

THE MINING REVIEW.

Vol. 1.

ROSSLAND, B. C., OCTOBER 14, 1896.

No. 5.

Cable address, "Mugwump," Rossland. Use "Liebert's," "Morcing and Neal's," and Bedford-McNeil's Codes.

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Mining Claims for sale near Rossland, Trail and in the whole Columbia basin.

WILL EXAMINE AND REPORT ON MINES.

MINING NOTES.

The average assay of \$230 obtained by the Deer Park people is a fitting reward for their faith in the property and perseverance through doubt and discouragement. Deer Park will be an early dividend payer.

A Toronto correspondent, one, by the way, who is in a position to judge, says: "Though mining business is booming here now we do not only have a foretaste of what is coming next spring. It only requires a few additions to the list of dividend-paying mines to set this town wild, and before May of next year there will be a regular exodus to Trail Creek."

The Waneta and Trail Creek Gold Mining Company has been successfully organized. At a general meeting of shareholders on Thursday these gentlemen were elected provisional directors: C. O. Lalonde, W. C. Archer, A. S. Goodeve, Charles Bates, D. D. Birks, A. H. McTeil, Robert Dixon and J. Dean. With such men at the head of affairs and a valuable property, Waneta and Trail Creek should be a go. Promoters' stock was pooled and sufficient treasury stock was guaranteed to carry on work throughout the winter.

Preliminary development work is being done on scores of claims in the camp and in many cases this will be continued during the winter season.

The Monte Cristo compressor started operations last night. The machine is a model one and runs to perfection. Drills are at work on both levels. The showing on the east end's fine. Ore near the pay limit.

The commencement of development work on the Annie, which is the property of the West Le Roi and Josie company is commendable. Messrs. Warren, Jones and Burke, who hold the contracts are now on the right track. There was no money in the company's treasury and it was generally supposed that the property would be sold. There was an offer of \$125,000 in cash, but this, THE REVIEW has been informed, was refused.

The Southern Belle, at a depth of 20 feet, has two feet of ore which assays \$34.85 in gold and silver.

Rufus H. Pope, M. P., of the Big Three company, has deeded to the company all the Mascot ground. As this claim comprises over 40 acres, the loss of the Eldorado, which the Mascot covered, is more than compensated for.

The owners of the Nickel Plate are putting in two new hoists, one on the main shaft and one on the east shaft and also two Knolles sinking pumps.

The Blackhawk Company, operating on Champion is meeting with some encouragement. At a depth of about 80 feet the ore has changed into a fine quartz mixed with iron. It carries \$22 per ton in gold.

There is one company in Rossland in which not a single share of stock has been sold although the company has been incorporated for months, that is the Southern Cross and Wolverine Consolidated, the owners of which have an obstinate conviction that they have one of the biggest mines in Trail Creek. They are making preparations to take up enough treasury stock among themselves to start work and to keep at work all winter.

Remarkably good ore has been struck in the shaft on the Eric.

There are rumors that a strike has been made on the lower level of the Jumbo. Perhaps they have found the hanging wall but it is more likely that the streak of high grade silicious ore they had above has been struck.

H. L. Martin, superintendent of bridges of the Great Northern Railway, is in the city.

M. D. Ballard, president National Bank of Commerce, Seattle, was in Rossland yesterday. Mr. Ballard is president of the Mugwump Gold Mining Company. He expressed great satisfaction at the fine ore body disclosed in the Mugwump, saying that while he had always felt great confidence in the property, he

could now for the first time say to his friends in Seattle that the Mugwump is a mine.

Work on the contract taken last week by Lof & Co. to enlarge, re-timber and sink the Butte shaft to the hundred-foot level has been started.

The steam hoist on the Mugwump will be in place to-day on the prospect shaft where it is to be used in raising the material broken in the up-raise until the latter reaches the surface, when it will be placed permanently on the sinking shaft. The entire breast of the raise is in excellent very rich in copper. The raise is now ten feet above the bottom and at present rate of progress should reach the surface within the next fortnight, when sinking of the shaft will be pushed vigorously.

THEY DO NOT LIKE IT.

Charles G. Griffith, of Helena, well-known and heavily interested in Kootenay, writes as follows to the Northwest Mining Association about the proposed sampling of ores imported into the United States:

G. B. DENNIS, Esq., City.—Dear Sir: I have not yet seen a copy of the bill for the establishment of sampling works at Bonner's Ferry and Northport, but I am told by Mr. Brown, collector of customs at Fort Benton, that the bill has been passed and signed and now only waits the pleasure of the secretary of treasury to make it operative. I understand also that the decision as to the advisability of the erection of sampling works at these two places is left with the secretary of treasury. It is, therefore, not too late to use the influence of your association in the matter, provided, after considering the subject, it is decided to take any action.

"As I understand it, under the terms of the bill no ore can come into this country from British Columbia except through Northport and Bonner's Ferry, where sampling works are to be erected. The result of this will be that all ores which now go via the Canadian Pacific road to Everett and Tacoma and the eastern smelters will be obliged to come through Northport or Bonner's Ferry. In many cases this requirement will work a great hardship upon the shippers. The mines lying between Three Forks and the Arrow lakes, including the Slocan lake country, which now go via the Naskup railway and thence north to the Canadian Pacific, will have to stand a largely increased freight rate in order to come via the sampling works. The competition between the Canadian Pacific branch from Sandon to Naskup and the Slocan railway, the benefits of which the mine owners now enjoy, will be entirely destroyed. This is a serious injury, but not the only one. It is more than likely that the proposed works will be managed by political appointees who are unfamiliar with the business of sampling and therefore incompetent. The results obtained will be highly unsatisfactory and the delay occasioned by this work in the additional time necessary to secure smelter returns will be a serious inconvenience to many of the shippers.

"Whether the cost of sampling will be paid for by the government or charged up to the shipper I am not able to say. The principal argument that was used by Senator Dubois in the senate to secure the passage of this bill was that the government was being defrauded out of duties on lead. This, from my own experience in smelting, I know is not and cannot be true. Under the present order of things, a duplicate pulp sample is furnished by the smelting companies to the nearest United States assay office, where the assay is made by a government employe and duly collected on his result. CHARLES D. GRIFFITH."

That district which is embraced in the Big Bend of the Columbia north of Revelstoke may yet become a great gold producing section of British Columbia. The district is so far away from a railway at present that its development must be slow until better communication is established, but it had a great history in the old placer days and discoveries of quartz and sulphide ores are being made there now which promise to give it a greater future. Some of the most enterprising mining men in Rossland are already looking to that section with an eye of intelligent appreciation.

REDUCTION PLANT FOR PYRITIC GOLD-BEARING ORES AT GIBBONSVILLE IDAHO.

This is a modern plant now successfully employed in the extraction of gold from its ores, especially the base and refractory ores. In order to lay the foundation for an adequate conception of the factors making up the problems presented for solution in the design and operation of the plant, a brief description of the mines is given.

THE MINES.

The mines are situated at the town of Gibbonsville, Lemhi County, Idaho, six miles west of the summit of the Rocky Mountain range, where the Bitter Root range spurs off, about 35-34 North latitude and 114-6 West longitude (Greenwich), at an altitude of 4,400 feet above the sea level. Gibbonsville is marked on the maps of United States and Idaho. The railroad shipping point is Divide Station, on the Utah & Northern Railroad, 27 miles south of Butte, Montana, 80 miles distant from the mines. From this station a good wagon road, generally speaking, leads to Gibbonsville.

The veins are true fissures, cutting across the highly-tilted strata of the slate formation. They occur in one system and are substantially parallel. Their strike is east and west, dip about 70 to the north, width varying from a few inches in some up to 12 feet in places in others. The ore consists of quartz and quartzified slate, streaked and impregnated with about eight per cent of iron pyrites. The iron pyrites contain all the value, of which over 90 per cent is gold and the remainder silver. The developments were sufficiently extensive to warrant the calculation that a production of 100 tons daily of \$10 ore could be relied upon, costing less than \$3 per ton for mining, development and delivery at the mill.

The mines are operated through cross-cut adit tunnels, which undercut the veins to a depth of 600 feet below their outcrop. Cordwood costs \$2.25 delivered; charcoal, 13½c. per bushel; mining timbers, 2½c. per lineal foot for 8 and 12 inch logs, and lumber costs \$0.50 per thousand. A four-drill air compressor, run by water, furnishes power for the machine drills used in drifting. Wagon transportation of mining and domestic supplies cost one cent per pound, over the prices that the same can be laid down for at Montana common points. Miner's wages are \$3 per day; common labor \$2.50, and carpenters \$4. The reduction plant is 4,800 feet distant from the ore bins at the mouth of the main working tunnel.

From the forgoing, it will be seen that the product to be treated amounted to 100 tons daily, of ore having an average value of \$10 per ton and carrying about eight per cent of copper pyrites. By repeated experiments it had been ascertained that the ore would yield 40 per cent of its value to plate amalgamation when crushed to a pulp flowing through a 30-mesh screen. Viewed from a commercial standpoint it was estimated that the 40 per cent of value recovered by amalgamation would fully meet all the costs of mining and reduction and the fixed charges of operation, and that the eight per cent of profits would have to be made on the 60 per cent of value locked up in the refractory pyrites after the pulp had been subjected to plate amalgamation and relieved of its free gold.

In the spring of 1885 the economic solution of this problem was undertaken by the writer, who was then managing the business of the American Mining and Development Company, the owner of the mines. After a careful consideration of all conditions, a reduction plant, as described in this paper, was designed and constructed, and has, during the past year's operation, proven a success.

THE PLANT.

The plant has ample capacity for the crushing and concentration of 100 tons of crude ore, and the roasting and chlorination of 20 tons of concentrates daily, using in the operation a combination of processes in three departments, as follows.

Section 1. Stamp crushing, with amalgamation of free gold on copper plates, followed by hydraulic classification of the pulp, and subsequent concentration of the sulphurets of Frue vanners.

Section 2. Dead roasting of the sulphurets in a Pearce turret furnace, with a toasting oven annex.

Section 3. Chlorination of the roasted sulphurets in revolving barrels, and precipitation of the metallic gold from the chlorine solution.

Section 1, Stamp Mill. The first department of the plant is the ordinary stamp mill of the California type, containing the modern automatic devices for minimizing labor, with certain modifications especially designed for the crushing, amalgamation and concentrations of pyritic ores. The building enclosing this section is 64x140 feet, built on a side hill, with 95 feet fall between the top of receiving bins and vanner floor. The foundation timbers of the building are set on solid rock, and bolted thereto, as are also the foundations timbers of the supporting frames of the heavy machinery. In operation, the ore delivered from the mine falls into the receiving bins of the mill. From these it passes by gravity, as permitted by the crushman, through the gates, over grizzlies—bar screens with 1½-in. spaces. By this operation it is divided into two sizes, one larger, the other smaller than 1½ in. The ore is further reduced by passing automatically through a Blake crusher, a trommel screen, and a pair of 36x14 Cornish rolls, to a size under 1 in. Thus reduced, the ore is delivered to the storage bins behind the batteries, which have a capacity of 300 tons. From the bins, the ore gravitates to improved Challenge feeders, which feed it automatically, as required by the batteries.

The mortars of the batteries are of the narrow, double-discharge type, having the front and rear screens inclined outward at an angle of 17 degrees. They are thus designed to facilitate the rapid crushing and delivery of the pulp, so as to prevent sliming of the sulphurets in stamping. The screen used is 30 mesh, 29 wire, Tyler steel wire battery cloth. The stamps, 30 in number, weigh 950 pounds each, with a drop of 6 to 7 in., 94 times per minute. On issuing from the battery, the pulp flows over silver-plated copper plates, set on tables with a grade of 1½ inches to the foot. On these the free gold in the pulp is caught. After passing over the plates, the pulp from the 30 stamps flows in launders to three sets of Brown's drometric sizers for classification. In each of these sets, five classifications, ranging from 30-mesh to slimes, are made. Thus classified, the pulp flows to 15 six-foot Frue vanners, divided in three sets of five each, corresponding to the sizers. The vanners of each set are adjusted for the concentration of the special classification of the pulp they are to receive. This arrangement is giving very satisfactory results in the saving effected by the vanners, as the loss in the tailings seldom reaches as high as 7 per cent of the gross value of the ore.

Section 2, Roaster.—The building covering this section is situated directly in front of, and 50 feet distant from the vanner room of the stamp mill. The main building has a round area of 64x64 feet and is 28 feet high to the eaves. Lean-tos for the annex and cooling room and floor cover an area of 64x30 feet and 64x24 feet. As already stated, the furnace is the Pearce turret furnace, with roasting oven annex. In operation, the concentrates are dumped into the elevator boot below the floor, from which they are raised to the storage bin near the roof by a belt and bucket elevator. From this bin the concentrates are delivered by gravity through an iron chute to an automatic feed hopper which is adjusted to feed the furnaces as desired.

In the furnace, while being roasted, the concentrates are mechanically stirred and carried round by rabble arms to the discharge. They are now charged into the roasting oven, where they are subjected to a reducing heat until the final traces of sulphates remaining in them are decomposed. They are then discharged, dead roasted, wet down, and delivered to the cooling floor.

Section 3, Chlorination.—The building enclosing this section has a ground area of 146x34 feet and par-

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ROSSLAND, B. C.

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Our work speaks for itself.

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SPOKANE FALLS & NORTHERN RAILWAY.

Nelson & Fort Sheppard Railway.

The Only Route to Trail Creek and the Mineral District of the Colville reservation, Nelson, Kaslo, Kootenay Lake and Slocan Points.

DAILY EXCEPT SUNDAY BETWEEN SPOKANE AND NELSON.

Leave Going North, 1:10 p.m. Arrive Going South, 12:40 p.m.

Passengers for Trail creek mines connect at Northport with stages and steamer daily.

Close connection at Nelson with steamers for Kaslo and all Kootenay lake points.

Passengers for Kettle river and Boundary creek connect at Marcus with stage daily.

COLUMBIA & WESTERN RAILWAY

Time Table in Effect July 1, 1896.

No. 2, PASSENGER, Daily except Sunday—	Leaves Rossland 7:00 a. m.	Arrives at Trail 7:45 a. m.
No. 6, PASSENGER, Sunday only—	Leaves Rossland 8:30 a. m.	Arrives at Trail 9:15 a. m.
No. 4, PASSENGER, Daily—	Leaves Rossland 3:00 p. m.	Arrives at Trail 4:00 p. m.
No. 3, PASSENGER, Daily except Sunday—	Leaves Trail 10:30 a. m.	Arrives at Rossland 11:15 a. m.
No. 1, PASSENGER, Daily—	Leaves Trail 5:00 p. m.	Arrives at Rossland 5:45 p. m.
No. 5, PASSENGER, Sunday only—	Leaves Trail 11:00 a. m.	Arrives at Rossland 11:45 a. m.

Connection made at Trail with ALL STEAMERS, both up and down the Columbia river.

For freight rates and further particulars, write to F. P. GUTELIUS, Gen'l Sup't. Rossland, B. C.

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from Rossland, and adjoining the Summit mine.**STOCK:**The first block of stock is now offered at the low price
of 1½¢ The second block of stock will go on shortly at 5¢.

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MINING BROKERS,

IN OFFICE OF

California and Big Three Gold Mining Company,
Burns' Block, ROSSLAND, B. C.**NOW OFFER 50,000 SHARES OF THE TREASURY
STOCK OF COLONNA GOLD MINING
COMPANY AT 12½ CENTS.**

We strongly recommend this purchase to investors. The

Colonna Gold Mining Co.is capitalized for 1,000,000 shares, par value, \$1.00, 200,000 shares of which is
Treasury stock. Officers of Company are: President, Chas. Schmidt, Butte,
Mont.; Vice-President, A. Klockmann, Rossland, B.C.; Treas., Louis Lienemann,
Butte, Mont.; Sec'y, Harold Kingsmill, Rossland, B.C.**Situation**—Buckeye No. 2 on west slope Monte Cristo Mt.; size 22 acres,
Bounded by the well known properties Monte Cristo, Evening Star, Silverine and
Eddie J. claims.**Title**—Absolutely perfect, company possessing crown grant and has no in-
debtedness, bonded or otherwise.**Stock Pooled**—Individual stock pooled for 3 months from Oct. 1, 1896.**Veins**—Three separate veins on Buckeye, 6, 18 and 25 ft. wide, running full
length of claim. The Colonna or South vein has been traced 1000 feet, an ex-
tension of the Evening Star vein, by whom it is being developed.**Ore**—Is auriferous copper in sulphide form. It is generally a massive
chalcopryite in quartz and calcspar gangue.**Assays** from this ore run as high as \$40 gold, 20 per cent. copper, and \$85
gold. These assays are not picked.*The Buckeye is first mining property in camp placed on market with body of
pay ore actually in sight.* Twenty tons already on dump, commanding a premium
at Trail Smelter on account of its copper.**Development**—Shaft 25 ft. deep, showing solid copper ore at bottom. A
tunnel along hanging wall 47 feet, headed for shaft tapping ore chute at depth
125 feet, opening vast stoping area. Open cut 250 ft. east discloses 4 feet \$60
gold and copper ore. Arrangements have been made with Monte Cristo Co. to
use two air drills, Monte Cristo Co. furnishing the power.We strongly recommend this purchase and request investors to visit the
property to verify facts as stated.

allels the mill on the side hill, but is separated from it by a space of 12 feet. Owing to this position no elevators are required except the drum hoist used in hoisting the roasted concentrates from the cooling floor of the roaster to the storage bins in this building. From the storage bins the roasted concentrates feed through chutes to the charging hoppers, over the chlorination barrels, where measured charges of 1½ tons each, this being the capacity of the barrels, are made. When required, these charges are drawn from the feed-hoppers into the chlorination barrels, where the chemicals necessary to generate the chlorine gas and sufficient to make an easy flowing pulp are added. The barrels are then closed and set to revolve 15 times per minute for three hours, the time in which the full effect of the chlorine gas is obtained. The chlorination barrels, of which there are two, are charged alternately, so as to best occupy the time of the attendants. When their charge is chlorinated they are stopped and their charge drawn off into filter barrels, there being one of the latter under each of the former. When empty, the barrels are hosed out, recharged with pulp and chemicals and revolved as before.

The chlorinated pulp and solution are now in the filter barrels, which are closed and compressed air applied. This application quickly forces the gold solution from the pulp through the filter heads of the barrels from whence it is conducted through lead pipes to the solution storage tanks.

After the filtration of the solution is thus affected, the pulp is washed by introducing clean water, which is filtered through the pulp and conducted to the storage tanks as before, until a simple chemical test shows such wash water to contain no gold. The barrel is then revolved and the pulp discharged into the waste sluice underneath, from whence it is flushed to the tailings dump by water. The filtered solution, including the wash water in the storage tanks is drawn off and distributed to the precipitating tanks, where the precipitation of the gold is affected by the addition of ferrous sulphate. The liquor, being now worthless, is run to waste, and the tanks refilled with fresh solution from the storage tanks, and the precipitation of the gold contained effected as before.

The gold precipitate is allowed to remain on the bottom of the tanks and receive additional precipitations, in a similar manner to that described, until the regular clean-up day, when the accumulation is carefully drawn off into buckets, poured into the clean-up tank, washed, filtered, dried, melted and cast into bars. The gold bars thus produced average about 995 fine—almost chemically pure.

The entire plant is run by water and lighted by electricity. The power is generated by two Pelton wheels under an effective head of 82 feet, one wheel running the vanners and dynamo, and the other all the rest of the machinery.

COMMERCIAL RESULTS.

As will be seen from the foregoing description, the gold is recovered by two processes; 1, amalgamation of free gold on copper plates; 2, the chlorination of the roasted concentrates. A year's operation of the mill has demonstrated that a fraction of over 40 per cent of the value in the crude ore has been saved by amalgamation and about 53 per cent of the gross value has been saved in concentrates, 7 per cent being lost in the tailings. In the chlorination of these concentrates, when roasted, a saving of 95 per cent is effected. Allowing 1 per cent for mechanical losses, a recovery of 94 per cent of the values in the concentrates is made; 94 per cent of the 53 per cent total value of the concentrates would be 49.8 per cent of the value of the crude ore. Hence of the total in the crude ore we have a saving of 89.8 per cent by both processes. That is, a total recovery of \$8.98 from each ton of \$10 ore, or \$898.00 from each day's run of 100 tons. From this amount the expenses of mining and the reduction of the ores are of course to be deducted, when the remainder will be profit.

The cost of mining and delivering the ore at the mill is \$3 per ton. The total daily cost of roasting and chlorinating 20 tons of raw concentrates is \$81.95 or \$4.09 per ton, with a saving of 94 per cent of the assay value, \$25.61 per ton over the realizable value of the concentrates if shipped to the nearest smelter.

As these sections have the capacity to treat about double the amount of concentrates resulting from the milling of 100 tons of crude ore, by reason of which

they are in operation only about half the time, unless treating custom lots of concentrates, the average daily costs of these sections, including repairs, will be one-half of that given above, which was for full capacity and continuous operation. Therefore an equalized statement of the daily cost would be: Mill, \$41; roaster, \$20; chlorination, \$20.97; making the daily average cost amount to \$81.97 cents, or about 82c. per ton of crude ore.

From the foregoing the following statement is deduced as the result of one day's operation, the unit of calculation:

100 tons at \$10 per ton.....	\$1,000
Cost mining and delivery of 100 tons at mill.....	\$300
All losses of concentration and chlorination.....	102
All treatment costs.....	52
Net profit.....	516
	\$1,000

—Bernard McDonald, in The Engineering and Mining Journal.

A GENTLE REMINDER.

We would remind our readers—those, at least, who are not subscribers that THE MINING REVIEW will be sent to any address in Canada or the United States for \$2.00 a year or \$1.25 for six months. Subscriptions are payable in advance, and the paper will be sent only to those who remit cash or money orders with their subscription. Though only a few weeks in existence, THE MINING REVIEW has succeeded in making its presence felt and already occupies a not unimportant position among the newspapers of the province. It will be the endeavor of the publishers to make it a necessity to all who wish to keep in touch with Trail Creek affairs, and the mining news—all of it—will be given, fully and fairly every week.

Toronto capital and Toronto men are now very much in evidence in this camp. There are over a score of the Queen City's business men here at the present moment, and no small share of the future profits of the camp will fall to the lot of the Torontonians who have made and are making judicious and timely investments. It must also be said that most of the stocks sold in Toronto are proving good, and not one can be named that has not a fair chance to become a payer.

THE MINING REVIEW

A weekly newspaper devoted to the mining interests of Trail Creek District.

Published every Wednesday at the office of The Mining Review, Columbia Avenue, Rossland, B. C.

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All business communications should be addressed to A. R. MACDONALD & Co., Proprietors, The Mining Review, Rossland, B. C.

VOL. I. OCTOBER 14, 1896. NO. 5.

EDITORIAL NOTES.

THERE has been a remarkable increase in the consumption of copper in Europe this year. The quantity consumed during the first three quarters of 1896 was greater by 27,800 long tons than in 1895. The increased use of copper in the manufacture of war material and in electrical work accounts for the heavy consumption.

A MOST extraordinary article appears in the Nelson Miner abusing the government for appointing Dr. Bowes as health officer in Rossland, because, the article alleges, he is not a Canadian. Dr. Bowes was born in Kingston, Ontario, brought up in Ottawa and graduated as a doctor at McGill college in Montreal. Without making any odious comparisons he is probably as good a Canadian as the editor of the Miner.

THE appearance of Spokane during the mining convention held there last week is the best evidence of the prosperity which West Kootenay is enjoying, not only in Rossland but in Nelson and the Slocan. Representative men from all parts of the country were gathered there and on all sides appearances showed that West Kootenay is beginning to return, with interest, the debt she owes to the enterprise of the Washington neighbors.

THE prospect of a conflagration that will wipe Rossland out of existence is hardly a pleasant one for the men who have invested their money in buildings and real estate. Yet such a catastrophe seems inevitable under the present conditions. Let the business men of the camp and all who have interests in Rossland give their aid to the efforts now being put forth to provide adequate equipment for the fire brigade. With the ridiculously insufficient apparatus now in use a blaze requires only a fair start to transform a bustling town into a big and expensive bonfire.

THE MINING REVIEW started four weeks ago with enough reading matter for an eight-page blanket sheet, no advertisements to speak of, and three paid up subscribers. It now circulates an edition of one thousand and the relations between reading matter and advertising constitute a crisis in the history of the newspaper. This crisis fortunately happened during the Spokane Fruit Fair, which the editor was enabled to enjoy, without worrying about the number of high grade editorials he had to produce for next issue, as there was no room for them. If the crisis becomes more acute, as it will, THE REVIEW will be enlarged.

THE United States government has always been credited with the desire to protect the industries of its own country, but it has never been accused of carrying the protective principle so far as to go out of its way to protect the industries of other countries at the expense of its own. Yet this will be the effect of certain customs regulations affecting the importation of lead ores. At all points where lead ores are imported sampling works are to be erected and the ore is to be sampled at the point where it crosses the line. This will prevent the export of Canadian lead ores from Kootenay at any points except Bonner's Ferry and Northport. It will absolutely cut off the market for its ore from a large part of the Slocan country and the trouble and expense attached to the process will have all the effect of an export duty, in

the case of that part of the district which the regulations do not completely isolate. Thus it is that the United States government gives a bonus on the construction of silver lead smelters on Canadian territory, and this bonus will probably be taken advantage of by the large smelting companies. Within three months after these regulations go into effect the construction of a smelter, probably at some point on Arrow Lakes will be started and what causes an immediate hardship to the exporters of ore will in the long run assist in the development of our infant industry of smelting. When the United States government comes to our assistance in developing our internal trade at the expense of its own we are not charitable enough to hope that any gleam of common sense will prevent it from accomplishing its purpose.

ROSSLAND is rapidly assuming an unique position in the mining business in British Columbia. There was a time, not so long ago either, when the headquarters of the mining business of Trail Creek were in Spokane. It is not so now, but of course much mining business is still transacted there. It is probably the most important prospective mining center in the United States, and the stake in Trail Creek still held there is heavy. But the power of capital has been turned on Trail Creek from other points and it no longer passes through the Spokane nozzle. The effect of this has been seen in the prodigious growth of Rossland during the last two months. Another feature of the situation is becoming manifest. Rossland has not only become the business center for Trail Creek mines but it shows signs of becoming the medium through which capital is reaching out to other camps. This is the question which the future must answer. Will Rossland be simply a dinner pail town supported by the pay roll of the mines in its immediate neighborhood or will it be a great commercial center, the business headquarters of British Columbia's greatest industry? Much will depend on the spirit and energy of Rossland's citizens. If Rossland is not incorporated this winter we lose a point in the game. If the land dispute round the city is not settled we lose another point. Some things are in our favor. Rossland early rose to the dignity of her future. The order, decency and comforts of a town were here when Eastern visitors were bringing in canned goods and forks in their grips. But much still remains to be done and the future of Rossland rests in the hands of those who will benefit most by its growth and prosperity, the citizens.

JUST as it is not the enormous quantity of wheat consumed in the United States, but the small surplus which seeks a market outside which determines the price of wheat. So it is not the value set upon a mining stock by the large holders, but the small blocks which are seeking realization which determines the price of that mining stock. A few small blocks of stock placed on the market to be sold at any price may knock down the quotation of that stock many points. This is not sufficiently understood by the promoters of many companies in Rossland who from time to time advance the price of the treasury stock. Whether the higher price will be maintained or not will depend, not on the appearance of the mine nor on its management, but simply on what a few thousand shares on which the owners wish to realize a profit will bring for cash. There are two stocks in Rossland, the Josie and Monte Cristo, which have been specially subject to variations from this cause. Shareholders may congratulate themselves that the properties are all right; but there has been some might poor stock-broking somewhere in connection with them. This article is from a business, not an ethical point of view, and some people will immediately say here is complete cynicism and a frank avowal that business and morality are but distantly akin. It does not follow. Does a man value his property at the lowest price he will take for it, or at the highest price someone else will give for it? And is the quotation of a stock to be held at the lowest prices that the big holders will take or at the highest price buyers will give to those who are forced to sell? If the stock of the Le Roi was sold by auction for cash without notice at a time when the wires were down and the banks were closed, it would not bring one cent a share. The forced realization of any form of fixed capital for money is never a true test of its intrinsic value. And if 500 shares of a company must be sold and cannot find a purchaser

that has exactly the same effect on the price of that stock as if five hundred thousand shares were in the same position. A stock whose market price is determined by a few small blocks of the shares on the market for sale may really be worth more than those shares will fetch, but none will buy them at a higher price.

TO DEVELOP THE EMPRESS.

The Empress has been purchased by a Victoria syndicate, whose members are Lieutenant-Governor Dewdney, J. T. Bethune, Ex-alderman McLellan, Ex-alderman Munn, Captain Wise and others. The first thing done by the purchasers was to have an assay on some of the ore and they were agreeably surprised to get a return of \$15 in gold, silver and copper. The claim was not represented as carrying any very good values on the surface. Governor Dewdney and Mr. Bethune visited the property on Monday and were more than delighted with the showing on it. They were accompanied by Mr. Dick, a manufacturer in Glasgow, and who is one of the heaviest stockholders in the Broken Hill mine in Australia.

The Empress is the eastern extension of the Southern Cross and Wolverine Consolidated and the ore uncovered there is undoubtedly one of the seams which traverse the Wolverine. There is no reason why the Empress should not, with development, show as colossal a body of mineral as its western neighbor.

A. W. ROSS & CO.

MINING BROKERS,

AND COMPANY PROMOTERS.

4 KING ST. E. TORONTO.

Correspondence and quotations on all standard stocks solicited.

WALTER C. ARCHER,

MINING AGENT,

NOTARY PUBLIC AND CONVEYANCER.

Full list of Mining Stocks. Quotations given by letter or wire.

Telegraphic address: Archer, Rossland.

P. O. Box 240. ROSSLAND, B. C.

WE ARE PREPARED TO PURCHASE any of the Standard Stocks at Market Quotations, paying cash for same. Wire offerings.

SAWYER, MURPHEY & CO.,

MINING BROKERS.

Canada Life Building. TORONTO, ONT.

OFFICES:
ROSSLAND, B. C., SPOKANE, WASH., TORONTO, ONT.

Contractors for the sale of Treasury Stocks of Mining Corporations in the Trail Creek District.

CERTIFICATE OF IMPROVEMENTS.

CAMBRIDGE MINERAL CLAIM.

Situate in the Trail Creek Mining division of West Kootenay district. Where located: About 4 miles south-east of the town of Rossland, on Violin Creek.

TAKE notice that I, N. F. Townsend, as agent for H. S. Wallace, No. 73,495; John Elliott, No. 75,011, and Ernest Miller, No. 72,357, intend, sixty days from the date hereof, to apply to the Mining Recorder for a certificate of improvements, for the purpose of obtaining a Crown grant of the above claim.

And, further take notice, that action under section 37 must be commenced before the issuance of such certificate of improvements.

Dated this 10th day of October, 1896.

10-14

N. F. TOWNSEND.

MARKET REPORT.

No very startling surprises have been given the market this week, but the volume of business continues to increase at better prices. Probably the most active stocks have been the Deer Park, Red Mountain, Evening Star and Mugwump. The REVIEW prophesied that when Deer Park started to move it would go straight to a dollar without a fall. It is on the road now. Two-hundred and thirty dollar ore, from the lowest grade prospect on the surface in Trail Creek justifies the advance. Great Western has been a well-handled stock and there is an active demand with few sellers on the present appearance of the property. Mugwump is selling freely at the advanced quotation. A big block of St. Elmo is reported sold in Toronto. Development work will be started on the Heather Bell under the superintendence of J. Moynahan. The treasury stock will be put on the market at 10c within the next seven days, as soon as the final payment is made on the property. The public cannot do better than buy this stock at bed rock. Developments are likely to take place on the Colonna shortly, which will materially enhance the value of the stock. A big consolidation is on the cards, embracing some south belt property, which will treble the value of a stock recently put on the market. The Iron Colt will be put on the market very shortly. It is reported that the management of the Southern Cross and Wolverine Con. is about to place a block of treasury stock on the market. It will be eagerly snapped up.

COMPANIES.	CAPITALIZATION.	PAR VALUE.	MARKET PRICE.
Alberta.....	\$1,000,000	\$ 1 00	t 10
Butte Gold Copper.....	1,000,000	1 00	t 07½
Caledonia Con.....	500,000	1 00	t 7½
California.....	2,500,000	1 00	15
Cambridge.....	1,000,000	1 00	t 08
C & C.....	500,000	1 00	*
Centre Star.....	500,000	1 00	*
Commander.....	500,000	1 00	t 25
Crown Point.....	1,000,000	1 00	50
Colonna.....	1,000,000	1 00	t 12½
Deer Park.....	1,000,000	1 00	20
Enterprise.....	1,000,000	1 00	*
Eureka.....	500,000	1 00	t 05
Evening Star.....	1,000,000	1 00	30
Georgia.....	1,000,000	1 00	35
Good Hope.....	500,000	1 00	06½
Great Western.....	1,000,000	1 00	22
High Ore.....	500,000	1 00	07½
Homestake.....	1,000,000	1 00	*
Idaho.....	500,000	1 00	*
Iron Horse.....	1,000,000	1 00	*
Iron Mask.....	500,000	1 00	75
Ivanhoe.....	1,000,000	1 00	t 10
Josie.....	700,000	1 00	60
Jumbo.....	500,000	1 00	75
Le Roi.....	2,500,000	5 00	7 00*
Lily May.....	1,000,000	1 00	15
Mayflower.....	1,000,000	1 00	18
Monte Cristo.....	1,000,000	1 00	20
Mugwump.....	1,000,000	1 00	t 20
Monita.....	750,000	1 00	t 25
Northern Belle.....	1,000,000	1 00	t 10
O. K.....	1,000,000	1 00	32½
Phoenix.....	500,000	1 00	t 12½
Poorman.....	500,000	1 00	11
Red Mountain View.....	1,000,000	1 00	20
Rossland, Red Mt.....	1,000,000	1 00	20
St. Elmo.....	1,000,000	1 00	15
Silverine.....	500,000	1 00	12½
Southern Cross & W Con.....	500,000	1 00	20
St. Paul.....	1,000,000	1 00	t 10
Trail Mining Co.....	250,000	1 00	*
Union.....	600,000	1 00	*
Virginia.....	500,000	1 00	28
War Eagle.....	500,000	1 00	t 75
West Le Roi.....	500,000	1 00	* 15
White Bear.....	500,000	1 00	t*
Young British America.....	1,000,000	1 00	t*
BOUNDARY.			
Old Ironsides.....	1,000,000	1 00	15
CAMP M'KINNEY.			
Cariboo.....	800,000	1 00	36
NELSON.			
Hall Mines.....	£300,000	£1	8 15
SLOCAN.			
Alamo.....	500,000	\$ 1 00	*
Cumberland.....	500,000	10 00	*
Grey Eagle.....	750,000	1 00	*
Kootenay-Columbia.....	40,000	100 00	* 30
Minnesota.....	1,000,000	1 00	*
Noble Five Con.....	1,200,000	1 00	50
Rambler Con.....	1,000,000	1 00	*
Slocan Star.....	500,000	50	2 15
Sunshine.....	500,000	10 00	*
Wonderful.....	1,000,000	1 00	15

Dividend paying properties appear in italics.
An asterisk denotes that there is no stock on the market. t denotes treasury stock.

CAMBRIDGE

Gold Mining Company

LIMITED.

Incorporated under the laws of the Province of British Columbia.

CAPITAL ONE MILLION DOLLARS.

Divided into One Million Shares of a par value of One Dollar each. All shares fully paid and non-assessable.

TRUSTEES:

H. S. WALLACE, ESQ., Rossland, B. C.
R. J. BEALY, ESQ., of the R. J. Bealey Co., Ltd., Rossland, B. C.
D. B. BOGLE, ESQ., Managing Director of the Kootenay Goldfields Syndicate, Ltd., London, Rossland, B. C.

BROKERS:

MESSRS. ROLT & GROGAN, Rossland, B. C.

SOLICITOR:

ERNEST MILLER, ESQ., Barrister and Solicitor, Rossland, B. C.

BANKERS:

THE BANK OF MONTREAL, Rossland, B. C.

OFFICES: HART BLOCK, ROSSLAND, B.C.

The prospectus of the Cambridge Gold Mining Company has been withdrawn. It offered the Public Treasury Stock at 5 Cents and the Company has no more to sell at that price.

The present quotation is 8 Cents, at which orders will be filled by the Company's brokers.

Delacola Gold Mining Co.

LIMITED LIABILITY

Incorporated under the Laws of the Province of British Columbia, Companies Act 1890, and amending Acts.

CAPITAL STOCK, 1,000,000 Shares; TREASURY STOCK, 300,000 Shares
PAR VALUE \$1.00 EACH.

HEAD OFFICE AND MINE, ROSSLAND, BRITISH COLUMBIA.

OFFICERS President, E. W. Johnson, Rossland, Vice-President, Jno. Donahoe, Rossland, Treas., Ross Thompson, Rossland, Sec., Harold Kingsmill, Rossland

DIRECTORS E. W. Johnston, John Donahoe, Geo. Hering, Ross Thompson, Harold Kingsmill, G. W. Myers.

Bankers Bank of British North America, Rossland, B. C.

Solicitor - J. S. Clute, Jr., Rossland, B. C.

THE DELACOLA.

The Delacola mineral claim is situated one and one-half miles due north of the town of Rossland, on the north slope of the famous Monte Cristo mountain, and adjoins the well known Eric. It is a location 1,500 feet square and contains 37 acres. The company, which is composed entirely of Rossland men, has been incorporated under the laws of the Province of British Columbia. The claim has been surveyed and a crown grant applied for. There is no flaw in the title and the certificate of improvements will be issued in due course. The company has no indebtedness.

Timber and Water Supply A luxuriant growth of timber, consisting of fir, pine, tamarack and cedar is standing on the claim and is sufficient to supply wood for fuel and timber for mining and building purposes for some time to come.

There is a never-failing supply of water in the shape of a creek at the bottom of the gulch.

Transportation Facilities. A first-class wagon road runs within a half a mile of the workings on the claim, while the preliminary survey lines of the north spur of the Red Mountain Railway, now in course of construction between Northport and Rossland, pass through one end of the claim.

Vein and Ore. The Delacola has a well-defined east and west vein which passes through the center of the claim. This vein has been traced for a distance of 600 feet, and several open cuts have demonstrated beyond question the certainty and regularity of the ledge. The ledge has an average width of four feet. The ore streak is eighteen inches wide and is very well defined. The ore is a chalcopryite and pyrrhotite in a good quartz gangue. Assays as high as \$880 in gold have been obtained from this ore.

Development Work. In addition to the numerous open cuts across the vein the company has started out and are now busily engaged in sinking a shaft on a very favorable outcrop. To continue this work and sink the shaft to a depth of hundred feet before cross-cutting and drifting are commenced, the directors have decided to place a block of 50,000 shares of the treasury stock on the market at the extremely low price of 4 1/2 cents per share.

For further particulars or any other information address

HAROLD KINGSMILL, Sec'y Delacola Gold Mining Co., ROSSLAND, B. C.

The Iron Colt...

50,000 Shares of the Treasury Stock of the Iron Colt Gold Mining Company will be placed on the market next week at the price of

15 c. per Share

The Iron Colt is the first west extension of the Great Kootenay and Columbia lead and pay ore has already been found upon it.

Moynahan & Campbell,

ROSSLAND, B. C.

COMPETITIVE DESIGNS FOR MINING PLANTS.

When it is determined to install a hoisting and pumping plant, a mine tramway or cableway, a mill, a smelter, or additions to these or any similar plant connected with the mining business, says an exchange, the first thing for the owners to do is to find out exactly what they want, and the next, to decide who is to supply it. Whether the thing in mind is an elaborate half million-dollar establishment or a donkey hoist, the same questions come up, and often the man who is looking for the right kind of an outfit to sink 300 feet with, is as anxious about it as the projector of something ten times bigger.

The subject is a very wide one, and all that can be said here is to touch upon a few of the prominent points, in the hope that the mention of them may lead to their serious consideration in more detail both by miners and machine-shop men. It is certainly an important matter.

As to competitive designs, this branch of the subject may be disposed of briefly. The cases must be very few where the competitive plan would be at all practicable; far less, indeed than in bridge building or anything strictly of the civil engineering order, and of course immensely less than in architecture. In this latter art, by the way, the practise of leaving the selection of design to the result of prize competitions is being much discredited at present.

When a mining man wishes to get a plant to accomplish a certain result he generally has a pretty fair idea of what he wants. He may even go directly to the foundry and machine-shop men and get their rates on certain pieces of standard machinery already well known to him, and then figure on freights and costs of setting up and housing. Or he may look a little farther and compare machines or sets of machinery of the same general class, but of different make, taking into consideration the difference in price. This is ordinarily sufficient, and covers most of the simple cases. If the mining man or the company already has a superintendent who is something of a mechanical and civil engineer, as many are, the matter will be put into his hands for decision, subject only to the money control. The move for a new

plant usually originates with the superintendent. But when the problem is more difficult, either from complexity, newness or size, the usual action is to call in a consulting mechanical engineer who makes mining machinery his specialty. Such a man is picked out because of his reputation, or because of some successful job he has just handled which is of the same kind and is known to the mine people, or more often because of personal acquaintance added to professional reputation. When the problem is of sufficient importance to have a consulting engineer at all, the mining man or company would hardly like to trust to the design and advice of some clever prize winner in a competition in which, perhaps, nice drawings would have undue weight, just as they do in architectural competitions.

It is imaginable that a case might arise in which the conditions were so intricate and advantages and disadvantages of different plants and processes so evenly balanced, with the money interest involved so great, that there would be room for more than one set of brains to work on it. We have in mind the case of a great mine where the question of the best plant and method for treating a peculiar and difficult ore was laid not only before many successive metallurgists and engineers, but also before several of these men consulting together. It is just possible that in another such case a high reward for the best idea might stimulate the ingenuity of the experts. There may also be some problems in the civil engineering line, in connection with mining, that might possibly be settled in this way; but, as we before observed, they must be very few indeed.

Now a great deal of trouble is taken off the minds of the mining men by the custom which all the great machine shops in the mine supply trade have adopted of employing expert engineers who understand mining requirements, men to superintend the shipment and delivery of machinery, others to set boilers, build stacks and reverberatories, put up buildings, set up machinery, and, in fact, take charge of the whole installation. For the future standing of the supplying establishment this work is usually well or fairly well done, and often a good deal better than the local talent could do it. The advice of the makers' engineers as to the selection of plant may not be disinterested, but it is at least intelligent and comparable with other advice. But the big machine shops, in their own interests, are very careful of their reputations. Shops which do not do a general mine supply business, but only manufacture one or a few specialties, do not make a practice of setting up their machines, but will always give instructions and can supply needed accessories.

A NEW YORK OPINION.

It is always interesting to read the opinions of others on matters with which we are familiar. The following extract from the editorial page of the Mining and Engineering Journal of New York, may not indicate that the Journal would damn us with faint praise, but it certainly shows that the paper is not inclined to wax enthusiastic over anything on this side of the line. Thus speaks the Journal:

"Our regular news columns have for some time past borne witness to the mining activity at present prevailing in British Columbia. The older mines in the established districts are generally doing well; there is a rush of prospectors everywhere; new claims are constantly being located and mines opened. Moreover, the country is attracting much attention abroad and new capital is going to it in considerable amount from this country, from the older provinces of Canada and from Great Britain. For all this there seems to be a solid basis; undoubtedly the mineral wealth of the country is great, though probably its resources are quite equaled by those on this side of the international boundary line in Idaho, Washington and Montana, and again to the south of us in Mexico. While we are pleased to see the prosperity of our neighbors, we find that, as in all similar cases, there is a warning to be given. Apart from the tendency to over-capitalize companies and to ask exorbitant prices for properties really having merit, there is no doubt that in many cases prospects of very doubtful value are being offered as mines. The always active promoter is taking advantage of the attention which British Columbia is attracting, and will do great damage to the real interests of the country if he is allowed to go on, and will cause the loss of many investments. No prospectus statements should be accepted by the investor, and no property should be bought except on careful investigation by reliable experts. This is common sense everywhere, but it is especially to be applied to a "booming" district. It is much wiser to keep out of such districts than to invest at unsafe prices or to buy wild-cats, not a few of which makes their homes in British Columbia."

The Idler Mining Company

REGISTERED.

INCORPORATED UNDER THE LAWS OF THE STATE OF WASHINGTON.

CAPITAL STOCK:

1,000,000 Shares, - - - - Par Value \$1 Each

TREASURY STOCK:

300,000 Shares, - - - - Par Value \$1 Each

ALL STOCK FULLY PAID AND NON-ASSESSABLE.

Head Office, Spokane, Wash. ————— Mine at Three Forks, B. C.

OFFICERS.

PRESIDENT, - - HON. GEORGE B. DENNIS. President of the Northwest Mining Association.
 SECRETARY, - - GEN. A. P. CURRY, First Vice-President of the Northwest Mining Association.
 TREASURER, - - J. C. MILLER.
 SUPERINTENDENT, - - JOHN BOUGH, an old resident of Butte, and formerly a partner of the noted Con Sullivan, discoverer of the Bunker Hill and Sullivan mines.

The management of this company is a guarantee in itself of the stability of the enterprise:

THE IDLER MINE.

TITLE.—The title to the Idler is perfect and is vested in the Idler Mining Company of British Columbia and Washington.

LOCATION.—The Idler is a full claim, 1,600 by 1,500, and contains something over 50 acres of land, is situated in the famous Slocan camp, about three-quarters of a mile from the railway running between Naskup and Sandon, and about one and one-half miles from the town of Three Forks; is right in the vicinity of the celebrated "Slocan Star," Alamo, Idaho, Wonderful and other dividend-paying mines.

CHARACTER OF THE ORE.—Is silver-lead and of exceptional richness. A fair average of nine samples assayed gives a general average of 954 ounces in silver and about 40 per cent. in lead; also from 5 to 8 per cent. of copper. Picked samples of this ore run as high as 2,000 ounces in silver. In each of the two tunnels driven the ledge runs from 20 to 24 inches in width; the galena ore in this body is from four to six inches wide and is very rich, the carbonates, of which there are between six and eight inches, run something over 200 ounces in silver.

DEVELOPMENT.—The deepest workings in this ground so far are about 12 feet; a tunnel is now being run to tap the ledge at about 100 feet in depth, and it is calculated that inside of 30 feet more the main ledge will be encountered, not only regular, but considerably wider. (All the mines in that district show a greater richness as depth is obtained.) They are now in over 100 feet on the tunnel. The property is very easily worked, and with transportation so near at hand the ore should average from \$500 to \$1,000 per ton.

A night and day shift are now working in the mine, and it is expected that the vein will be reached in the very near future, when, if the ore still retains its present richness, there will be sufficient value in sight to warrant the stock selling for \$1.00 per share, as was witnessed by several of the mines under circumstances almost identical; (it would be altogether unprecedented if the ore did not show up a greater richness when the vein is reached.)

Mr. Bough, superintendent of mine, who is known as a thoroughly practical miner, pronounces the "Idler" as one of the very best prospects in the famous Slocan mining district.

TREASURY SHARES.—Three hundred thousand shares of this stock are set aside for the purpose of buying machinery and other development work; the other 700,000 shares are pooled and cannot be sold at any figure, hence it will be impossible for the stock to be cheaper than now.

We advise our clients to invest, if only a small sum this time, in the "Idler," before the limited amount of treasury stock offered at 7½ cents per share is exhausted.

C. W. RICHIE & Co., SPOKANE, WASH.

Agents for the sale of Treasury Shares.

We did not Intend to Advertise Mugwump

any more because the 2 1-2 feet of solid ore disclosed in the Mugwump advertises the property better than we can. However, having contracted for this space in which to broach another proposition not yet quite ready for the prints. we take advantage of the opportunity to say that

“Mugwump”

Fully Paid and Non-Assessable Shares. Par Value, \$1 Each, at

Twenty Cents Per Share

are a first-class investment; under-written, as it were, by a magnificent ore body. exploration of which is being pushed day and night. There are no apologies made for Mugwump and people who invest in Mugwump shares get action on their money.



Mugwump is on sale by

THE WALTERS CO.

Lemon Blk.

Rosland, B. C.

H. O'HARA & CO., TORONTO M. P. HATCH & CO., BUFFALO, N. Y.