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## REDMAN \& OUTHETT,

METALLURGICAL OHEMISTS,
MINING ENGINEERS.

## Tkamloops Minining $\mathfrak{G a j e t t e . ~}$



The past month has not seen very much change in the prospects of the prospects of the camp. Although at the same time development work has been going on steadily on quite a number of prospects with mosten. couraging results. From the Python, Kimberly, and Copper King, all of which are working, we have received the very best reports, and there is no doubt but that these three mines will turn out well.

There are rumours to the effect that Miss Joussaye has bonded the Iron Mask but nothing definite can be ascortained at present. The Python management are enthusiastic over the shewing in their workings and will have another shipment of ore ready shortly. Taking everything into consideration we think that the camp is to be congratulated on the progress made which though slow, owing to the want of outside capital, is none the less sure.

A step in the right direction is the appointment by the B. C. Inland Board of Trade of a mining committee and the placing of show cases for mineral specimens outside the Government offices. We would suggest that a case of specimens be prepared aud placed in some prominent position in Vancouver. It is surprising how little, people in Vancouver, know about our mines, and nearly every mining man that comes to this country visits the terminal city.

J. P. Dillon has been working on the Mona claim and has uneovered a lead 34 inches wide of solid copper and magnotite.
L. W. Nestelle has been duing work on the Dewey group. A tumnel has been driven over 90 fiet on a vein of chalcopyrite and cha:cocite assaying high in copper and gold.

Assayes from the Polestar on Noble's Creek show $\$ 19$ in gold and $\$ 24$ in silver. The ore from which the assay was made is from a ledge from 8 to 12 feet in width.

Mr. G. F. Moncleton of Savonas writing to the Canadian Mining Gazette says ; Min1ng is rather quiet in this locality at present. No considerable amount of outside capital has come in during the past year, and the residents have, therefore, had to develop the mines themselves. Notwithstanding this a fair amount of work is being accompliehed.

The Pothook, the one mine which has had the advantage of outside capital, has closed down pending the erection of new hoisting plant, and the construction of a large concentrator, and tramway leading to it is talked of. The main shaft is now 350 feet deep, and some of the drifts 300 feet long. There is no doubt that a very large body of low grade copper ore has been opened up.

The Python is now being devel. oped, and is proving ir every way worthy of the anticipations entertained of it. The main shaft is 100 feet in depth, and at the oud of a drift 90 feet long, 55 feet below the surface, a crosscut is being put in, which it is intended to carry on umtil the walls are fomad. The vein has been found on the surface west of the shaft to be over 30 feet in width, and is known to be at least 10 feet wide at the bottom, but as neither wall has yet been struck, it is likely to be much wider. The value of the property has been enormously sustained by the fact that, within the last few weeks, trenches cut through solid rock east of the shaft inave exposed the vein. The first 2,000 feet from the shaft dues not shew either wall, but the vein is in it over 60 feet wide. It carries some copper and gold, but is much oxidized. The second trench has exposed $\Omega$ vein cropping 1,000 feet east of this, but the rock is much altered. This vein has now been traced over 5,000 feet, which is gosd shewing for the amount of work done. It is intended to crosscut the vein from drift at the bottom of the shaft. A carload of ore has been shipped, valued at 8 per cent copper and $4 \frac{1}{2}$ gold per ton, which should give the company nearly $\$ 10$ net per ton. So far as the work has proceeded it reflects great credit on Manager Wood, and everything points to the property becoming a great mine.
A. Noble, has just finished assessment work on the Mollie Gibson, a very promising gold property, adjoining the Homestake on Jamieson Creek.

Mr. Onthetit has received a communication from the Provincial Board of Examiners of Assayers to the effect that in his case examination will be waved, as his credentals show an efficiency finat is quite up to their high standard. Mr. Outhett has received a thorough training both at the Royal School of Mines, London, Eng., and at the Royal College of Science.

A large shipment of bullion arrived in Ashcroft last week from the Cairboo Hydraulic mine.

The first meeting of the Minitg Committee appointed by the B. C. Inland Board of Trade was held in the Coinncil Chamber on Tuesday November 21st. There were present J. Redman, F. J. Fulton, H. G. Ash${ }^{3}$ y, Dr. M. S. Wade and E. T. W. Pearse, secretary. The followingr resolutions were passed:
That the secretary obtain imformation from other Boarcis of Trade in B. C. and Washington as to the scope of the work done by their Mining Committees.

That the B C. Inland Board of Trade be requested to secure a room for the exhibition of mineral specimens and mining literature.

That the secretary provide and open a register for the registration of local mining properties, and purticulars thereof, such as location, price, amount of development work done, terms, names of owners or agents.

That the secretary write to F. J. Deane M. P. P. requesting that the Mining Committee shall be sent copies of proposed new mining legislation.

Mr. W. W. Clarke writes us from London, that the Kamloops mineral exhibit at Harris's, 418 Strand, is attracting a lot of attention. He regrets that there is no exhibit of this sort for the whole of British Columbia, in some prominent place. He finds that people are eager and willing to enquire into our resonrces, but other colonies and people are so busyspreading out the advantages of their localities and properties, as a field for investment, that we stand nowhere, in the race after capital. His littic exhibit has attracted enquiries and letters innumerable from persons seeking further linowledge of the prospects of this locality, and if only this was attencled to by an authorized Government Agent, British capital would slowly but surely find its way to this country, for investment.
O. Redpati is working on his Jamieson Creek property the Homestake. This is one of the properties which is going to make a mine, and is attracting considerable attention from mining men.

Mr. Chris Outhett of the firm of Redman \& Outhett, Metallurgical Chemists and Mining Engineers, is now duly qualified as an Assayer according to the provisions of the Bureau of Mines, Act 1899.

Messrs. Redman \& Outhett, report that notwithstanding the temjorary closing down of the Pothook, considerable activity prevails throughout the camp. "Work on many prospects will be continued through the winter, and there are several important deals on the tapis. While secrecy is being preserved,
it is generally lnown thit, one at least will materinlize before the spring.
The Glen Iron mine has starten to work again, shipping ore to the: Nelson smelter.

Work will shortly reenmmenco on the Hecla Group, The shalt. is down 30 feet. Assays from thr bottom averaged $71 / 2$ per cent. (o); per and $\$ 2.00$ in gold with some sil: ver. The shaft will be put down $\mathrm{i}_{0}$ feet, when the vein will be cross. cut.

Boillot Bros. are pushine work on the Hill-top group. An extensive series of cross cuts are being made, shewing immense boulies of quart\%.

James Wright has just completed his assessment work on the Bluebird group, situated on Shuswap lake, near Sicamous. Several massive veins of pyrrhotite have been opened carrying good copper-gold values. No. (1) sample carried $\$ 14.50$; No. (2) $\$ 17.00$ and No. (3) $\$ 21.00$ in copper and gold at the current smelter prices. These veins are very similar to the Rossland ores.

Mr. T. H. Mathews is going to create a boom in the Kamloops camp nextsprirg. While prospecting in a creek near Kamloops the name and locality of which he has wisely withheld from pnblishing, he was lucky enough to find a nugget of gold, worth about $\$ 5.00$. Owing to the lateness of the season, he does not intend doing any further prospecting this fall, but next spring he will thoroughly prospect the creek, and is confident that he has got a young Klondike.

Wrork on the Kimberley is being pushed on rapidly. Capt. Garland of North Bend and Atlin, was in town last we $k$ inspecting the property, in which he is interested, and expressed himself as being very well pleased with the shewing Active development, work will be continued thronghout the winter. Seventeen feet of clean ore has been gone through up to the present time, the face of the tunnel being still in the vein.

## THE NININC IRECOIRDS.

Cyclops-6 miles $S$ suth of Kam loops, G. D. Harrison and P. Herod; November 1.

Noonday (fractional)-adj. Noonday, O. S. Batchelor ; Nov. 4.

Null--1 $1 / 2$ miles N.E. of Ducks, Geo. Wilson; Nov. 4.

Woodbine--9 miles W. of Kamloops, Theo. Brookfield ; Nov, 4.

Nilson (fractional)-W. of Perci. val's ranche, Grand Prairie, John Stewart; Nov. 9.

Lucky Girl--5 miles S. W. of Kamloops, $1 / 2$ mile N. of Jacko Lake, Mrs. Victor Guillaume; Noč. 9.

Trump (fractional)-adj. O. K., F. Harding ; Nov. 9.

Dandy Fifth-.S. side of Dandy, Jacko Lake, C. Outhett. Nov. 9.

Black Horse-- 8 miles $S$. of Kamloops, J. C. Donaldson ; Nov. 9.

Glencoe-. 8 miles $S$. of Kamloops, R. Blair ; Nov. 9 .

Cassie Turner--Jamieson Creek, 20 miles from N. Thompson River. A. W. Haddock ; Oct. 2.

Anaconda-on Scotch Creek, M. McIntyre; Nov. 11.

Monarch-on Scotch Creek, J. McIntyre; Nov. 11.

Canada-on Scotch Creek, D. Mc Intyre; Nov. 11.
Eureka-on Scotch Creek, A. McRae November 11,

Golconda-on Scotch Creek, D. MoIntyre; Nov. 11.
C. B. --on Scotch Creek, C. D. Algar; Novemder 11.

Wheal Tamar (fractional)--Jacko Lake, adj. Wheal Tamaa, O. S. Batchelor ; Nov. 11.

Lilly- 7 miles N. of Shuswap, $P$.
K. Behusen; Nov. 13.

Sunny North--Adams Lake Villey
Dan Campbell ; Nov. 17.
Eliza Jane-as above, J. R. Hull; Great Iron Cap-as above, H. W. Lees; November 17.

Tontine-.Sugar Lroaf, alj. Chieftain, J. M. Harper ; Nov. 18.

Barney--on Coal Hill 4 miles from Kamloops, W. W. Wood; Nov. 22. Hilltep (fractional)..on Ceal Hill, adj. Python, W. W. Wood ; Nov. 21 . ASSESSMENT WORK.
Baryta--J. A. Mara.
Truth, Dakots, Hope and Jennie, Truth Mining Coy.
Cowbyy--R. H. Winner.
Goodenough-- J. H. Hill.
Bessie--J. H. Morrison.
Hill Top--Hill Top Mining Coy-
Little Jem- Messrs. Stephenson, Costley and Vaer.

Blue Bird--J. Wright and John McLeod.

Molly Gibson--A. Noble.
Bill Nye--J. A. Lavery.
Last Rnse of Summer-Hecla
Mining Coy.
Finance--W. G. Merryweather. Dispatcher--A, M. Graves and J.
H. Woodside.

Transvaal-J. C. Arnell.
Ray--L. Blair.

(Continued from last issuc.)
Due north of this mine lie the [rent and some other claims in which copper occurs in the same kind of rocks, which at one period were evidently united to those of Cherry Bluff. Cinnabar and copper alsu occur there in dolomite. The granite wherever it carries copper is considerably altered and traversed liy veins of dolomite and lime. On the Trent claim, the principal deposits of copper seem to run irregularly through zones of decomposed granite, which are heavily charged with iron pyrites. The strike is north and south, the dip being nearly verticai, and their character is somerthat altered where they are crossed by the calcareous veins, which lie nearly flat.

- Before leaving this area of gabhros and diorites, the writer may say that it would seem as if all the ore deposits in them are veins of replacement, the vein filling.of which ias been deposited by thermal waters rising along the line of fissures in the gabbro and kindred rocks. These waters would replace the calcareons components of the country rock by oxides of iron, which were probably derived from the pyroxene of the same rocks. The copper would be obtained from volcanic rocks in the district. Hornblende and labradorite would provide a large quantity of lime, and would thus be largely the source of the lime reins. Magnetite occurs in grains disseminated through the rocks of Cherry Bluff. The veins usually have one well defined wall,
which is the line of the original fissure through which the heated vapours ascended, one wall being indistinct, and the scanty evidence which we have before us at present gives reason to believe that the ore will be found to cross over to the other side of the wall, as the solutions found it easier to decompose the rock on that side of the fissure. One such well marked instance may be seen at the Glen iron-mine. The writer way say, however, that there are other theories. One old miner has informed him that the mountains are hollow, and that the metalliferous solutions are boiling and "sizzling"' inside still. We have not as yet sunk or driftel far enough to prove the truth of this opinion, but perhaps some "bloated capitalist" in the old country will modertake this somewhat dangerous operation. If these subterranean furnaces could be safely tapped, we should have another source of heati for industrial purposes.

Copper Creck.-The developments on Coal Hill and Cherry Bluff havenot so far afforded us sufficient data for forming theories as to the influence exerted on the formation of ore-bodies by different rocks and contacts, which to some degree detracts from the influence that scientiffe men would take in those area". This is not, however, the case with the Copper creek district. Here it is well seen what are the rocks affecting the deposition of ores, and it seems as if any worls donc along certain contacts which are barren when firstattacked will show up ore, although not necessarily paying quantities. The writer will deal first with the copper ores of the district, as the consideration of the
phenomenaattendant on the occurrence of cimmar will lead us furtherafield. The portion of the dis. trict carrying copper ores is a small one, lying immediately east of Copper creck and forming Lookout Point, Sjo feet above the lake. The extent of it is about 1 square mile. Copper is known outside of this, but no deposits of note have been found. The formation is of Tertiary age, and originally consisted of stratilied tuffs and arkose, the greater parth of which belongs to the Tramquille beds. These are intersected ly dykes and sheets of basalt and porphyry. The tuffs have been so contorted that their dips and strikes vary every few feet. Through them a dyke of angite porphyry has been thrust. Its direction is nearly north, its dip almost vertical and to the east. It throws out some smaller dykes running nearly at right angles. Its thicchness will average 800 feet. This dyke, as well as the beds of ash, is intersected by a sheet of basillt dipping to degrees east and throwing out numerous vertical or nearly vertical dykes. This basalt is the ore-bearer of the camp. The ore-bodies of importance, so far as lonown, are all actually upon or close in the contact of the basalt :and porphry. The basilt itself cirreies sime copper at almost every ?rint. Both of these rocks carry the motal at the esentact, distinct vins of quart\% in them being of very sermblary importance. The pmehery is traversed by mumerous s:ach small veins, usually carrying arey copper.
The principal worls has been done on the El Progresso and Tenderfoot: ciams. In both these areas, ore is
being followed which lies along the contact of the basalt and porphyry. That in the porphyry is bornite, while much of that in the basalt is copper pyrites. One of the principal paystreaks is a narrow dike of basalt: which has been shattered and re-cemented with veinlets of lime. The El Progresso carries a good proportion of gold, while 4 tons shipped from a 6 inches vein of dolomite in the Tenderfoot claim sielded copper 21.97 per cent and some gold and silver. In the El Ultimo, a dike Girries bornite where it is traversed by quartz veins. In the Caledonia a decomposed dike holds some mative copper. The composition of this is probably peridotite, but it is so rotten that this is not easily ascertained. In the gulch below, minch native copper occurs from the demmatation of this. No doubt this is where the Indians obtained their copper, on accomit of which they called the stream hard by Copper creek. The dike does not seem to eontain any appreciable quantity of the metal now.
Near this, on the Last Chance, is a quarts vein comtaining molybdenite associated with copper pyritcs. The copper of this area is no doubt derivell from the underlying nicola rocks as they are traversed by mumerous small veins of copper pyrites of high grade, the metal in which was gathered up by the heated waters attending the intrusion of the basalt and porphyry, de. posited in the fissures openerl in them during the period of their cooling. It is rery likely that the granite eastwarlo of the creck had partially concentrated the copper previous to tine intrusion of these roleanic rocks. There is reason to suppose that this sranite belongs to the end of the micola period. This would explain why the metal is only found in apmeciable quantities over such a limited area. Nearly all the later Tertinay dikes in this area contain some copper.
Copper occurs west of Mamit lake in hack basaltice rock at its contact mith porphyry. Shipments have
vielded 9 per cent., and it, seems to be irregularly distribuoed throngh the rock. The surface soil is very heavy in that localisy. It also occurs on Criss creek and Deviman river, and Jacko lake on the South side of the granitic area of Coal Fill seems to be destined to take a prominent place. Intrusive volcanic rooks of later date are there in contacn with the gabbros. It is note-worthy that nearly all the deposits of copper are near outcrops of the Iranquille ash beds.

Copper Creek.*-On the west side of Copper Creck is ar zone of

* Jrans. Inst. MI. E., vol. גiii., page 3, H. Merritt.
dilomites and porphyries which orerlies the cold water conglomerafes. In irregnam quarty and ealcire reins through these cimm? fommat. 'The seneral direction of the veins is north and sonth. (Cinnimbir is fomad in tine comany rock as well as in the veins. A consiacuable smm inas beren spent at the month of tine creota in mining in tibleso rocks without succers. A famale was built to theat the lowgrable ore with the resmlt that one m:1y unw wash quichsilver in the c:abk below it. Pamallellevels were duven into the mountain side, and the works now resemble a hure r::bbit warren. Uncler the einlier management they producen 7 SG: 1hs. of quichsilver trom hirh-irade ore. This quichsilver zone extends for a sreat distance, crossing Copper creek higher up, where it is asain found to contain cimmbar at. Earclie mountain. In that locality itoccurs disseminated in dolomite and in an altered rock which ap. pears to be volcanic ash, also in rich liatle veins traversing these, and in the chamnels of extinct hot springs. Tinc best ore is a brecciated quart\% crmented with lime on this same gone, cimmatuar was discovered by Mr. a. j. Colquhom at Toonkwa. lake last vear. This place is 12 miles south of Savonas. There is bat little rock showing, but the zone appears to be of considerable widtin. Between these two, near Kimmonus lake, dolomite and dolo-
mitized rocks aloout 1,000 feet wide are seen at several points to carry cimmbar. Throughout the upper part of the Nicola series, especially near the west end of Kamloops lake, a little cinnabar may be found. North of Copper creek, on Criss creek and Deadman river it occurs in the Tertiaries, and there scems to be a most promising district abont 3 miles up Criss creek, where the \%one of cimabar bearing dolomites run nearly north and lie near rrimite. This zone lies west of the ofler, but, may be the same one fandted. It is moteworthy that the Copluer creok zone has at one end two small areas of granite and in the immediato meighborhood of Fardie mountain mines another sramitic area. In the gramite of Comper creek some cinnabar occurs. Nar the Trent mine cinnabar is fomun in colomite close to another granite area.

The dolomites contiaining cinnabar have been tracea by Mr. Colquhom 10 miles north of their occurrence on Criss creck. These dolonites may be in purt the result of alteration of ofluer rocles, but would seem from theiv permanence and the fact that they coincide with the line of strilie and dip of the bedded rocks of the district, to be in part at least; a sedimentary formation. The strata of the district are throughout so heavily fanlted that it is extremely difficult to classify them. The work of the Geological Snrver in this district is very rough, (probably on account of the great area to be traversed by a very suall party), especially in the outlying distdicts, Criss creek, for instance, but affords a good groundwork on which to base observatious.

In conclasion，the writer may say What while this district is new and bui．little work has been done it should come into prominence rapid－ ly as development is pushed，trans－ portation being so easily available． The cost of mining will，of course， vary with the rock，but sinking a 9 feet by 5 feet shaft costs $£ 3$ in do－ lomite，$£ \pm$ in porphyries and gab－ bros，and 87 in basalts and the harder granites．Drifting costs per foot in dolomite， 16 s ．；in porphy－ ries and gabbros，$£ 1$ ；in basalts and gramites，\＆゙2．Treatment calls for an expenciture of $£ 210 \mathrm{~s}$ ．per ton， including freight，in the case of cop－ per ores which have to be shipped 400 miles，and the copper is paid for at three－fifths the murket price． Cimmbar ore should be treated for 4s．per tin so that one－tenth of 1 per cent．should pay for treatment at present prices．

## Conglomerates and Placers．

In addition to deposits of metallic minerals in veins，gold is found within this area in conglomerates of Tertiary age，and also in gravel which in part dates from the glacial epoch，hat is for the most part more modem and caps the river teraces．The conglomerates have heen but little tested，but would mobably be well worth investigat－ mig as ancy have been found to car－ ry srold at several points and could be quarried for milling at a very slight expenditure．The gold would be free，so that the ore should not cost more than 2s．per ton to mill． It must，howerer，be pointed out that much prosimectiug and testing wound be necessary before proceed－ ing to deal with them．Some of the conglomerates have been mucil al－ tered by the heat of the volcanic in－
trusions which have broken into them，and the writer would suppose that would be the best to test，as the gold might be collected into pay－ streaks．The conglomerates attain an enormous width at certain points． Placer gold has been found on the Tranquille river，which is believed to have yielded a very considerable sum on Criss creek，where the con－ glomerates are supposed to have been its source（as to this the writer has great doubts），on Jamieson creek，and on the Thompson river below Kiamloops lake．In all these cases it is confined to their pay－ streaks，rarely exceeding 6 inches in thickness，and is not likely to fur－ nish a large ontput in the future． Many othier streams will yield a prospect，but not sufficient to pay interest on the capital expended in purchasing a pan，and man does well if he can make 6s．a day in the season of low water．

When the mines are more devel－ oped，which will be in about ayear＇s time，the writer will endeavour to show the results of the worl in a paper supplementary to this．Work is the ouly thing that will make mines．Accompanying the paper are a tracing of the Geological Sur－ vey Map，an enlargement by the author of the district immediately contingent，to Kamloons lake，and other plans and sections．

The writer＇s best thanks are due to several gentlemen for assistance given him when he was inspecting moperties for the jurpose of this payer，more especially to Mr．Went－ worth F．Wood，assayer，Kamloops， and Mr．A．J．Colquhoun，mining engineer，who has made a special study of the cimabar occurrences．


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