle; average per ton \$13.50.

One sample taken by F. T. Congdon, K. C.; Assayer Cobb; value per ton \$13.26.

Year 1911

From a report by Clark & Fothergill; Assayer - Freeman; (Canadian Bank of Commerce); values, per ton, \$3.30 to \$7.50.

INDIAN RIVER CONGLOMERATES

(The Dawson Daily News of Monday, March 3, 1919).

(continued)

Year 1912

Mining Inspector - T. D. McFarlane:
values per ton \$4.55 to \$8.75.

Year 1913

Assayer - Sanders (Canadian Bank of Commerce)
average values per ton \$4.00

Year 1911

Clark & Fothergill
Assayer - Freeman, (Canadian Bank of Commerce)
Three runs by cyanidations:
First run, 85 lbs. value per ton \$5.50
Second run, 80 lbs. 7.15
Third run, 75 lbs. 8.84
Average - \$6.00

Assayer - Day (Canadian Bank of Commerce) - average \$7.15

W. Marshall - average \$7.00

Several other assays were secured on various Indian River conglomerates at different times and are shown on assay certificates held by those mentioned. The assays are as follows:

18 September 1913 for A. A. McMillan

Assayer - D. Saunders - Gold \$3.20; Silver, 90 cents.

13th September, 1913 - for A. A. McMillan

Assayer - D. Saunders - Gold, from F. Slavin sample	\$2.64
From 80 ft. shaft	4.00
From 15 ft. shaft No. 1	2.90
from 152ft. shaft No. 2	1.80
from left limit	1.40
from porphyry dyke	1.00
→ from top of hill	Trace
→ from half way to hill	Trace

Fothergill sample \$2.44

11th October, 1911, for G. Fothergill

Assayer - Horace Freeman - Gold \$2.06; silver 6 cents.

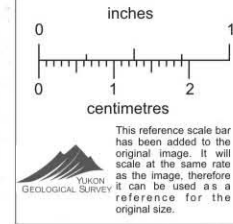
21 April 1914 for G. Fothergill

Assayer H. J. Marshall - From roof - Gold \$10.00; silver 6 cents,

From face - Gold \$2.00; silver 2 cents.

CANADA
DEPARTMENT OF MINES AND RESOURCES

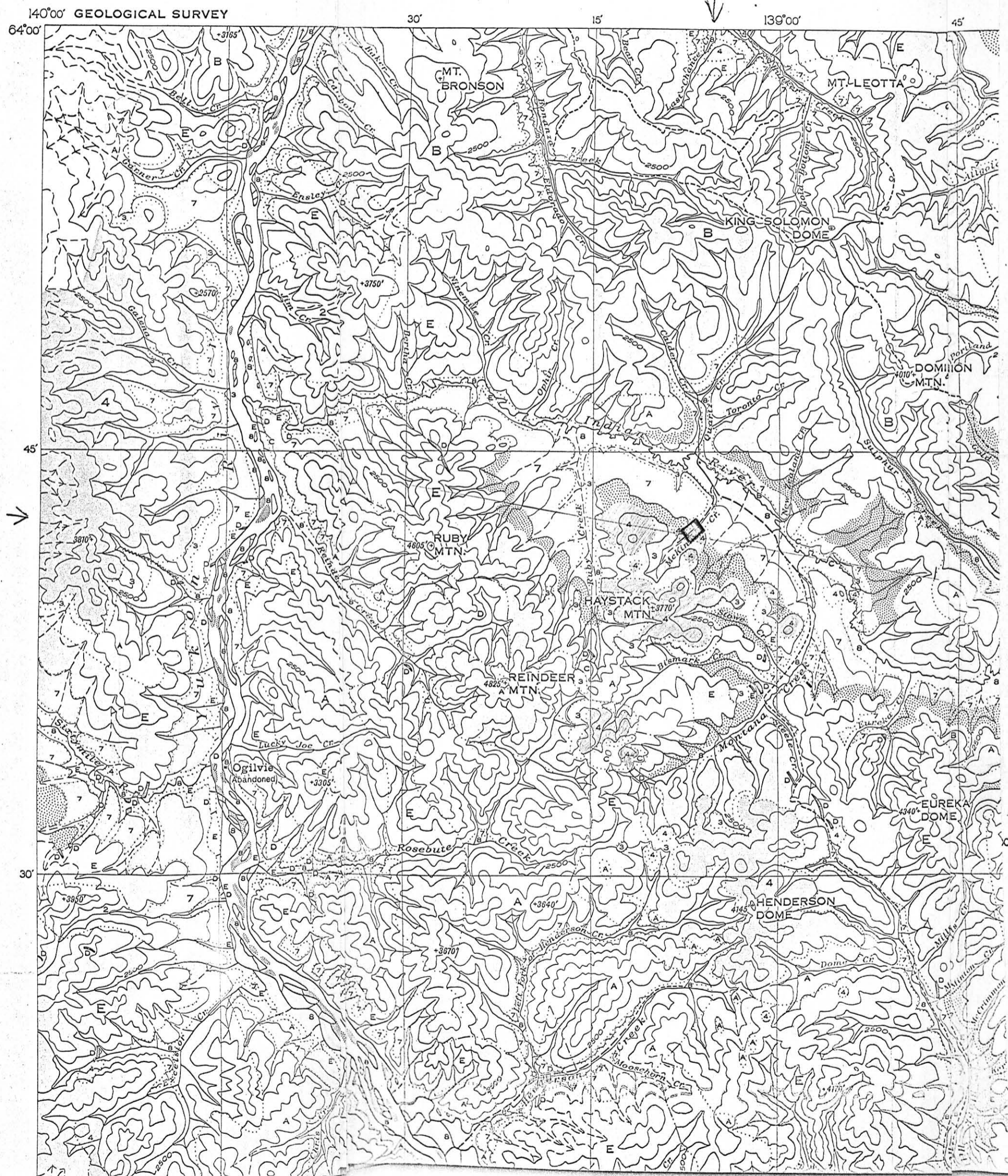
MINES AND GEOLOGY BRANCH
BUREAU OF GEOLOGY AND TOPOGRAPHY



* Dawson
C.P.R.

LEGEND

- | | | | |
|-----------|--------------------------|---|--|
| CENOZOIC | MODERN RECENT | 8 | Stream deposits |
| | TERTIARY AND MODERN | 7 | Stream deposits |
| | | 6 | SELKIRK SERIES
Basalt, andesite |
| | TERTIARY EOCENE OR LATER | | Granite porphyry, syenite porphyry |
| | | 4 | Andesite, basalt, dacite, trachyte, rhyolite, breccia, tuff, agglomerate |
| | EOCENE | 3 | Conglomerate, sandstone, shale, coal, tuff |
| MESOZOIC | JURASSIC OR LATER | 2 | Chiefly granite and granodiorite |
| | ORDOVICIAN OR LATER | 1 | Argillite, sandstone, conglomerate |
| PALÆOZOIC | PRECAMBRIAN AND LATER | A | Chiefly gneissic granite |
| | | B | Klondike schist: sericite schist, minor chlorite schist |
| | | C | Gabbro, pyroxenite, peridotite, serpentine |
| | | D | Limestone |
| | | E | Gneiss, quartzite, schist, slate |



The KLONDIKE SCHIST (B) is typically a light-coloured, massive, sericitic rock containing much quartz, commonly in corrugated lenses a small fraction of an inch thick. It grades through feldspathic quartz-mica schist to augen-gneiss (A) and to more massive granitic types. Small bodies of schist similar to the Klondike schist occur in the area of gneissic granite on Henderson Creek. The Klondike schist truncates strata of the Yukon Group, holds inclusions of these rocks, and otherwise exhibits characteristics of an intrusive rock.

The greater part of the main bodies of gneissic granitic rocks (A) are close to granite in composition but some of the smaller bodies are of granodiorite and quartz diorite. Remnants of larger feldspar or quartz crystals lie in a foliated groundmass of feldspar, quartz, mica, chlorite and, less commonly, hornblende, tourmaline, and garnet. Parts of the larger bodies may be only slightly gneissic. Other parts have been crushed and sheared to form fine-grained rocks. All gradations exist between these extremes and are well exemplified by the granite body that extends northwestward from Mount Burnham. Many dykes and sills of gneissic granite, aplite, and pegmatite, related to the larger gneissic granite bodies, lie in the Yukon Group strata near contacts with the gneissic granite.

East of the Yukon and north of Indian River is a stock of coarse, grey granite (2). The rock is not foliated and is sheared in only a few small areas. The large granitic body exposed on either side of Scroggie and Walhalla Creeks (2) is a coarse white granite near the junction of these creeks but, farther south and east, is more nearly a granodiorite and carries large pink feldspar crystals. Along its southern contact is a zone composed mainly of hornblende and pink feldspar. The body contains numerous xenoliths of the Yukon Group and innumerable pegmatitic intrusions that, in places, make up fully 30 per cent of the volume of the rock.

A clastic assemblage (3) consisting of conglomerate, sandstone, arkose, greywacke, shale, and tuff lies unconformably on rocks of the Yukon Group (E) and associated intrusions (A, B, and C) and is overlain by lavas of the Carmacks Group (4). Over 500 feet of, chiefly, conglomerate is exposed on McKinnon Creek. Here pebbles and grains of white vein quartz make up the greater part of the rock. Other pebbles are of quartzite, gneiss, and schist, and, like the vein quartz, are derived from the underlying Yukon Group. The pebbles are rounded and few are over two inches long. With the conglomerate is interbedded some sandstone and carbonaceous shale, the latter containing thin seams of coal. Fragments of plants are common. The formation is cut by a number of dykes of rocks lithologically similar to the overlying lavas. The areas of these sedimentary rocks to the south consist of similar strata but those west of Yukon River hold detrital materials from various formations including some that are not present in the map-area. Volcanic materials of the Carmacks Group (4) are intercalated with the upper beds of these sedimentary deposits. The strata dip at angles up to 35 degrees. The area fringed by these rocks west of Yukon River forms a syncline trending northwesterly with a minor anticline in it extending up Galena Creek. Along the power ditch between the forks of Klondike River are beds of conglomerate, shale, clay, and lignite (3) that have been correlated tentatively with the strata described above. They form part of a sedimentary basin that extends for over 50 miles to the northwest, in parts of which plants regarded as of Eocene age have been found.

The CARMACKS GROUP (4) of volcanic rocks is predominately andesitic in composition. West of Yukon and north of Sixtymile Rivers the strata appear conformable with the underlying Tertiary beds (3). On either side of McKinnon Creek they occur as sheets that cut through and overlie the sedimentary beds. South of Sixtymile River a large part of the lavas are light-coloured; include more of the acidic varieties than elsewhere; and, in places, appear to be intrusive. The acidic types resemble the Tertiary intrusive rocks (5) but have typically volcanic textures. In almost all parts of the map-area are a few dykes resembling the volcanic rocks, and in the area west of Yukon River, north and south of White River, such dykes are abundant.

Three porphyritic bodies (5) that range from granite to syenite lie in the southern part of the area and are regarded as of Tertiary age because of their resemblance to some of the Tertiary volcanic rocks. They intrude the Yukon Group but their relationships to other formations are not known. Mirolitic textures are common.

Remnants of a basalt lava flow of the SELKIRK SERIES (6), as much as 100 feet thick, lie on both sides of Rosebud Valley. In places the base of the flow is less than 40 feet above the creek.

Deposits of stream gravels (7) lie on rock terraces and on high saddles in the ridges close to the level of the upland surface. The great deposits of Flat, Rosebud, and Valley Creeks and of Indian River, and the White Channel gravels of the Klondike are believed to have accumulated more or less contemporaneously and all are stream deposits. The White Channel deposits along Bonanza, Hunker, and other creeks draining into Klondike and Indian Rivers formed solely from the rocks in their respective valleys, whereas gravels along Flat Creek contain great quantities of detritus from the Ogilvie Mountains to the north, and those of Stewart Valley from the country to the southeast. The gravel terraces in the valleys of Stewart River and Rosebud Creek contain distinctive chert, chert breccia, and conglomeratic material from Pelly River, not found on the upper Stewart River. The gravels are over 200 feet thick on Bonanza Creek and along Yukon River, and over 500 feet thick on Flat and Rosebud Creeks. Large deposits occur along Valley and Rosebud. Creek valleys up to an elevation of 2,500 feet, and chert pebbles characteristic of these gravels were observed as high up as 3,000 feet. The deposits filled Stewart Valley and were carried through the lowest pass to Australia Creek and down the valley of Indian River to its mouth. Subsequent uplift has led to the re-excavation of the valleys through the gravels into the rock floor beneath and the formation of the lowest rock terrace. Recent stream deposits (8) floor the valley bottoms and flood plains. They rest on the lowest bedrock surfaces of their respective areas.

The area mapped includes all but the northern fringe of the Klondike placer district. Though its deposits were discovered nearly fifty years ago they are still an important source of gold and promise to be so for some time to come. In other parts of the area, notably the central and southern, a number of creeks have, in the past, been found to carry gold placers of some importance. These have been found in the gravels of both the recent (8) and older (7) stream deposits. Most of these creeks have still to be investigated by drilling or other modern methods. The possibilities of lode mining are largely unexplored. Though the areas of the Yukon Group adjacent to the intrusive rocks present features favouring lode deposits, there have been few discoveries and none has yielded a profitable production.

OGILVIE, Y.T.
1" = 4 mi.