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The Mining Record.

VOL. II.

JANUARY, 1896.

No. 1.

BRITISH COLUMBIA MINING RECORD.

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VOL. 2.

JANUARY, 1896.

No. 1

Editorial Notes.

With this issue the British Columbia MINING RECORD commences a new volume, and, at the same time, the subscription price is reduced from Two Dollars to One Dollar per annum.

Those subscribers who have paid Two Dollars will have their terms of subscription extended to cover the amount.

The Publishers, after careful consideration, resolved upon taking this step in order to extend the circulation of the RECORD outside, as well as inside, the Province. It is their aim to make it the best medium published for the purpose of making known the mining resources of British Columbia. It will not only continue to be illustrated with mining scenes, but articles from the best writers in the Province are being constantly secured and will appear from time to time.

We are glad to note that the Christmas number of the RECORD was everywhere received with favor. A very

large number went to Great Britain, Europe, and the United States, where they cannot fail to attract attention to our mining industries, and the wealth of resources possessed by this Province, only awaiting capital to develop them into rich mining properties.

In some of the mining districts the winter season brings active operations to a stand still, but in others the snow is an advantage as it makes the hauling of the ores from the mines much easier, but the general opinion among men who have given the matter consideration is that with the coming of spring the season of 1896 will be a wonderfully active one in mining affairs.

It behooves us, then, to see that nothing is allowed to take place in connection with our mining affairs to give the Province a bad name with investors. We want capital to develop our mines, but let there be only a few instances of crookedness on the part of mining men and company promoters, and the whole mining industry of British Columbia will suffer. Above all, let purely speculative ventures be avoided, so far as asking the general public to join in them.

On another page will be found a long list of companies incorporated under the "Companies Act." Some of these may be classed as "unknown quantities," others are purely speculative, while a certain number are "bona fide" in every respect.

It is difficult for the ordinary investor to judge the good from the bad unless he has the time and chooses to make the most searching enquiries. Prospectuses, it is well known, are not always to be believed, nor are the names attached to them to be always relied upon as a guarantee that the statements made are true. The very best of men may be induced sometimes to place their names to a document through misrepresentation of wily promoters.

We regret to say that prospectuses of mining companies in this Province have been issued lately which should never have been allowed to see daylight. They contained propositions to which the public should not have been asked to subscribe, and were merely speculative ventures on the part of the promoters. The public, in fact, were asked to risk all the money involved, and, as a matter of course, in case of loss, to bear the whole brunt of it.

There is a great danger of this sort of thing being attempted over and over again. It was so in California—it will be here, and innocent investors, unless they are very careful, will be taken in. We, therefore, sound a note of warning at the outset.

Our judges may be relied upon to protect investors against actual fraud and to punish the guilty parties, but unscrupulous promoters are generally wily enough to keep within the letter of the law, and yet manage to mislead the unsuspecting investor. No man should invest in a mining company without first probing thoroughly the nature and value of what he is asked to invest in. He should also make diligent enquiry as to the character and standing of the men who are to manage the concern, and, last but not least, he should know the amount of money actually invested in the company by its principal promoters, the amount in stock or otherwise to be paid as promotion fees, and the commission allowed for floating the stock.

These are all important points, and if the enquiries show a satisfactory state of affairs there is not much risk in making the investment. Our remarks do not, however, apply to gambling in mining shares on the Stock Exchange, which is quite a different affair, and cannot be regulated by any rule other than that of "getting on the inside track."

We have made these remarks regarding mining companies because with the beginning of the present year the MINING RECORD intends to give particular attention to the sifting of facts connected with the formation of new incorporations. The position of those already incorporated will also be investigated, and the facts, so far as they can be obtained, will be given from time to time. With the February number this work will become a prominent feature of the RECORD so that we may be able to warn the unwary, and, at the same time, assist legitimate enterprises.

Professor Carlyle, the Provincial mineralogist, arrived from the East a couple of weeks ago, and the day following his arrival he went to work to set his department in order, and prepare for the labors before him. It speaks well for the man that he should have lost no time in getting into harness.

The Minister of Mines is to be congratulated on the steps he is taking to give impetus to our mining industries, and the Provincial Government is to be commended for the activity being shown in the building of roads throughout our mining districts.

But the Government should continue, and, if possible, increase this activity. Every available dollar in the Provincial treasury should be expended in the opening up of our mining districts. Of course, there are many demands in the way of expenditure made on the Government, but we think it will be wise policy on its part

to cut down expenses in other directions so as to allow as much money as possible to be expended in the development of our mines. We think the Province generally will approve of such a course, because of the active and successful development of our mining industries means increased activity in all branches of trade, manufacture and farming throughout the whole country.

Word comes from the mining districts of numerous cases of claims being jumped. We are certainly not disposed to look favorably upon claim jumping, but it must be remembered that laws have been framed which require certain conditions to be fulfilled by the claimant and, if he neglects to obey the law, he runs the risk of being made to suffer.

The man, however, who deliberately takes advantage of any little technicality in the law to jump a claim and thus deprive another of the well earned fruits of toil and hardship is hardly worthy of the name of man. But if a claimant neglects to do the assessment work required by the act he cannot complain if another steps in to do it.

It is necessary that the conditions regarding assessment work should be rigidly enforced, otherwise we would have the whole country staked off and development at a standstill. No claimant need fear that the Government will allow an undue advantage to be taken of him if he shows a desire to fulfil the conditions imposed upon him, which it is generally admitted are of a most liberal character.

In cases where mineral claims are taken up on land belonging to private individuals, it is absolutely necessary in common justice that a bond should be given protecting the owner from loss by damages to his property. If the claimant neglects to give such a bond he should certainly not be allowed to hold his claim.

We think, however, that claim holders should be protected in some way against jumpers who put them to legal expense without just cause, because many a poor man will allow his claim to go when jumped because he has not the necessary money to fight a legal battle. It should be made exceedingly risky for anyone to jump a claim unless he is perfectly certain that he has a good right to do so.

There is a good deal of claim jumping going on by arrangement of the parties concerned. In other words, they swap claims in order to beat the Government out of the assessment work. Like smuggling, this is not looked upon by many as a very serious offence, but all the same it is a sin against the community at large and a menace to the proper development of our mines.

It must not be forgotten that the gold commissioner has it in his power to revoke a miner's license, and even declare his mining property forfeited, if he does anything wrong in the way of claim jumping. This does

not, however, always deter parties from jumping claims they have no right to, or doing acts which they should not do, and therefore it would do good if the measures to be taken against them were made, by law, more severe.

Eastern wholesale houses, it is said, are to a certain degree afraid to push business in the mining districts because they say the country is new and the merchants in it have not had time, in many cases, to prove their reliability. This may be true, but on the whole, there is no reason why trade should not be profitable and merchants in as good standing in the mining districts as elsewhere. Trade is, of course, largely carried on with a floating population, and the greatest care should be taken by retailers in the matter of giving credit. It is the duty, however, of each and every one of the merchants in the mining districts to make it a point to meet their obligations promptly, or at least to avoid showing any neglect of them. A careful attention to this on the part of every one doing business will soon raise the general standard of the district.

Care on this point will enable the merchants to buy from the best houses, instead of second rate concerns. They will thus be able to buy cheaper and better goods—their profits will be larger and their customers will derive a benefit from their attention to the ordinary rule of business. We are induced to make these remarks because cases have been reported to us where carelessness and not inability to pay was the cause of bills not being met.

There is a very general desire for a better map of the Kootenay than at present exists. The Dominion Government has had men working on one for the last year or two, but as yet there is no sign of its appearance. The government at Ottawa is evidently not awake to the fact that, in British Columbia, there lies vast wealth in gold, silver and other valuable minerals, otherwise they would take more pains to let it be known to the world. A good map of the country would not only be valuable to outsiders, but it would be of immense benefit to the people living in the Province. The Provincial Government is doing what it can in the map line, but the Dominion authorities, with the facilities at their disposal, should provide an up-to-date map without delay. Why don't the local papers unite in demanding it?

The days for hauling ores long distances to be smelted are about past in the Kootenay. The activity of the Canadian Pacific Railway in its efforts to afford transportation facilities in the several mining districts is attracting attention, and our cousins across the line are beginning to fear that their hold on the Kootenay is in danger of being lost. Competition is the life of trade, and the more the railways waken up to this fact the better it will be for our mining districts.

It is, however, chiefly to the Canadian Pacific Railway that the people of the Kootenay will have to look in

the future. Cheaper coke provided by that company will enable smelters to be operated at home instead of having to send the ore to distant points in the United States. This will enable mine owners to operate their mines more profitably and will encourage the opening of new properties. The construction of the railway through the Crow's Nest pass, with its wealth of coal deposits, will simply boom the great Kootenay district for all it is worth. And that is a great deal.

The opening of the Nakusp, Slocan and Kaslo railway is an instance of what improved transportation facilities will do for a mining country. Good properties which have lain idle for several years in the Slocan district are now being opened up and ore shipments are pouring in to the railway from every direction.

We look forward with much expectation to the lectures about to be delivered in Victoria and Vancouver under the government auspices. Those who can afford to do should take advantage of the whole course. But as there will be many of our readers who will be unable to visit the Coast cities, we propose, with the consent of the government, to publish the lectures in the RECORD as fully as the space at our command will allow. This will, we think, prove a boon to many who have not the means or opportunity to attend the lectures, and will, in a measure, be aiding the government in the good work they are doing.

We also purpose commencing with February to devote a department of the RECORD to chronicling such matters connected with the office of Provincial Mineralogist as Professor Carlyle may deem proper to make public. Anything appearing in that department will be official, and therefore thoroughly reliable.

And now we appeal to mining companies, mine owners and holders of claims to send us samples of their ore, properly labelled with full particulars. These samples will be effectively displayed in our offices and will meet the eyes of many visitors interested in mining investments who visit British Columbia. Wherever possible we would like the samples in duplicate, so that we may be able to display them in our Victoria office as well as in Vancouver.

There are several other features in connection with the RECORD which we contemplate but which lack of space prevents our describing in this issue. All we propose, however, will tend towards attracting capital to the development of the mines of British Columbia.

It was a happy thought and a generous act on the part of the Canadian Pacific officials to offer to carry ore for prospectors to the smelters in ton lots at car load rates. It is good policy to aid prospectors in this way to enable them to ascertain the value of their claims. It will result in bringing about more active development.

We would again call attention to the opening which we believe exists in the Cariboo country, for a company with a large capital to undertake the supplying of water for hydraulic purposes, to the various mines in that district. It is worthy the consideration of capitalists and, if it is practicable, as we think it is, it would be one of the best paying investments in this country. Millions were made out of it in California. Why not here where the show of gold is even better?

Mr. Clemes, the English mining expert, has left on his return to the old country, and the best thing he said, while here, was that he would likely be back in British Columbia next spring. He would not be coming back here if he had not seen something to bring him.

Speaking again of trade with our mining districts, we see no reason why Canadian, and especially British Columbian, wholesalers should allow it to flow into the United States, as it has been doing largely in the past. The country may be new, and the dealers comparatively unknown in some instances. But the trade is there to be done, and during the coming season the quantity of goods that will be required to supply the demand is likely to be very great. Whoever secures the trade of our mining districts now, is likely to retain it for some time to come. Let British Columbia look out for her home trade.

West Kootenay Reminiscences.

BY G. O. BUCHANAN.

I made my first visit to Kootenay Lake in May, 1888. Mr. R. G. Lemon built a scow of twenty tons capacity at Revelstoke, this he loaded with merchandise and with the help of half a dozen men, navigated it to Sproat's Landing, now Robson. I went along as a passenger. Mr. Sproat was on the ground and had a town staked off, and was cutting a trail toward Toad Mountain. Several American outfits were camped on the bank of the Columbia. Mr. Lemon pitched a big tent and opened out his stock and continued to do business there for a year or more.

Jas. McDonald, the furniture man, Jack Egan, and myself walked into John Wards' tent-hotel, the principal feature of what is now the town of Nelson. The trail was cut about eight miles. Beyond that we walked on windfalls, and tore our way through thickets of willows and rose bushes. We ran down the Slocan River on a raft of our own construction, and crossed the Kootenay narrowly escaping the descent of the rapids below the junction. We reached Kootenay Lake in two days. The next day, May 23rd, we went to the Hall mine. A snow storm was raging and the Halls were in their cabin. I think that they would have sold the mine for \$100,000 but we had not that amount with us. I staked a timber claim on Toad Mountain, and one on the outlet sixteen miles up and returned to Revelstoke. I came down the next spring bringing my family. I brought in sawmill machinery from the Northern Pacific Railway, built a mill on the outlet, and sawed the first board on the 12th of July, 1889.

John Ward's town had in the mean time been plotted and named Nelson. During this year some hotels and other buildings were erected. The renovated steamer Galina appeared in Kootenay Lake, and made bi-weekly

trips to Bonner's Ferry. The Idaho, Surprise, and Midge, small steam launches, were also running. Mr. R. D. Atkins became interested in the Hall mines, and the chain of events began which led to the formation of the present Hall Mining Company. Mr. Davenport built the crusher upon the Eagle Creek gold mining property, and Messrs. Stanley and Davys put one upon the Gold Hill prospects. Steam power was put in at the Blue Bell mine by Dr. Hendry. The pack trail from Sproat's Landing to Nelson, was finished, and the people of Kootenay Lake, who have since so frequently been heard from, clamored for a wagon road over the same route.

In 1890 the Columbia and Kootenay Railway was commenced; the Davies, Sayward, and Nelson saw-mills were built; active development began upon the Hall mine, and a considerable amount of ore was shipped, but proceedings were checked by the death of Mr. Atkins. A good deal of work was also done at Ainsworth during this year.

In 1891 the C. P. R. was finished, but loud complaints were evoked by the refusal of a charter to the Nelson and Fort Sheppard Railway. The steamer Nelson was launched; the Kootenay Lake telephone wire was strung from Nelson to Ainsworth and to Toad Mountain. The site of the smelter at Pilot Bay was chosen and work upon it begun. The townsite of Kaslo was plotted, and put upon the market by Geo. T. Kane. In the fall of this year the country was electrified by the news of vast discoveries of mineral in the Slocan.

Eighteen hundred and ninety-two was mostly a Slocan year. Hundreds of claims were staked in the new camp. By monumental energy roads were forced in from Nakusp and from Kaslo. The latter town grew rapidly. Mr. E. E. Coy took out to Tacoma, ten tons of ore from the Dardenelles mine and brought back \$5,000 in gold coin. The big boulder containing one hundred tons of galena, worth several thousand dollars, was found.

The Great Northern Railway, after protracted hesitation, chose a northern route, and built along the bank of the Kootenay River to a point of connection with boats from Kootenay Lake. The steamers Ainsworth and Spokane were put in commission.

In 1893 the rosy hopes of the pioneers were dashed by the collapse of silver values. Silver had been sick for some years, but just when Kootenay was ready to produce it, the artificial stimulants, by means of which a fictitious and precarious vitality had been kept up, were suddenly withdrawn.

The temporary outcome was depression and suffering in Kootenay, as everywhere.

The work of development, however, did not cease. The Nelson and Fort Sheppard Railway was built and the Nakusp and Slocan begun, and some thousands of tons of Kootenay ore were profitably marketed at prices which dropped during the year from 85 cents to 57 cents.

Eighteen hundred and ninety-four had signs of returning prosperity, but again the stars in their courses fought against us. One-third of the City of Kaslo (incorporated in September, '93) was destroyed in February by a midnight conflagration of suspicious origin. In May Kootenay Lake rose to the unprecedented height of fourteen feet above ordinary high water. The low lands were flooded, the rivers engorged—land-slides and washouts could be seen everywhere.

Cyclonic outburst of wind followed, accompanied with fresh deluges of water where there was already too much—nature redressing the lost balance of atmospheric gravity by summary methods. The early removal of snow also prepared the surface for the spread of forest

fires, which made further ravages. The rising town of Watson went up from earth in a chariot of fire.

In the destruction of roads, bridges, buildings and chattels, and the attendant paralysis of business Kootenay lost some hundreds of thousands of dollars in the summer of '94.

In the midst of this destruction the Halls returned from the Old Country with substantial capital, secured for the development of their mine. Mr. A. B. Hendryx landed at Pilot Bay and promised to complete the smelter and put it in operation, the Nakusp and Slocan Railway was finished, and more thousands of tons of ore were shipped. The splendid concentrating works of the Slocan Milling Co. were erected near Three Forks, and a concentrator was also put upon the No. 1 mining property at Ainsworth.

The record of 1895 is one of prosperity and progress.

At Nelson the Hall Mine Co. have greatly extended their workings upon the mine. They have constructed a tramway for the conveyance of ore to the water front at Nelson and have erected works upon an adequate scale for the treatment of the product.

The Pilot Bay smelter has been in operation almost continually, and has shipped some 3,000 tons of bullion.

The Blue Bell mine, its principal feeder, has been developed into a vast quarry of ore, and has had heavy machinery and steam power put upon it. At Ainsworth the No. 1 mine has been steadily worked, with good results, and the Skyline has been demonstrated to be one of the great mines of the country.

The Kaslo and Slocan Railway, postponed from year to year since 1892, was begun in April and finished in December. It is 30 miles in length and gives to the larger part of the Slocan camp the easiest possible outlet to Kootenay Lake.

The chief promoters of this road are: Alex. Ewen, John Hendry and D. J. Munn, of New Westminster. Aside from a land grant of no great immediate value, they have had no public aid, and they deserve the highest credit for the enterprise and perseverance they have shown in carrying to completion a scheme of great public utility, in the face of much discouragement.

To meet the competition offered by the construction of this road to Landon, the Nakusp and Slocan Railway has been extended to the same point.

These two roads now afford access, on easy terms, to the bulk of the Slocan camp, and many mines are going on with active development. The Slocan Star Co. have built a tramway and concentrator. The owners of the group of mines tributary to the Slocan concentrator have built a tramway. The Washington Co. have built a concentrator, and a multitude of other owners have attacked their mines or prospects with renewed courage.

Public attention has been in a measure diverted from Kootenay and Slocan Lakes in 1895 by the wonderful development in the contiguous camps of Rossland and Trail.

The mountain spurs and ranges between the line of the C. P. R. and the southern boundary of the Province constitute an empire of mineral wealth which even yet has been explored only in the most superficial way. We whose fortunes are for the time identified with the established points in the country have no reason to complain of extensions of the area of known productiveness.

During the seven years passed over in this paper, we have seen more accomplished than we could have reasonably expected. During this period we have been dependent upon capital attracted from outside sources for all development. We have now the fair promise of large production of wealth, and this will be used in further development, and progress will be in geometric proportion to what we have had in the past.

The Trail Creek Mines.

BY J. R. REAVIS, EDITOR ROSSLAND MINER.

The entire value of the ore shipped from the Trail Creek Mines during the year 1894 was \$125,000. This came from three mines, the Le Roi, War Eagle and the Josie, all situated on Red Mountain, near the present town of Rossland. The shipments for 1895, up to October, aggregate 17,027 tons, the value being \$636,000 in gold, \$33,000 in silver, and \$66,000 in copper. Average value in gold, \$37.35 per ton; in silver, about \$2 per ton; in copper, about \$4 per ton; making total average value about \$43.35 per ton. The aggregate tonnage for the year will reach 23,000 tons, which, at \$43 per ton, would be worth \$989,000. This is almost \$1,000,000 for the year 1895, which is a very remarkable increase over the value of shipments for 1894. Of this sum something more than \$200,000 has been paid out in dividends. This is a brief epitome of Trail Creek. It is certainly a very satisfactory showing. The first ore in Trail Creek was found as early as 1887, but no serious development work was done for several years after that. Gold had never before been found in considerable quantities under similar conditions, and mining men were incredulous as to any profitable results that might follow the opening of the veins. The surface showings, however, were very strong and very extensive. It was soon discovered that Red Mountain, about whose base the beautiful town of Rossland has been built, was the centre of this new gold field. Here was located, in 1890, the Centre Star, the War Eagle and the Le Roi, three mines which are destined to be among the foremost gold producers of the world. The ledges upon all these claims were so plain to the eye that they could be followed with but little difficulty. The predominant constituent of these surface showings was iron and it was found that this iron carried gold from a trace up to \$400 per ton, and that there was everywhere a percentage of copper. The ore was Pyrotic and few of the prospectors and miners of the North West knew anything about it. The veins cut the formation, the country rock being dioretic, which is low gold bearing eruptive rock. In 1890 a syndicate from Spokane (an American city in the State of Washington, just across the international boundary) purchased the Le Roi, and in 1893 Spokane people purchased the War Eagle. A wagon road was built from Red Mountain to Trail Landing, on the Columbia River, a distance of seven miles, and in the fall of 1893 a shipment of 70 tons was made from the Josie mine, which gave a smelter return of \$43 per ton. This gave the first real impetus to the development of the Trail Creek mines. In 1894 both the War Eagle and the Le Roi became regular shippers, the former property being under the management of Patrick Clarke, one of the most capable mining men in the North West.

The rapid increase in the output of these two mines, the large and regular ore bodies discovered in each, and the confidence which they instilled in the minds of all who saw them, brought a large number of prospectors and mining men to the camp in the spring of 1895, the town of Rossland sprang up in a day as it were, and the whole of the surrounding country was prospected and laid out into claims. Mineral showings were found everywhere. Over 1,000 locations were filed within a few weeks, and some properties were bonded at very high prices. Immense iron capped ledges were found north, south, east and west of Rossland. It was soon discovered that the mineral zone extended far beyond the limits of Red Mountain. In the meantime the monthly output of the established mines went on increasing at a rapid rate, and the War Eagle paid a dividend of \$30,000; two dividends of \$50,000 each from

the same mines followed during the summer. A wagon road has been built to Northport, in the State of Washington, of 17 miles, where the northern terminus of the Spokane Falls and Northern Railroad could be reached. Ore from Trail Creek went out to this road by wagons over the Northport road, and also to Trail Landing and down to Northport on steamer over the Columbia River. The shipments soon reached 150 tons a day, the ore being worth not less than \$40 per ton. Great progress in the general development of the camp has taken place during 1895. Successful development work has been prosecuted on the Kootenay, Columbia, the Iron Horse, the Crown Point, the Lee and Maid of Erin, the Colona, the Jumbo, the Homestaké, the Gem, the Deer Park, the Zilor, the Good Hope, the Gold Hill, the Gopher, the Nickel Plate, the Centre Star, the Iron Mask, the Mountain View, the St. Elmo, the St. Elmo Consolidated, the Highland, the Georgia, the Cliff and others. All these are now ranked as partially developed mines of bright promise. The Le Roi, during the year, has put up a hoisting plant that raises 125 tons a day, also a compressor which runs seven machine drills. The War Eagle Company are just completing the erection of a compressor that will have a capacity of 20 power drills, and the Centre Star Company have a compressor ready to operate seven drills. The Kootenay and Columbia are to be worked by the Trail Mining Company, which, in the spring of 1896, will put in a thirty drill compressor. Power drills are also to be put in this winter or next spring by the Cliff, the St. Elmo, the Josie, the Iron Horse, the Crown Point and probably the Homestake. The Lee and Maid of Erin have a small drill plant in operation, which will probably be enlarged during 1896. It is not unreasonable to predict an output of 100,000 tons for 1896 worth from \$3,500,000 to \$4,000,000.

So great is the assurance of a large ore supply that a strong company began the construction of a large matting and smelting plant at Trail, on the Columbia River, seven miles from Rossland, in October of last year, and will have it ready for operation by 1st February next. The same company are now building a tramway to transport ore from the principal mines about Rossland to the smelter. It will be completed and ready for business by February 1st. The smelter and tramway together represent an outlay of not less than \$500,000. Surveys have been made by both the Spokane Falls and Northern Railroad Company and the Canadian Pacific Company for lines into this wonderful camp, and these lines will be built as soon as practicable in the spring, and will represent an outlay of not less than \$2,000,000. This, in brief, indicates the confidence felt in the Trail Creek mines, and it also indicates something of the activity that may be looked for in and about Rossland during the year 1896.

Fort Steele Mining Division.

BY T. T. MCVITTIE, C. E., P. L. S., SECRETARY FORT STEELE MINING ASSOCIATION.

The Fort Steele Mining Division of East Kootenay District comprises a large tract of country, lying in the extreme S. E. corner of British Columbia, bounded on the south by the International Boundary, on the east by Alberta (one of the Northwest Territories) on the west by the District of West Kootenay, and on the north by the watershed between the waters of the Columbia and Kootenay rivers. The main valley, which is from five to fifteen miles in width, is formed from the Kootenay river, which flows in a south-easterly direction for about one hundred and twenty miles through the district, separating the Rockies on the east from the Purcell range

of mountains on the west. The intervening country, consisting of bottom lands interspersed with hay meadows which lay along the banks of the river and its numerous tributaries, while rolling bunch grass hills, sparsely timbered with fir, yellow pine and tamarac extend back to the foot of the mountains, affording every facility for horse and cattle ranching, also farming on a small scale. But it is as well to bear in mind that the prosperity of this district depends entirely on the development of its mineral wealth, the presence of which has been proved now beyond a shadow of doubt, and it is only a matter of time, and, we believe, a short time at that, when this portion of British Columbia will take its place among the great mineral producing regions of the continent. A great change has taken place within the last year or two, we have now several ore producing mines; fresh locations and discoveries are constantly being made, development work is being pushed forward with much more zeal and vigor on the different mineral belts, showing up numerous valuable deposits of gold, silver, iron and copper, the most important being what is known as the North Star group, discovered in the summer of 1892. It was purchased by D. D. Mann of Montreal, who formed a company for the purpose of developing it; at present they have about 30 men employed getting out ore, extracting from 25 to 30 tons a day, and expect to have over 3,000 tons ready for shipment in the spring,—the property consisting of four 1,500 ft. claims, situate about 20 miles north-west of Fort Steele, being an immense body of steel galena, the work extends over about 450 feet of the lode,—one drift shows solid galena and carbonates to the remarkable width of 65 feet, assays run from 47 oz. to over 85 oz. in silver, with 67 per cent of lead. Quite lately a small stringer was struck assaying as high as 267 oz.

In the same neighborhood, about a couple of miles to the north, we come to the Sullivan group, which was discovered about a week after the North Star. A good deal of development work has been done on this property, exposing to view 16 ft. of solid ore. Between these two groups, and in the vicinity, about 40 claims have been staked off, on many of which ore has been struck. A wagon road has been made from the mines to the Kootenay river, over which a number of teams will be employed during the winter hauling ore.

Fort Steele, the distributing point of the district, is situate on a bench overlooking the Kootenay at its confluence with the St. Mary's river and Wild Horse creek. Steamers ply on the river between here and Tenning's, on the Great Northern, and connect with steamers from Golden on the C. P. R. It will quite likely become a place of importance in the near future, as the numerous mines in the vicinity are developed. Up Wild Horse Creek, about five miles from Fort Steele, is the old Kootenay placer camp, out of which millions of dollars in gold dust have been taken. Two companies are at present engaged in hydraulic mining, besides some Chinamen. It is a picturesque spot, with its ancient buildings, Chinese quarters, and old graveyard; surrounded with piles of debris, bare bedrock and high cut banks, showing the immense amount of work that has been done in the past, during the palmy days when gold could be got in plenty, just for the digging. Without doubt, there is still a large extent of ground to be worked over, which will pay well for the trouble. But the chief interest from now on will centre in the gold quartz properties in the vicinity, numerous claims having been staked off on the main stream and its tributaries, development work and assay returns show that there are valuable deposits of gold quartz within a radius of four or five miles of the old placer camp, which are

only waiting for capital and labor to be worked to advantage. Following the mountains north from Wild Horse, a mineral belt extends for a distance of about thirty miles, there are numerous outcrops with good indications, over which locations have been made, among which may be mentioned the Wasa group, where considerable work has been done, proving the existence of a valuable deposit of gold, silver and copper. Returning to Wild Horse and taking a southern course, we are still in the same mineral belt. At intervals of every two or three miles locations have been made, the most important being the Dibble group, situate in a gulch of the Rocky Mountains, about ten miles in an easterly direction from Fort Steele, discovered by James Dibble and a couple of other men in the fall of 1890. The ore is a gray copper, carrying gold and antimonial silver. Numerous assays have been made, showing that the ore which could be shipped averages 300 oz. in silver, \$54.00 in gold, with 12 per cent. copper. A working bond has been taken on this property by some Montana mining men and contracts have been let for the extraction of ore, to be ready for shipment in the spring. The outcrop follows along the face of the mountains on the east side of the valley as far as Elk river, a distance of about forty miles from Fort Steele, crossing Bull river and Sand Creek. At each of these points numerous locations have been made, which have every appearance of turning out well, assays showing that the ore carries copper and gold in considerable quantities.

Returning to Fort Steele and taking a westerly course we strike into the mineral belts of the Purcell range, following up the St. Mary's river, which joins the Kootenay at Fort Steele, we pass through a partially timbered, rolling country, interspersed with open prairie for fifteen miles, before reaching the mountains. Through this section placer mining was carried on to some extent during the old days, but of late years little attention has been paid to it, although it is thought there are spots which would well repay any labor expended on it. During this summer, quartz ledges carrying gold have been discovered crossing the river in various places and have been traced back into the open prairie country. Nothing can as yet be said as to their value, with the exception that there is no doubt that they are well determined ledges, and essays give promising returns in gold. Away up the St. Mary's and its branches, not far from the summit, is a mineral belt which can be traced for thirty miles, carrying copper, silver, gold and lead. About 75 locations have been made in this section, but very little development work has been done in consequence of its inaccessibility at the present time. Trails have been cut in for some distance from both sides of the mountains, leaving a fraction of about twenty miles yet to finish, which it is hoped the Government will carry through next year. On Perry Creek, which joins the St. Mary's about ten miles from Fort Steele, are placer diggings which have been worked for years. A company has control of a good deal of the ground, but a few individual miners still get out quite a little gold every season. From here on across some low mountains to the Moyie river and its branches are several well defined ledges of gold quartz. On the Moyie river itself there is a company engaged, and have been for some years, in hydraulic mining; they meet with fair success and there is no doubt there is other ground which could be worked to advantage. Upon the Moyie and near the source of some of its tributaries, are quartz ledges carrying free gold in paying quantities, it is expected that before long work will be commenced on some of them. Following down the Moyie river we come to lakes of the same name, on the east bank of the lower one is situated what may be considered as about

the most valuable mineral property in the district, distant about thirty miles from Fort Steele, traversed by the old Walla Walla pack trail; it was only discovered in the year 1893. The ledge can be traced from the lake shore to the top of the mountain, a distance of about a mile. The original discovery was made on the precipitous face of a cliff, about 2,500 feet above the surface of the lake, it is at this point where the principal amount of development work has been done, Messrs. Finch and Cronay having about ten men employed getting out ore for shipment. They have at present about 800 tons of ore on the dump, 200 going 58 oz. in silver and 70 per cent lead, 600 going 45 oz. in silver, with same percentage of lead. A tunnel has been run in following the ledge for a distance of 100 feet, showing a width of from 2 to 6½ feet of solid ore and widening out into chambers of even greater width. The ledge has been stripped and can be traced for 800 feet on the surface. They are now running another tunnel and expect, in less than another month, to tap the ore shute at a depth of 120 feet below the present working. There are six claims in this group, all having plenty of ore in sight, and there is no doubt that in a year or two, when the B. C. Southern Railway, which will probably pass right through this property, is completed, this will be a flourishing mining camp.

The formation in which this outcrop occurs is similar to the country rock in the vicinity of the North Star, and it seems highly probable that both groups are situate on the same mineral belt, in fact, allowing for the dip of the veins and contour of the mountains, the formation can be traced right across country from one to the other, therefore there is every reason to suppose that many more discoveries will be made, not only in this section of the country, but all over the district, as there are large and extensive tracts yet remaining to be explored, prospectors having confined themselves principally to those places which were most accessible. But a year or two will make a great change, as everything seems now to indicate that we are on the eve of an era of prosperity in mining matters. Ore producing mines are being worked which will necessitate the building of two or three more steamboats for transshipping the ore. it will also hurry on the construction of the B. C. Southern Railway, which will run through the heart of this section of country, besides opening up those immense coal fields on Elk river, in the Crow's Nest Pass. These coal deposits have been traced for upwards of forty miles through the south-east portion of the district. There are numerous seams overlying each other cropping out along the face of the mountain, between alternate ledges of sandstone, varying from 30 feet to 4 feet in thickness. There are about eleven seams altogether, the lowest known seam being about 1,500 feet above the level of the valley. The coal has been proved to be of first-class quality, and when the property is opened up it will, without doubt, prove to be one of the most valuable coal deposits on the continent.

Therefore, in a few years time, when busy mining camps are established all over the country, and we have railway communication with the outside world, then, with our valuable mineral deposits of gold, silver, copper, etc., our immense coal fields, combined with the large tracts of grazing and farming lands, the boundless supply of timber, the water power attainable from the numerous streams, there is no doubt that this valley will be certainly one of the wealthiest portions not only of British Columbia, but of North America.

The secretary of the Fort Steele Mining Association is prepared to answer all correspondence in regard to the mining interests of the section.

Alberni's Gold.

Hon. D. W. Higgins, of Victoria, speaker of the provincial House of Parliament of British Columbia, tells some interesting facts about the gold discoveries at Alberni.

"Gold was discovered in this district in 1865," says he, "but not until one year ago was any effort made to extend explorations and prospect thoroughly in other portions of the country. These researches resulted last spring in the discovery that a hill situated about fifteen miles east from the town of Alberni was highly mineralized, presenting wherever the top dirt, has been removed, a vein of quartz carrying free gold and sulphates carrying gold.

"Numerous claims have been staked out on this hill, which has been aptly termed Mineral Hill, especially on the west side of it. The Alberni company has let a contract to run a tunnel into its claim about a 100 feet, and ten days ago reached a deposit at a depth of twelve feet assaying \$400 to the ton. Surface rock from the same claim has assayed as high as \$200 to the ton, and I have a specimen from Mineral Hill that realized \$1,768 to the ton. On the east side of the hill forty claims have been located on three creeks, Tum Water, Huckleberry, and Yellowstone, and further to the north on Cameron river, but within five miles of the hill a forty-foot ledge of quartz assays from the outcropping from \$4 to \$8 a ton. On China creek, which is west of the hill two miles, several hydraulic claims have been located, stock floated and works in full swing, and it is expected they will be piped about March 1.

"Along Alberni canal, which breaks in from the ocean for thirty-nine miles, the country on either side being rugged, and the hills precipitous, vigorous prospecting has been carried on and important discoveries made. An American miner, Mr. McAllister, visited the canal last May, and discovered a hill on Colman creek, a small stream emptying into the canal about twenty-five miles from the sea, which is composed of what appears to be rotten slate, intersected or threaded by small seams. The rock is easily pulverized, and every piece that has been crushed and washed shows free gold. Three hundred pounds were sent to Mr. Pellev Harvey, of Vancouver, who subjected it to a mill test, and reported a result of \$12 to the ton, the ore not being at all refractory. This hill is a great mass of rock, all of which can be easily worked, in fact, a veritable quarry. There are no veins at all; it is just an upheaval. Competent judges say that, if it only paid \$4, there would be a fortune to the owners, and it is believed that the hills in the same locality, are equally rich. The rock is such poor stuff that one would hardly pick it up on the street, and is something like the South African conglomerate.

"On Granite creek, six miles above Colman creek, large numbers of very rich claims have been discovered, among which are Star of the West, Islander, and Nevada. Then four miles inland on the same creek are the Starlight, Black Jack, and Seattle, owned by Seattle people, and St. George owned by Tacoma men, ranging from \$5 to \$40 to the ton. The Islander has been capitalized for \$100,000.

"At Tschucknueknet creek several highly mineralized ledges have been found and subjected to a mill test, yielding \$9.45 to the ton from surface rock.

"On Copper island, a small island in the centre of the canal, about twenty miles in from its mouth, is a vast deposit of copper carrying gold. A shaft is being sunk upon it by a company, and assays are similar to those of Trail creek.

"The country is well adapted to mining, water, etc., being in abundance. The size of the claim is 1500x1500

feet, the largest ever made. Facilities are given to all miners alike, and the same interest is shown to all. People of Victoria and Vancouver Island have secured many mines, but very little mention has been made, as they want the first harvest, but next year the mines will be taken in hand and pushed vigorously.

"There is an extensive district that has not yet been prospected, and which is believed to be as rich, if not richer, than any yet discovered. On Many Tod island, near Victoria, a quartz vein is being worked with good results so far."

Mr. Higgins says further that the discoveries of Rozenbenay and Alberni, combined with the newly discovered facilities for saving gold, will soon place British Columbia in the front rank of the gold producing countries of the world. He anticipates a great inflow of people and capital in 1896, and says, "the province is just awakening from its sleep of ages to the realization of a new life."

Queen Charlotte Islands.

Professor Odlum, who has lately returned from the northern coast of British Columbia and Alaska, says he has proved to his satisfaction that besides wide seams of gold on Queen Charlotte Islands, there are large gold, copper, and silver deposits at many points. Miners informed him that as the country was opened up it would be found to be as rich in minerals as the richest part of the mainland or Vancouver Island.

Through the War Eagle Tunnels.

To one not accustomed to mining, an exploration of the workings of the War Eagle will seem something of an undertaking. In company with two others, our representative paid a visit to this most famous of West Kootenay mines through the courtesy of Supt. Clarke. Candles were obtained at the engine house, from which it is only a few yards to the mouth of the lower tunnel. It is easy walking over the broad plank which runs between the iron rails on which the wagons bring the ore from the end of the tunnel to the dump. These wagons are of iron, and are so easy of propulsion, loaded or empty, that the man in charge finds no difficulty in keeping up a sort of a jog trot while pushing. The tunnel is about four feet in width, with a varying height of from six to ten feet, and one has to keep in the centre of the track to escape contact with a projection here and there, just high enough to make a tall man wish himself a little shorter. Here and there along the walls bright spots glisten in the dull light of the candles, and on a closer inspection the yellow ore is seen in large splashes and veins; but this is only at intervals, as the walls are mostly covered with a damp, bluish clay, as if put on with a whitewash brush. Probably this is spattered over the walls and roof by the blasting operations. It is all rock; all drill work; no use here for pick and gad, such as the Cornish miners use in soft lodes of copper and tin. There are cross pieces at short intervals, on which the air pipe rests. These cross pieces are of green wood, five or six inches in diameter, the ends fitted into niches cut into the solid rock about six feet high. There is very little water in the tunnel, just a dampness on the walls, and perhaps a slight dripping here and there, with a tiny stream flowing beneath the plank.

Many imagine that mineral veins run in rigid straight lines, but if the War Eagle tunnels have strictly followed the ore body, the twistings and turnings of these particular veins are remarkable. The noise of the drill being worked by compressed air at the end of the workings becomes terrific as the last curve is rounded, and it

takes some time for the eye and ear to become accustomed to the surroundings. Two men are in charge of the drill, which is boring a hole high up in the face of the tunnel, the apparatus resting on a cross-piece fixed for the purpose. One man turns the handle of the screw which presses the drill against the rock, while his partner throws water into the hole where the drill is working. The tunnel is in 600 feet and in good ore, but it is in the upper tunnel of the mine that the greatest development is seen. An immense air compressor plant is being erected to drive a large number of power drills. This will more than double the output of ores, and considerably lessen the running expenses.

Leaving the miners to their monotonous task, working like gnomes in a subterranean hole, we retrace our steps towards daylight and are soon mounting the steep declivity to the higher tunnel. The rumbling of a coming wagon compels us to wait until it has dumped its load, and then we enjoy pushing the empty little vehicle along the glistening rails. This tunnel shows greater quantities of ore than the lower one. It has the appearance of having been worked for years, as there are crosscuts and tunnels branching off in various directions, with an uprise and a stull here and there. Overhead is another level, and chutes are placed at short intervals, from which the ore truckles into the wagons on our level. One is surprised at the visible extent of the workings, which would indicate that the War Eagle is a great mine, and has long passed its development stage. Following a branch tunnel we come to a winze about 60 feet deep, and we can hear the rattle of the air drill as we look down. Men are also working there with hammer and drill, but we do not go down, although the ladders look invitingly steep. Good ore is being taken out of this winze by means of a windlass and bucket. Going on, we strike the main tunnel again, and soon reach the end, where men are engaged with the air drill.

This end is larger than the one in the lower tunnel, and the working of the drill can be noted very fully. They have already bored eighteen holes, each about three feet deep, which depth the drill will accomplish in about twenty minutes or half an hour. All these holes are not fired, only those best situated for breaking rock; and if the first fire does not come up to expectations, then the holes still left intact are set off.

The miners are very intelligent men, and are not above explaining a few things for our enlightenment. But their task must be fearfully monotonous and unhealthy. Working there in the damp and the darkness, with the unvarying clatter of the drill to intensify their discomfort, one cannot help asking: "If the miner is not deserving of his pay, who is?"—*Rossland Prospector*.

Coal Mining.

CROW'S NEST COAL.

The coal fields in the East Kootenay district, in what is known as the Crow's Nest Pass, lie in a southeasterly direction from Fort Steele, a distance to the nearest available coal of about sixty miles. These coal fields in the near future will have a world wide reputation, both on account of the quality and quantity, and are without doubt the best undeveloped coal fields in America.

The western outcrop of the field is on the side of a mountain in the valley of Elk river, one of the largest tributaries of Kootenay river on the eastern side, and the coal seems to have been traced a distance of forty miles, with surface cross cuts made at intervals showing the seams and walls.

The lowest known seam is some 1500 feet above the drainage level of the valley, and is thirty feet in thickness. One hundred feet higher there is another seam 30

feet thick, then comes another seam 15 feet thick, then a small 3-foot one, then a 7-foot one, and then another 30-foot seam, and above these there are five more workable seams from 4 to 10 feet in thickness—eleven seams in all, making a total of 148 feet in thickness of coal exposed. These seams dip with the mountain easterly at an angle of from 30 to 35 degrees, the upper seams having the least dip.

There are three large creeks cutting this coal field. The seams are exposed on the banks of these creeks, and openings can be made to mine the coal without much preliminary expense. The cuts made by the creeks are more valuable than so many tunnels to prospect the coal, because there is room to operate the mines on both sides of the creek, and the mines are proved to be permanent without any cost; in fact nature did the prospecting. In addition to the coal on Elk River, further east on Martin's Creek, and other tributaries of Mitchell's Creek, which is a large fork of Elk River, there is another large body of coal, above the Elk River field, but of smaller area, a great amount of the field having been carried away by natural causes through the different ages since the coal was formed. The aggregate of the depth of the seams of coal in the upper basins is somewhat more than on Elk River, so that if a shaft be sunk through the whole field there would be found 300 feet of coal in workable seams. It would be hard to find another field of coal with so much coal to the acre, and so easy and cheap to work.

The eastern outcrop of the field is near the summit of the Rocky Mountains, the average distance from the western crop being ten miles, showing a coal field forty miles north and south by ten miles east and west, and an area exceeding 250,000 acres.

The coals in this field differ, owing, no doubt, to the different ages of the coal, there being three different qualities. The lower seams are anthracite in their nature, whilst the upper seams are the bituminous coals. In between, both above and below the bituminous coals, are a number of seams of coal different from anything heretofore known. It is somewhat similar to cannel coal, but superior to any cannel coal known.

These coals have been analyzed and tested by different parties, amongst them Professor Hoffman, government assayer at Ottawa, for the geological department, and the results, as shown in the department reports, prove that these coals would lose nothing by comparing them with the best coals of the same variety in Pennsylvania. Owing to their position these coals can be mined at a small cost, and can be placed on cars ready for shipment at \$1.25 per ton, and with ordinary freight rates can be placed on all the western markets to compete with any and all of the coals now used.

We predict that the quality and cheapness of these coals, when once developed, will astonish the western mining population.—*Fort Steele Prospector*.

Formation of Coal Beds.

Many theories have been advanced to account for the existence of coal, and their merits have been discussed by many learned men. Still the pleasing thesis of Lesquereaux has not been destroyed or shaken, and the virgin forests be conjured up from the shale and coal are accepted yet to-day. It may easily be drawn from analogy that the bed of clay ever found beneath the coal bed is the floor of the primæval swamp, and this has often yielded fossilized specimens of wood that have often told the secret of the coal. In the roof shales of many mines, too, have been found the delicate fronds of the fern, and those delightful little curios, bringing us in contact with a far distant past, are often the most in-

teresting treasures of the musee. Lesquereaux, it might be noted here, was led to the conception of his vegetable theory for coal by prior investigations into the origin of peat. After close and diligent labor he discovered the affinity between peat and the fibre of existing trees, and established a knowledge of the changes which had taken place. Since then chemistry and the microscope have additional proofs and convincing facts of the source of the black diamonds. All kinds of acids and unctuous substances are still found in the coal that prevail to a greater or lesser degree in wood, and which have been retained in its composition despite the lapse of countless ages. But the penetrating lens of the microscope have revealed the greater truths. By means of this it is actually possible to trace the woody fibre and even to distinguish the air cells as clearly as in a piece of wood taken from a tree to-day. This condition may not be always prevalent, but it can at times be found and proves conclusively the vegetable theory. Yet it is strange that in the face of this other theorists will enthusiastically advocate the extraordinary proposition that coal is a natural composition, and has oozed out of original matter like gneist, or granite, or lava. The suggestion that it would have ignited if brought into contact with great heat, would probably be airily discounted on the ground of a lack of air. However, so far as theory goes, the vegetable theory is the one that accounts for coal.

Granite Creek.

Robert Stevenson, who has spent the summer in Granite Creek constructing flumes, digging ditches, and fitting up the hydraulic plant for the Stevenson Gold and Platinum Hydraulic Mining Co., Ltd., has gone to Montreal to attend the annual meeting of the company, of which he is president. Mr. Stevenson had the good news to tell of the brightest possible prospects for the company in which his chief interest lies. They had got the work so far advanced that washing would begin in March, and practically as soon as water was running in the streams. There were many obstacles to be overcome, but the ditch was dug and the flume constructed in very difficult places, all without accident, though at some places the flumes were so high that not all the workmen would go on them to work. They will have about 1,000 inches of water, enough for two monitors, and they will be working in pay gravel from the start. Mr. Stevenson also put in a saw mill, which turns out from 8,000 to 10,000 feet per day, though capable of much more. Work went slow early in the season, but the men were untried, and Mr. Stevenson has always found it best not to rush green hands. Toward the end of the season, when all were picked hands, work went ahead with surprising rapidity. He brought in three nuggets found near the property.

The Golden Gate Co., also on Granite Creek, who hold some very valuable ground, expect to do considerable work on their property next spring. R. A. Lambert, one of the principal owners, says that their ground has been thoroughly tested, and will soon rank amongst the best of the claims which have made Granite Creek famous.

The Horsefly Country.

W. N. Bissett, who has been for the past two seasons foreman of the Horsefly Hydraulic Mine on Horsefly, is known as a thorough and practical hydraulic miner of wide experience, having worked in many parts of California. He says that, in his judgment, a better country than Cariboo for hydraulic mining had never been found, the only drawback being the trouble of get-

ting water on the many benches on account of the level character of the country.

The output from the Horsefly this season, being over \$50,000, Mr. Bissett considers very satisfactory. In his judgment \$40,000 will be the cost of working the claim next season, and he thinks stockholders will draw dividends to the amount of \$100,000. The cement in the course now being worked in the mine has disappeared, and the opinion of good judges is that it was only on the rim, and that where the cut now has been worked back an old channel was formerly, either of the Horsefly or some other stream.

Mr. Bissett says for three feet above bed rock no pan of gravel can be taken out without at least 25 cents being found therein, and \$2.00, \$4.00 and as high as \$8.00 to the pan is not uncommon. The last run was by all odds the most satisfactory, 204 hours piping yielding \$7,417, or nearly \$1,000 per day of 24 hours. The first six weeks of the past season were principally devoted to getting ready for work, as a bedrock tailrace of large dimensions had to be cut out of bedrock. Everything is now complete and work will be pushed next season.

Many inquiries have been made about the cement in the Horsefly carrying gold. Mr. Bissett says that as you get nearer to the bedrock in the cement it becomes richer in gold, the same as gravel, and that the top cement carries but a few cents to the cubic yard. A test was made by him of quite a large quantity from all through the cement bank. Not far from bedrock the cement gave returns of about \$4.50 per cubic yard, but on the whole he does not think the cement is rich enough to make it a milling proposition, nor is it, in his judgment, necessary, as apparently there will be little more trouble from this cause.

The gold differs in quality and looks from the gold taken out five miles above, in the Ward mines, which is worth about 60 cents more per ounce. From this and other causes, Mr. Bissett does not think the two properties are on the same gold run, and is of the opinion that systematic boring would find near these properties other valuable mines. He speaks very highly of the value of the Ward mines and foresees a bright future for them.

The Ward company have their freight well on its way and it will soon be moved in from the 150-Mile House. The Horsefly country will be an interesting place to visit next season.

Dredging.

Dredging for gold is now a method of mining that is receiving considerable attention in British Columbia, and wherever operated, produces, generally, very satisfactory results. Though this method of extracting gold from the beds of rivers has been in use in New Zealand for many years, it is little over a year since the method was introduced here, yet it is rapidly being adopted and coming into general use, as may be seen by the following instances.

The gold dredger of the Finch Mining Company is now in full swing at Mormon Bar, six miles up the river, and authentic reports say that the company is doing very well and that the enterprise is in every way a success.

The large dredger of the Fraser River Company is now at work making the preliminary tests preparatory to going higher up the river. The success which has attended the smaller scow at Mormon Bar presages a larger share of it for the Fraser River Mining Company's vessel, as the machinery is more powerful and there are increased facilities for extracting and manipulating the gold.

J. Heid and J. Gallagher, of Big Bar, visited Dog Creek lately on a prospecting tour. The parties were accompanied by Mr. Fraser, of the Bank of Montreal, New Westminster, also Mr. Clemes, who is connected with a large English syndicate. They made a thorough prospect from Big Bar up to the mouth of the Chilcotin River. The prospects turned out most satisfactory, and there is a likelihood of the erection of several dredgers between Big Bar and the Chilcotin.

Mr. Young, of Pittsburgh, is arranging for the building of another dredger for use on the Fraser above the canyon. Mr. Young stated to parties at Quesnelle, lately, that the small dredger has been a complete success, and that he should build the large one on nearly the same principle. The scow will be over 100 feet in length, and 30 feet in width. Men are getting out the logs, but delay is caused on account of there being little snow to handle the logs on.

The Underwood dredger is completed as far as it can be until the machinery, which is expected soon, arrives. The men working on the dredger have in the meantime been laid off.

With the Fader Company, the Underwood Company, the Young Company, all working near Quesnelle next season, and at least two working near Lytton, the problem should be solved next season, and it is to be hoped gold saving by dredging will be demonstrated a success.

The field, if so opened up, is practically inexhaustible, as every year more banks are washed along the river, more bars formed, and every few years brings about an almost complete change in portions of the gold bearing streams. The number of miles of river bed which, if the method is successful, work can be done on in British Columbia, taking in the Fraser, Thompson, Quesnelle, Parsnip, Blackwater, Peace, Columbia, Salmon, Pine, Smoky and dozens of others, reaches into the many thousands, and will furnish labor for many hundreds of men, and thereby open up sections of the country to the growing of grains and produce, as a market will be provided for such farm produce. The dredging men of the Cariboo country have the sincere good wishes of all the people with them.

Floating Mines in London.

HOW A TEN THOUSAND DOLLAR PROSPECT BECOMES A HALF MILLION MINE IN A FEW DAYS.

The process of floating a mine on the London market is extremely interesting. It is the working of this machinery, and not the yield of the mines themselves, that has made most of the enormous fortunes which have been accumulated the last few months. I have said that the company promotor buys up most of the private mining claims. It would be more correct to describe him as the agent of a promoting or exploitation corporation or syndicate. There are plenty of these corporations now in the field, and the profits of their operations within the last year have been in many cases almost incredible. Let us take, in illustration of their plan of operation, the case of a single mining claim. They have paid the discoverer, say, \$10,000 in cash for it. They send a few men and sink a test shaft thirty or forty feet on the reef and take out several tons of ore. An expert examines the mine and reports, and some of the best specimens of ore are assayed. The result is embodied in a prospectus and printed in all the London newspapers. Subscriptions are invited for the shares in the Struck-It-Rich mine "capital £100,000 (\$500,000), of which 60,000 one-pound shares are offered to the public at par." It is explained that 40,000 fully paid shares and £20,000 in cash are to be paid to the vendor company. Public subscribers are notified that

they must pay two shillings and sixpence upon application and the same sum upon allotment of each share. Five shillings more per share will be due a month after allotment, and the balance of ten shillings as called for by the directors.

If the promoting company is a concern in which the public has confidence, that is, if it has engineered similar deals successfully before, and if the directors named also command respect, then, if the experience of the last six months holds good, the public subscriptions will call for 300,000 shares instead of the 60,000 offered. In that case the public subscribers will receive one-tenth to one-fifth of the shares they applied for or, perhaps, none at all. Such a demand for shares, of course, insures their advancing to an immediate premium, and as the directors can allot to whom they please among the subscribers, it is natural that their friends are supplied first. It happens almost daily, therefore, that shares in new companies are quoted at a high premium as soon as, or even before, they are issued.—*New York Sun.*

Home Smelters.

The Spokesman-Review, of Spokane, has the following to say on this subject: Smelters make a local pay-roll; they consume supplies; they draw capital to the local banks. These, however, are but minor benefits from the operation of this industry. The greater benefit would flow from the impetus given to mining in the adjacent districts. Properties now lie idle because their ores are too low in value to stand shipment to distant smelters, could enter the list of producing mines. This would put incalculable value into the various mining camps, and of course the influence would soon be felt elsewhere.

For years the railroads of this country have been under indictment for adhering to the narrow policy of discouraging the operation of smelters in this section. It has been said that their policy has been to carry the product to distant smelters in order to secure the long haul of the ore shipments.

If these charges have been true—if the railway managers have really been wedded to that makeshift policy—it must be evident that this method has outlived its possibilities. To the north of Spokane an extensive mineral area is passing from the prospecting stage to the stage of active development and production. Smelters are in course of erection at Trail and Nelson, and a large plant is in active operation at Pilot Bay on Kootenay Lake. The ores of these northern camps are to be treated near at hand and the management of the Canadian Pacific, aroused to the importance of the mining industry of West Kootenay, has entered on a vigorous policy. It does not propose to allow the ores of that district to be carried thousands of miles to the American smelters. Its policy is close local treatment, which, it expects, will give it the long haul on the bullion and also the tonnage from supplies carried to the smelters.

Diamond Drills.

Prospecting mines with diamond drills seems to be a favorite way of determining the extent of veins. It has the merit of being cheaper and certainly as effective. In the Le Roi mine, recently, a trial of one of the drills was made, and W. M. Ridpath says it did the work in six days, at a cost of not to exceed \$100; which would have required not less than 60 days and an expenditure of \$1,200 by the old way of exploring.

In the Silver King mine at Nelson all the exploring is done with diamond drills. Recently they sent the drill across the ledge, and at 306 feet the ore body was eight feet wide. From a different point the drill was

sunk to 600 feet and the vein was nine feet wide, and at 800 feet the ore body held its own. There is no uncertainty about this. The owners know they have ore at these depths. Some mining men object to the diamond drill, but for determining where ore bodies are at a minimum expense the drill would seem to fill all the requirements.

Happenings at the Mines.

ALBERNI.

Frank McQuillan, superintendent of the Duke of York Mine, at Alberni, on his way to San Francisco, said: "The wealth of China Creek, on which the mines are located, has been known for years, but work never began there until last summer. There are now two hydraulic claims, each employing ten men, and there are numerous other locations which have gold, both quartz and placer. There are two companies operating the hydraulic mines, but the combined investments do not exceed \$30,000. What is really wanted is capital. Men have gone in there and taken up the claims and are simply waiting for the money. They are willing to give capital the lion's share for an inducement, and to allow the investor to control. We have a lease of land from the Government and have prospected it thoroughly with shafts and otherwise. The placers will average 40 cents a cubic yard, and the quartz runs from \$20 to \$500 per ton. No difficulty is experienced, whatever, in getting it out. The Government is making roads. We now have a good trail the full length of the creek—fourteen miles. A wagon road runs up for a distance of seven miles. The country is not rough, nor in any sense disagreeable, and the work can continue unabated the year round so far as weather would interfere. In August or September the supply of water might give out, but at other times there is any amount of the finest water supply in the world. The men are now engaged in building the flumes, and these will not be required for a greater length than one and one-half miles. The mines of Alberni are so near home that people do not realize their richness. They have the idea that they must go somewhere at a distance, but to go into the Yukon mines work cannot be done for more than ninety days of the year, and then the expense of going and coming must be considered. We pay good workmen \$2 a day and board and all are busy. In my opinion we will have a boom in the spring." Alberni is in the centre of Vancouver Island, and the nearest point of any size is Nanaimo. Alberni is fifty-four miles from Victoria and seven miles from the boat landing, the latter being the distance which Mr. McQuillan refers to as being covered by a good wagon road.

CARIBOO.

It is reported that the Cariboo Gold Fields Company's pipe will go forward yet this season.

Along with operations that will next year be carried on by the Cariboo Gold Fields, Slough Creek, Lightning Creek and other smaller operations, Barkerville will be a veritable hive of industry.

A cyanide plant is to be erected at Barkerville to treat the ores of the Black Jack Mine. It will be under the supervision of W. Pellet-Harvey, the agent at Vancouver of the Cassels Gold Extracting Company, of Glasgow.

A nugget, weighing over half a pound, came down by express from Stanley this week. It is worth over \$160 and is a very handsome specimen. It was found in Lightning Creek the past season.

Work on the Montreal Company's mines, on Quenneville River, is still being pushed, and the immense amount of gravel in sight now much more than justifies the placing of a plant on the property. Work is being done to determine how largely and extensively this ground shall be opened up. In other words it is the size of the plant and plans to be determined and not the richness of the ground. This is already known.

Among the many other great propositions that will be pushed next season is work on Antler Creek, and the starting of a tunnel to eventually drain the Williams Creek Meadows and the well known Kurtz and Lafe ground. This property has been placed by Mr. D. Oppenheimer, of Vancouver, with an English syndicate, and a private bill will be asked for this winter conferring some privileges on the company.

The best mining men who have visited the Cariboo country this season, agree on one point at least, and that is that mining in Cariboo has just begun, but that hereafter combination of capital is what is required, and from the present indications it is fast going that way seeking investment. When companies take hold of properties that have the merit that all well informed mining men believe Lightning Creek to possess, we have no fear of the result.

Under date of December 20th, W. T. Sargent, secretary of the Slough Creek Mining Company, writes: "The weather has been against us, and, as a consequence, we have not been able to make another start on the extension of the tunnel over to the Nelson Creek bench, but it will be started as soon as possible. The men are waiting until the surface water has run off so they can begin. We will then push it as fast as possible."

The fact of work began commenced early next season in the way of a bedrock tunnel on Lightning Creek is very welcome news. An English syndicate has been interested in the proposal to run a bedrock tunnel, and ample funds provided for the work. Ten leases taken out this season by Messrs. Adams, Boyd, Peebles, McLeese, Reid, Fraser, Tingley, Harvey, Mackay, and Reynolds, will be shortly transferred to the company, and some special legislation asked for in the way of consolidating this group of claims, embracing as they do, five miles of ground. Surveys and preliminary work will be begun early in the spring and the work pushed earnestly.

F. H. Lahtz, foreman of the Montreal claims on Quenneville River, near Beaver, was in town on his way to Alberni. Mr. Lahtz reports work on the Montreal Company's ground as going ahead in good shape. The cross drift is in to rim rock, 1,700 feet in the upper benches, and good gravel was found all the way. Shafts have been sunk at various places in the course of the drift. Some very rich ground has been found, and the company on the whole are well satisfied. It is expected that a large force of men will be put on early in the spring, and work in earnest commenced in the way of building dam, ditch, etc. The dam will be either made of cement or of logs and gravel. It is in good ground and can be made solid beyond a doubt. It will require to be about 50 feet in height and the ditch line will be about fourteen miles long. An immense ditch will have to be constructed to supply water enough, as the company will open up at least two or three pits and calculate on running half a dozen monitors. A road will be built from above Frank Guy's, at Beaver Lake. The cost of opening up this gigantic property will be not less than a quarter of a million dollars, but, whenever opened up, will be a dividend payer longer than the present owners.

can expect to live. It is expected to take two years to get the mine in working order. Mr. Lantz will return in a few weeks.

EAST KOOTENAY.

The Dibble group of mines in East Kootenay have been bonded by Messrs. Sprague & Chisholm, in the sum of \$25,000.

A snow road from Fort Steele to Tobacco Plains will be made this winter. There were 140 mining locations made in the Fort Steele division this last year. The North Star is working in a body of very rich ore.

At present many parties are engaged in prospecting the old channels of various creeks in East Kootenay. Placering is still actively operated on several well known streams during the working season.

Fort Steele expects a considerable influx of men and money next spring.

The North Star has about 1,200 tons of ore on the dump awaiting shipment next spring. The development of Fort Steele mining is sadly hampered by the absence of adequate shipping and transportation facilities. While several thousand tons could easily be produced by such mines as the North Star, St. Eugene, Dibble and Sullivan groups, all the opportunity for is provided shipping by two small streams, capable of hauling about 125 tons a week. And this they cannot do steadily for want of improvement in river navigation.

These mines are situated on the east fork of Wild Horse Creek, some two miles from the forks. The Sweepstakes, located by Chas. Elwood, Maud S., by H. L. Amme, and the Nancy Hanks by A. B. Grace, have the largest vein of mineral discovered in this district. The vein is 400 feet in width, and can be traced for a distance of 4,000 feet. There has been considerable work done on these claims, the ledge has been cut showing mineral the full width of the vein; there are numerous small cuts some sixty feet apart; also a tunnel in some 15 feet. The ore is iron sulphurets, an analysis of the ore is: Lead carbonates, silver sulphide, iron sulphurets per oxide, manganese oxide, zinc sulphide, aluminium oxide, gold, silicon oxide (quartz). As there is a large body of this ore, it can be profitably worked by smelting with galena or any other lead product. An average of 14 assays give \$17.80 to the ton. In the event of a smelter being erected in this district, these claims will prove valuable (aside from the gold and silver contained in the ore) as a flux to any and all lead products.

One of the various resources of East Kootenay awaiting for development is the petroleum found in the Flathead Valley in the southeastern portion of this district. This is a section of country but little known—and is separated from the remainder of the district by a high range of mountains. The natural outlet of the valley is down the Flathead River into Montana, and the nearest railroad is the Great Northern. Some years ago attention was called to this section through the finding of crude oil in the possession of some Stony Indians who annually hunted in this valley. They were induced to show some miners where they obtained the oil, which they (the Indians) were in the habit of using as a medicine for complaints of all kinds. The surface indications are good, and two different qualities of oil have been obtained.

WEST KOOTENAY.

The Black Diamond will resume operations this month, and soon after the new year a tramway will probably be

put in on the lake shore, to convey the ore from the property and the Little Phil and the Little Donald.

McVicar Brothers have bonded the Mile Point from G. B. Wright, and are taking out several tons a day that assay from 100 to 300 ounces.

The Skyline continues to ship twelve tons of ore a day. At present they are working in a chute of ore that assays 700 ounces.

An English party are taking a bond on three properties on Gold Hill, Illecillewaet. They will do more during the coming three months. Before the fall in silver considerable work was done on these properties, which carry silver, lead, and gold in a vein of from six to ten feet.

The Minister of Mines has changed the boundaries of the Trout Lake and Ainsworth Mining Divisions by detaching from the latter all that portion of Duncan River lying above East Creek, and adding it to the Trout Lake Division.

At the No. 1, under the new management, with a force of only one-fourth that formerly employed, they are taking out double the amount of ore. They now have over 1,000 sacks ahead of the teams. The bulk of the ore runs from 80 to 100 ounces and much of it is from 1,000 to 3,000 ounces. The breast of the "silver drift" now shows nearly four feet of ore that assays above 1,600 ounces. The concentrator is closed down for the winter on account of low water.

Since March 16, 3,000 tons of bullion have been shipped from the Pilot Bay smelter, and this too when the smelter has been running only about half time.

Messrs. Baum, Bigham, and Lendrum, who have a claim near the townsite of Lardo, at the north of Kootenay Lake, sent 1,300 pounds of ore to the smelter at Pilot Bay for a test. The return made was 106 ounces of silver to the ton. The vein is two feet wide and carries six inches of ore.

Fifteen tons of 150-ounce and 35 tons of 80-ounce ore have been extracted from the No. 1 at Ainsworth. Besides this there are 150 tons of concentrating material which will run five tons into one and average 100 ounces per ton. The management expect to realize a profit of \$1,000 for the company the first month, and thereafter much more, as considerable dead work had to be done the past month.

The Canadian Pacific Mining & Milling Company has completed its wharf at Woodbury Creek, and some 28,000 feet of lumber for a flume have been delivered. The force is busy at present putting in the timbers for the flume and power building. The water wheel and compressor are expected next week, having been shipped from San Francisco some ten days ago. This mine will soon be a shipper, an immense body of ore being in sight.

An English company that proposes to operate in British Columbia mines, has obtained terms for a bond on two claims a few miles from Illecillewaet. The deal will be closed in March.

The Isabella, the richest grey copper claim in Illecillewaet, was worked at a former time, the ore averaging 300 ounces of silver; and some samples running as high as 3,000 ounces to the ton. It belongs to the Lanark Company and five men will be employed on it during the winter.

The asbestos find at Trout Lake has attracted considerable attention from outside, and several letters of inquiry have been received from parties desirous of in-

vestigating its possibilities. The discovery was made too late to permit of work being done on it this season, but the owners intend opening it up as soon as possible, and a trial shipment will be made. Expert opinion has been obtained upon several samples and it is pronounced of a very high grade.

During the ten months ending October 31st, the smelter at Tacoma received 12,788,214 pounds of ore from British Columbia, of which 8,297,103 pounds were from West Kootenay, and 4,500,111 pounds were from different points on the Canadian Pacific. Unless the ore credited as coming from different points on the Canadian Pacific includes the iron ore shipped from a point near Kamloops, all, or nearly all the ore from British Columbia came from the mines in West Kootenay. From the above figures, the smelter at Tacoma draws nearly all its ore from British Columbia. If British Columbia ore can be profitably smelted at Tacoma, a point distant 600 miles from the mines that supply the ore, the ore can and will be smelted at points nearer the mines. Within a year 75 per cent. of the ore mined in Kootenay will be treated at reduction works in Kootenay.

BOUNDARY CREEK.

Returns from the sample of ore taken from the Smuggler claim in Fairview, a short time ago, and sent to the Tacoma smelter, and also to the Cyanide works at Vancouver, gave in one case a return of \$31 per ton in gold, and in the other \$39.

Gradually the ore body widens out as depth is obtained upon the Anarchist Mine in Camp McKinney. At the present time, the vein is over four feet wide and is becoming more and more mineralized as the shaft goes down, which is now some fifty feet deep. Mr. Sidney, the owner, reports an offer having been made by monied men to put a 20-stamp mill upon the property for a half interest in the claim, which offer may in all probability be accepted.

Recently, from the 45-foot tunnel of Ingrim Mountain claim, a vein almost a foot and a half wide was struck of what is known as copper glance, which assays some 75 or 80 per cent. copper and from \$10 to \$15 in gold.

Articles of incorporation of the Old Ironsides Mining Company were signed lately. The company is formed for the purpose of developing and working the Old Ironsides Mine. The company is capitalized at \$1,000,000 in shares of \$1 each. This property was located July 25th, 1891, by Henry White and Matt Holter, who were the discoverers of the camp. "Numerous cuts have been made on the property," said Mr. Palmerston, "and it is estimated that over 1,000,000 tons of ore can be quarried without any expense for hoisting or pumping. The enormous quantity of ore and the cheapness of handling renders very low grade ore profitable."

Mr. G. Cook is engaged sinking on the Ruby claim, near Boundary Falls, a property adjacent to the American Boy, and, as far as the work has been prosecuted, splendid results have been attained. The ore, which is a copper sulphide carrying gold, is of a very rich looking character, and the ledge is sufficiently extensive to warrant any amount of work being done and money spent upon it.

The Last Chance, which adjoins the famous Copper claim in Copper camp, has been bonded by Mr. W. T. Thompson on behalf of eastern capitalists. The Last Chance is a west extension of the Copper, and was located in 1891 by Mr. W. Austin. The character of the ore is similar to that of the Copper, being what is

termed a red oxide, which carries from 10 to 15 per cent. copper, and from a trace to 20 ounces silver, and from \$1 to \$10 in gold.

TRAIL CREEK.

There are 3,000 tons of ore on the dump of the Le Roi mine, Rossland, awaiting shipment to the Trail smelter.

The new shaft on the Zilor is down about twenty-five feet, with clear ore from wall to wall. Assays run from \$40 to \$50 in gold.

Leslie C. Hill, a mining engineer of high standing, has been making a study of the camp. Mr. Hill came at the instance of some London people, who want to learn something of the mines of West Kootenay.

The Le Roi is raising more than 100 tons of ore a day; one day last week they took out 125 tons. The wagons are not able to move the ore as fast as it is taken out. As a consequence all the ore bins are full.

It is an almost assured fact that a smelter is to be built, in the immediate future, within a mile of Rossland. Two most influential mine owners are now making the final arrangements for its erection with a well known smelter man.

Siinking is being continued in an old shaft on the Gopher, and the first shot or two uncovered four feet of fine looking ore, which, upon being assayed, went \$16 in gold and eight ounces in silver. This is equivalent to something over \$20, and is quite encouraging.

The Cliff deal is off. Work on that property will commence again next Monday under the old management. It is assumed that Mr. Barnard's company gave up the option on the Cliff mine on the report of Mr. Benedict, the expert employed to examine it. The conclusion he is believed to have reached is that the price was too great for the available ore in sight; not that the ore is not in the mine.

The quality of the ore in the Le Roi continues to improve with depth, nor does there seem to be any falling off in extent. The shaft is now down 420 feet. If the width of the vein is maintained to the 450-foot level, where a station is to be made, Judge Turner, the manager, estimates he will have 100,000 tons of high grade ore practically in sight. There are two most reassuring features in the deep working of the four best developed mines in the camp; they are improvement in the character of the ore and maintenance of the ore body. These four mines are, the War Eagle, the Le Roi, the Josie and the O. K. Some of the War Eagle ore taken out recently has run as high as \$800 per ton in gold. Every one of these mines is far greater in this important respect than it was six months ago.

At the Crown Point the ore body is still looking fine. The shaft is down about 150 feet, and a drift has been run in on the lode for about 70 feet. This mine will be a shipper all winter, and is only waiting for good sleighing weather to commence the shipment of between 600 and 700 tons of rich ore now stored at the mine. The Crown Point is one of the best developed mines on the south belt, and is within view of Rossland.

After struggling with a faulted vein in the upper tunnel of the Cliff for some time, the men finally discovered the ore shoot last Monday. They discovered a narrow stream on the left side of the north-west drift, about forty-five feet from the face, and a few strokes of the pick disclosed a foot wall and vein matter. By Wednesday the clean ore was fully exposed, and presented a solid, permanent appearance. It is a beautiful chalc-

pyrite, the richest copper ore yet found in the camp. The ore body has increased to three feet, and a sample taken on Wednesday returned 20 per cent. copper and \$21 in gold, equal to a total value, not counting silver, of about \$45 per ton.

Those who know, predict that early next year there will be considerable mining development in the vicinity of Champion Creek, seven miles south-east of Trail, on the Columbia river. Claims were located on this creek in 1891, but no work to speak of was done by any of the locators until this spring. The principal mines are the Free Coinage, Jeff Davis and Black Hawk. Assays made of samples from these properties have gone as high as \$21 in gold and 12 per cent in copper. These mines are located four miles back from the river, at the head of Champion Lake, from which the creek takes its name. This winter there will be upwards of forty men working thereabouts.

KASLO-SLOCAN.

Over two thousand claims have been recorded in the Slocan since the first claim was located on Payne Mountain, on the 9th September, 1891.

A barge, partially laden with iron ore obtained in Kaslo Bay, has been towed to Pilot Bay, where an experiment will be tried to ascertain if it can be economically utilized.

The owners of the Yakima group and Cumberland Mine, Slocan district, have organized two companies to work these properties. The one to work the Yakima group is called the Sunshine Mining Company, and the one to work the Cumberland is called the Cumberland Mining Company. Each company's capital is \$500,000, and both have the same officers.

Mr. H. Abbott, general superintendent of the Pacific division of the Canadian Pacific Railway, has bonded the Legal Tender mineral claim from Messrs. Freeman, Pease and Wilson, for \$30,000. The claim is situated in Slocan district, and adjoins the Noble Five of the famous group of the same name on the northeast.

Last month the Slocan Star contracted to furnish the Tacoma smelter with 500 tons of lead ore. The order was filled in exactly fourteen days. Mr. White states that he could easily produce 1,000 tons per month.

Two hundred and seventy-two tons of ore were shipped from Kaslo in one week lately. Of this quantity 197 tons is to be credited to the Slocan Star, and the remainder is divided between the American Boy, the Goodenough and Ruth. The Slocan Star ore went to the Tacoma smelter, with the exception of eighteen tons, which were sent to Everett. The ore from the other mines was sent to Pilot Bay.

The Hall Mines Co., Ltd., has purchased the Iron Hand, a claim on the Kaslo and Slocan Railway, about 15 miles from Kaslo. The sellers were Thomas McGovern and William Franklin, of Ainsworth; the price, \$1,500. A contract has been made with James Sproule to mine 1,200 tons of ore and deliver it in chutes at a siding that is to be built by the railway. The Iron Hand ledge is about 50 feet wide, the ore carrying the right percentage of iron to smelt in combination with the Silver King ore.

The snow falls have made rawhiding possible in the Slocan district. The Goodenough has two carloads ready for shipment, which will be sent to the smelter at Pilot Bay. On the south fork of Kaslo Creek the owners of the Gibson will bring down a carload, which will also

go to Pilot Bay. The Slocan Boy will also ship at an early day. The large properties will also rush forward to an early market the output of several months.

New mines are being opened up constantly in the Slocan country, and a great many of them begin to ship ore almost immediately. Much of this ore is in narrow veins, but it is so rich that a carload of it often yields five or six thousand dollars. The result is that but few large companies are operating mines. It is a poor man's country and scores of prospectors are working the claims they discovered and are making money on them.

YALE.

Work is being pushed ahead on the Wanderer mining claim, near Enderby.

Capt. Scott, of the Anglo-American Gold Mining Co., reports that the hydraulic plant at their mine in Similkameen is all ready for operation in the spring. Cold weather has set in in Similkameen and everything is frozen up.

The original locators of the Bon Diable mineral claim are steadily prosecuting their development work on this property, and this week will send off a shipment of ore to Vancouver for test treatment. They have every faith in the richness of their discovery.

Mr. W. F. Cameron (contractor) and Messrs. J. A. and C. E. Mohr, who have been working all summer on the Similkameen near Granite Creek, have come home for the winter. They say that big results are expected next summer from the hydraulic claims on the Similkameen and Tulameen, and on the latter stream valuable quartz discoveries have recently been made.

Mr. W. Bellamy, from Vancouver, has been lately investigating a mining proposition on the Thompson River just below Savonas. A bar nearly two miles long prospects fairly well, and more work will be done to prove the value of the proposition. Mr. Bellamy is so far well pleased with the showing. The day is not far distant when many of the banks and bars of the Thompson will be worked.

Mr. F. H. Latimer, C. E., who recently returned from a trip to Camp Hewitt, where he and his partners have completed their assessment work on the Farmer mineral claim, is more than ever convinced that a big thing is in sight in that camp, where in all the claims that are being developed the rock continues to increase in value, and gives evidence of justifying all the predictions that have been made regarding the rich nature of the mineral deposits of that district.

Mr. F. M. Kirby, C. E., went down to Camp Hewitt a short time ago to survey the mineral claims, Dandy, King Solomon, and Meadow Lark. These claims are being developed by a Vernon company, including Messrs. W. J. Armstrong, W. T. Shatford and the original holders, Hewitt and Brott. They will do considerable work on them this winter and the present indications point to extensive and paying leads being uncovered on all three claims.

Mr. Veach, who is the foreman in the mine, Savonas, stated that about twenty-three men were at work, all but four being white miners. The mine is looking well, but no smelting is being done just now on account of the retorts not being protected by proper buildings from the weather. Drifts are being run and the mine thoroughly opened up. The grade of ore is very high. This mine is said to be the only producing quicksilver mine under the protection of the British flag.

Mr. Chas. H. Ballard, a mining expert and engineer, whose name is well known throughout Western America, left the other day for Monashee mountain where he has been sent by Montana capitalists to inspect and report on the Monashee mine, the property of Mr. D. McIntyre. There are many who place every reliance in the Monashee mine, and firmly believe that if properly worked there is a big thing in it. We trust that Mr. Ballard's trip will result in these ideas being justified, and that the owner, who is well known in this city and highly esteemed, may yet reap a rich reward for his many years of arduous and patient toil on this proposition.

One of the most remarkable mining events of the year in the Similkameen country was the find of copper on the Tulameen on Wolf Creek, about seven miles from the Anglo-American Company's property. The place is known as Copper Mountain. The vein is 400 feet wide and can be traced through three mineral claims, or 4,500 feet, and assays have been got from 40 to 76 per cent. copper, 15 and 16 oz. in silver, and \$6 in gold. Mr. Stevenson, with Jas. Jamieson, came on this vein eight years ago, and the former is now interested in the property. Mr. Stevenson has also found coal about one mile from the hydraulic mine. There is a strong vein, which can be traced for a mile. The coal is good for coking and the find may yet prove of value. Mr. Stevenson expressed great confidence in the many resources of the Granite country, and next summer he predicts will be an active one.

A mining deal, which, in magnitude probably is entitled to rank highest among any that have yet been consummated in the Province, has been recently carried through by Messrs. W. T. Thompson, of Fairview, and S. S. Fowler, of Chicago. These gentlemen, in company with Messrs. Henry White, the energetic and old-time miner who has brought White's Camp, in the Boundary Creek district, into prominence, and Mr. Austin Hammer, another well known mining man, of the southern Okanagan, are at present staying at the Kalemalka Hotel, awaiting the conclusion of the deal. The purchasing parties, who have secured in all fourteen claims in the famous Copper Camp and White's Camp, are, beyond any question, the strongest financial company that has yet become interested in mining properties in this district, and their ability to carry through any enterprise in which they may become engaged is beyond dispute. Along with Messrs. White and Hammer is Mr. John Moran, a co-owner in some of the properties disposed of, who now reaps the reward of his tenacity of purpose and perseverance under trying difficulties. This deal will reach into big figures—between two and three hundred thousand dollars, and though we at present cannot get at all the details of the purchase, sufficient is current to warrant us in saying that nothing approaching in importance to it has yet-taken place in this district, and by it the Okanagan Valley appears to be on the verge of an era of prosperity that will exceed the expectations of the most sanguine.

History of Mines in British Columbia.

No. 2.

In the last issue of the British Columbia MINING RECORD a short history of the period prior to 1858 was given. Up to 1858 nothing but preliminary work had been done, and little was known of the mineral resources of the Province except those revealed by the fragmentary discoveries of Indians and officials of the Hudson Bay Company. It was in 1858 that gold mining really began, and from that period dates the history of mining in this

Province. The increase in the production of gold was rapid, and from \$705,000, which is a rough estimate of the output in 1858, it rose in 1868 to \$3,913,563. This latter amount came largely, if not altogether, from the Fraser River and its tributaries. In following the somewhat irregular and uncertain course of mining in British Columbia, we find that there were series of excitements, all followed by "rushes" to new mining camps, and that interest in mining was proportionately stimulated, each of these being marked by an increase in the mining output for the time being. Thus we have a decline from 1862 to 1870, then an increase, then a decrease to 1873; then a jump in 1875 to \$2,474,000, since which there has been a decline until the present mining activity began, which, roughly stated, was five years ago. The effect of the activity of the last four or five years was not shown until last year for the reason that it was mainly directed to development of quartz veins. From this time onward we may expect to see the output steadily increasing.

Going back to the year 1858-9, during which time the work of mining was mainly confined to the Fraser River as far as Yale, we find that the same restless spirit which actuated miners in Australia and California was present here, and that daring prospectors had penetrated far into the interior. In 1861, after laborious and hazardous journeyings, Williams and Lightning Creeks, Cariboo, two of the most noted gold producers of British Columbia, were discovered, and in this and the following years most of the other rich creeks in Cariboo became known. Then began that rush which is the most notable event in the history of British Columbia, and one which has had the most lasting effects in determining its future. The finds were very rich and the lucky prospectors who became owners of claims amassed large sums of money in a very short space of time. These discoveries caused a second immigration from the outside world, which continued to grow until the year 1864. It will be remembered that the first immigration to Victoria, in 1858, from California, estimated at between 23,000 and 30,000 persons, was followed by almost as rapid an emigration, owing to the disappointment experienced by the greater numbers in not finding the gold equal to their expectations.

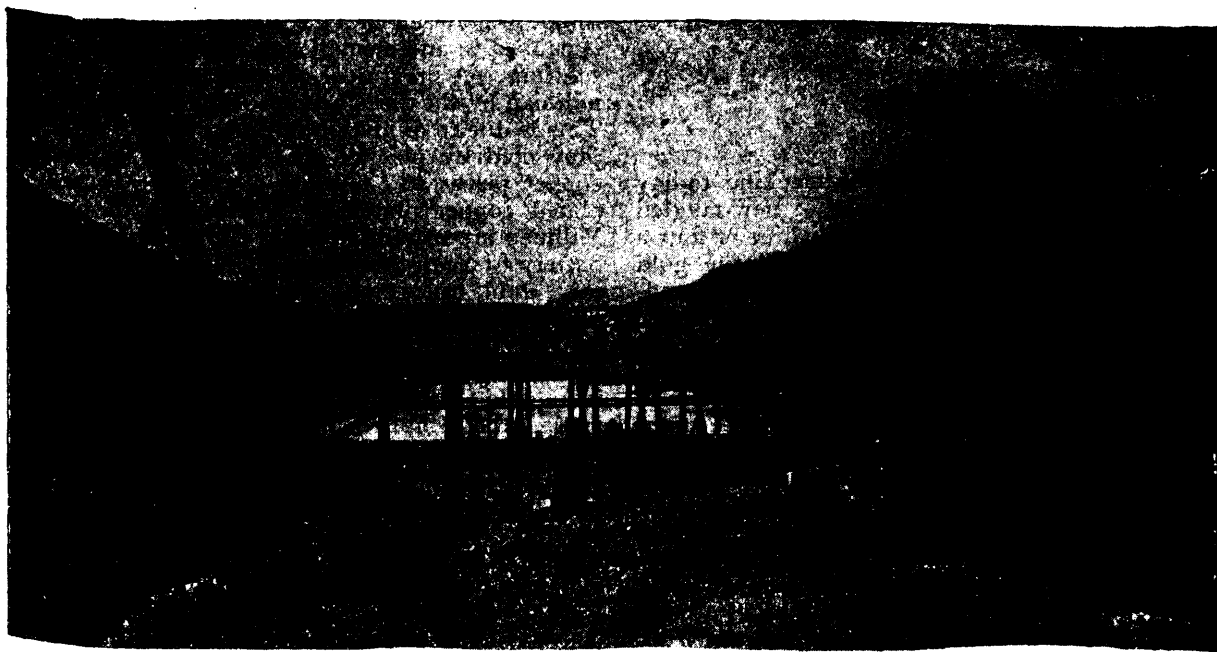
The second period of inflation was the result of letters from miners and others to papers in Great Britain, Eastern Canada, the United States, Australia and elsewhere, principal among which are a rather remarkable series of letters to the *London Times*. One of the direct results of accounts published in outside papers, was the celebrated overland party which came from Eastern Canada in 1862. A number of persons now living in British Columbia formed part of that party, and their trials and tribulations in making the long and weary journey will ever remain an interesting chapter in our annals.

Up to 1866 the principal operations were confined to Cariboo, but there were, in the meantime, several lesser excitements, notably the discovery of rich placer deposits on Wild Horse Creek in the Kootenay district, in the extreme southeastern part of the Province. Then the Leech River excitement of 1864, in the southern part of Vancouver Island. And again the Big Bend excitement of 1865. The deposits in the last named place were found to be rich, but the inaccessibility of the region, the total lack of facilities for bringing in provisions, and the great hardships consequent upon prospecting and mining in this district, proved too great for continued success, and the excitement quickly subsided. It is quite probable, however, that the Big Bend country will soon again excite the interest of miners and prove a rich field for them.

Shortly after the discovery of Cariboo gold mines, the restless prospector began pushing his investigations further north, and in 1869 the Omineca country was reached, where an excitement of not inconsiderable dimensions took place and numbers rushed in. These mines were fairly remunerative for a time, and have been more or less operated ever since, but in 1872 the rich northern mines of the Cassiar District at the head waters of the Dease, were brought to light, and the second most notable mining epoch was effected. Out of this district some five or six millions of dollars in gold were taken. True to his instinct, after the first richness of the Cassiar Creeks was exhausted, the prospector pushed further and further north, until finally in 1880 gold was found in paying quantities in the tributaries of the Yukon. Ever since that time, this District, which extends further north than the extreme limit of the Province, to the land of the midnight sun, has been the field for miners and prospectors, and though not meeting with the returns with which they were rewarded in the Fraser River, and Lighthing, William's and other creeks in Cariboo, the returns have nevertheless, been sufficient to attract them year after year. At the present

deposits, and the machinery being such as is employed in the primitive cradling of the rocker and the more antiquated modes of hydraulicking. Since then attention has been directed to quartz mining, in which, if we except the somewhat notable quartz excitement of Cariboo by which a number of worthy citizens of the Province lost money, nothing heretofore has been done, and without means of communication nothing indeed was possible. The latter period is the one to which we will devote more particular attention in future articles. It may be called the railway era of British Columbia. The extension of railways and the branch lines in the various mining districts in the southern portion of Kootenay has made possible the development of which we hear so much to day, and which promises in the near future to give us rank with the great mining countries of the world.

• As to the period prior to this much is given in Bancroft's History of British Columbia, more particularly with reference to the excitement of Cariboo. Dawson, from whose pages much of the foregoing has been condensed, says that the details there collected may be consulted with advantage, and have been frequently referred



AERIAL TRAMWAY, HALL MINE COMPANY.

time the Yukon is a prospectively rich country, and during the last year or two, many adventurers have gone in, and the success of their efforts have been such as to attract the attention of the Government of Canada, the field being considered of sufficient value and importance to justify its borders being protected by detachments of the Northwest Mounted Police. Great hopes are entertained of this most northerly mining district, and when easy communication by rail or otherwise is established, it is anticipated that results not second to Cariboo itself will be achieved.

In 1885, Granite Creek, a tributary of the Similkameen, afforded evidences of rich placers, and a small rush occurred and although not so rich as was supposed at first, it has ever since occupied the attention of prospectors, and during the past two years has received very considerable exploitation.

The period between 1858 and 1885 may be now regarded as an historical one, the events relating to which and the development being those associated with placer

to in connection with localities mentioned in later pages of this report. It must be added however, that many of the statements quoted by Bancroft must be accepted with caution, having been derived often from newspapers of the time and other sources not always trustworthy, but which it has naturally been impossible for the compiler to check, and many of which call for an intimate local knowledge of the country to properly correlate.

Dawson in the report referred to, in concluding his historical summary of events up to the time when it was written, says:

"While it may now be safely affirmed that gold is very generally distributed over the entire area of the Province of British Columbia, so much so that there is scarcely a stream of any importance in which at least 'colors' of gold may not be found, the enumeration of the principal discoveries of mining districts show very clearly that most of these are situated along the systems of mountains and high plateaux which comprise the

Purcell, Selkirk, Colorado and Cariboo ranges, and the northwest continuation lying to the southwest of the Rocky Mountain range, properly so called and parallel in direction with it. Of all the gold producing districts, that of Cariboo has proved the richest and most continuously productive."

We have thus hastily glanced over a comparatively speaking wide stretch of history, the details connected with which are of extreme interest, but which must be dealt with by sections to be fully appreciated. In subsequent chapters these may be taken up and the various succeeding phases more carefully examined and for which purpose the foregoing may be regarded as preparatory. There has been much disappointment in the expectations formed by pioneers of mining in British Columbia, there have been many financial reverses for those who have risked their money on mining ventures, and hope has been time and again deferred. Year after year for many years, the people were invited to bright anticipations for the "next year." Few lost hope, however, and the faith in our future, long clung to, sometimes almost in despair, is, we are glad to say, to-day stronger than ever. It has been strengthened by results, which are coming at last, and it may be safely stated that the long looked for day of great things is speedily on the way.

The Stamp Mill.

BY G. F. MONCKTON.

The stamp mill is the most efficient machine to-day existing for producing gold. In spite of new-fangled processes that are invented at the rate of three or four a day, guaranteed to save all, or more than all the gold existing in the ore, the machine, which, it is believed, the Romans invented, and the moderns have improved, still fills the air in the neighborhood of mining camps with its incessant roar. The first stamp mill that we know of as being in actual work was in the Hartz, in 1210 A.D. In that district to this day the improvement in the machine has not been so much the form as the increase in weight. The stamps at present working there are still composed of blocks of stone, into the upper part of which fit wooden stems. The stone used is a hard phonolite which has the advantage of not producing fine chips of iron. The Cornish stamp is also a type which is fast going out of date. In a plant of this kind the striking part is composed of a block of iron. In the upper part of this is a hole into which fits the shank, spindle or stem, as it is variously called. Sometimes the lower part of this shank is made of iron. On the shank, higher up, is a projecting piece of iron, called the tappet. Motion is given to the stamp by means of cams which are let into a band of iron round a revolving wooden shaft. The stamp falls into a long box, which, in Cornwall, is called a "gopher," but, in other places, a battery box. The floor of it, in Cornwall, is usually made by stamping down fine material, and then placing under each stamp a piece of cast iron, called the die. When these stamps were introduced into America in the early gold rushes they were soon improved. It was found that by turning the stamp it would wear more evenly, and the material underneath would be more thoroughly worked over by reason of the swirl caused by the revolution. In order to accomplish this the square Cornish stamp gave way to the round Californian one, the form of which has, in the main, remained the same ever since, and the cams were curved so that the stamp should slip off and partially turn each time that it is released. The batteries of four stamps were replaced by batteries of five, and it is generally believed that the middle one of the five does more work than any of the

others. The front of the battery is covered with a screen. A stamp now consists of a stem, a tappet, the position of which can be altered at will, a large block of iron called the vol, into which the lower end of the stem fits, and a shoe which fits into this. There is also a die underneath the stamp which is made tight in its position with tailings and wedges. The dies and shoes constantly wear out and have to be replaced. The driving pulley of the battery is made of wood with a cast iron hub, it having been found that a wheel of this kind stands the vibration best. The ore is fed into the battery at the back.

The object of the battery being to save gold, by means of the affinity of mercury for the precious metal, mercury is introduced at intervals. There is usually a copper plate inside the battery on which the amalgam may settle. Outside the screen is a table coated with copper plate. This has a slope, generally of one and a half in twelve. On these copper plates the amalgam which escapes from the battery is caught. In order to render these copper plates fit to catch the amalgam it is necessary to dress these plates with a solution of some kind. A very common method is first to scour the plates with fine tailings, then to pour on nitric acid to make them "bite," and wash with clean water. After this, mercury is rubbed in and a small quantity of potassium cyanide solution. A great deal of annoyance is caused to the millman by the discoloration of the plates when working. This is due to oxidation of the copper. This has been prevented by placing an iron rod in contact with the copper plates and forming a galvanic couple. Silver-plated copper plates are often used to prevent this. Millmen are usually too fond of putting cyanide into the battery to clean the plates. Of course, cyanide will dissolve gold, unless it should find a sufficient quantity of a metal which has a greater affinity than gold, such as lead or zinc, to take up. Copper plates should be enameled before they are used. A curved plate will save more gold than one which has the same inclination all its length. Impure mercury is often a cause of bad work. Quicksilver should be cleaned by giving it a bath of dilute nitric acid. It has been proved that gold, which has been hammered, amalgamates badly. Impurities in water often give trouble, copper salts causing a precipitate, and subsequently resulting in an amalgam of copper. Sulphate of iron is a more common difficulty. Beyond the stamps, concentrators are usually placed. These collect, at a trifling cost, the sulphurets, which would otherwise be lost in the tailings. There are also boxes provided at the end of the plates to catch the mercury. Only the so-called free milling ores can be treated in the stamp mill, that is ores in which the gold exists free from sulphurets. A certain percentage of sulphurets does not prevent successful work. Sometimes the gold is covered with a film of oxide of iron which prevents amalgamation. The screens in front of the batteries are often made of punctured iron, but wire cloth is rapidly superceding this. In Australia a remarkable innovation has, in some cases, been made by having a discharge from the ends of the batteries as well as from the front. The idea was to obtain a greater output, but apparently the desired result has not been compassed as the designers hoped. In Australia, also, the framework of the batteries is usually made of steel and wrought iron instead of being of wood as on this continent. The weight of the stamps is usually about 850 pounds. Some have been made of 1,000 and even 1,100 pounds, but the extra weight does not seem to produce better results. Pneumatic stamps are also used, but have not come into great favor.

The work of stamps will be best judged by the following table :

	Cost of Milling.	No. of Stamps.	Weight of Stamps.	Coke Per Stamp.
Haile Mine, S.C.....	49 cents	.....	.....	.....
Caledonia, Cal.....	74 "	.....	.....	3.25 t'ns d'ly
Sierra, Butte.....	59 "	.....	850lbs	.....
Plumas, Eureka.....	45 "	60	800 "	.....
Hite Mine, Cal.....	25 "	40	800 "	.....
Loyal Lead, Cal.....	95 "	10	700 "	.....

The cost of milling in Australia is usually about \$1, sometimes less; of South African mines, the Simmer and Jack give \$1.25, and the Crown Reef \$1.18, as their milling cost. No paper on this subject, written in the Dominion, would be complete without mentioning Mr. Hardman's work at Waverly, where the cost is 48 cents per ton, and at Oldham 28 cents. At Waverly there are ten stamps crushing three tons each daily, worked by steam. The mill at Oldham is worked by water. The batteries are quadrant plates outside the batteries on which the pulp falls.

A great deal of discussion has recently taken place with regard to the breaking of stamp stems. Some claim that this is due to crystallization caused by the vibration. Dr. Barnes has shown that the molecules of steel are always subject to incipient change. Experi-

ments of Walberg, Swing, and others would seem to point to the conclusion that this might be so. That renowned engineer, Dr. R. W. Raymond, however, says that it is not even settled that vibration will crystallize iron under any condition. Professor Ledeben, now considered the highest authority on iron and steel, goes so far as to say "that the idea that fibrous wrought iron is converted into granular, under continuous shocks, is entirely erroneous." Professor Rankin cautiously refers to the subject by saying that "at all events iron should be as little as possible exposed to sharp blows." Rickard, the State Mineralogist of Colorado, is a firm believer in the theory. On the other hand, the committee appointed by the United States Navy Board to consider the effect on iron, a committee which consisted of such men as Holley, Beardslee, SooySmith and Gilmore, could only find one certain case of it.

The question of stamp-milling is a question which should be studied by those interested in mining in this Province, for the writer's experience as an assayer here leads him to believe that the day is not now very far distant when mountain and valley shall be sounding with the music of the stamps.



NELSON B. C.

Around Nelson.

The Nelson *Tribune* says that the Hall Mines smelter is now receiving its finishing touches, and Paul Johnson, the superintendent, announces that the furnace will be blown in. Though relatively a small concern as compared with many American smelters it has been constructed with a view to probable enlargements, so that

at minimum cost it can be increased from its present capacity of 100 tons per day to a capacity of 500 tons. In point of convenience, however, it is doubtful if the smelter has its equal in America. Mr. Johnson says it has not, and having seen the greater number of American smelters he knows what he is talking about. To begin with, the company had an excellent site for a smelter, and in the construction the work was so admir-

ably planned that every natural advantage was turned to account, even to the natural reservoir formed by the country granite on the hillside above the works. The bucket-tramway which connects the Silver King with the smelter is now in perfect working order, bringing down the required 100 tons per day with ease. By reason of its great length some difficulty was occasioned in operating the tramway at first, but it may now safely be said to have passed the experimental stage. Up to date it has brought down some 1,800 tons of ore, which has been deposited in the large bins erected at the end of the line, at a slight elevation above the smelter. There are seven of these bins, each with a capacity of 1,000 tons. The ore as it comes down from the mine is sampled, a certain percentage of the buckets being dumped into one of the bins assigned to such purpose. From these bins a short gravity tramway has been constructed to the smelter. From these cars the ore is dumped into a series of gravity bins, from which it can be drawn as required for smelting. The details with respect to the construction of the smelter have been planned and carried out by Mr. Johnson, the superintendent. He is satisfied that with respect to working arrangements he has the handiest concern of its kind on the continent. From a careful sample of the general run of the mine, such as comprises the 1,800 tons now in the bins awaiting treatment, it has been estimated that the ore from the Silver King will average from forty to fifty ounces silver, \$2 in gold and from six to seven per cent. copper. Taking the lowest side of these figures it will give the ore a value slightly over \$40 to the ton. During the first few months the output of the smelter will be fifteen tons of matter per day. The gross value of the daily output will consequently be slightly over \$4,000.

A Vancouver Need.

There is no doubt that a great and growing need of Vancouver is the establishment of a local smelter, to which reasonable first aid might well be granted by the city, in the case of a bona fide concern, emphatically "bent on business."

The building and working of a smelter within the Terminal City would probably hasten by several years the development of many mine claims on the southern coast of the Province and on certain isles of the Gulf of Georgia; and also promote the vigorous working of extensive ore deposits known to exist at many points on lower Fraser. All these would be readily accessible by water from Vancouver, and, as many of the claims in question yield comparatively low grade ores, it is clear that these are unlikely to be worked with profit, and, therefore, adequately, unless, and until, provided with smelting facilities, to the place of which carriage is cheaply afforded, and on the site of which cheap supplies of fuel and fluxes are also made available. Now, Vancouver is readily accessible from many richly mineralized, yet, at present, undeveloped localities in British Columbia, by the cheapest of all means of transport, water carriage, and abundant supplies of coal, iron and lime are easily and cheaply obtainable. Labor, too, is plentiful, and another advantage of the city is found in the fact of its Oriental shipping services, which suggest markets for much of the lead and other metal smelted. China, in particular, as is well known, imports from the United Kingdom large quantities of lead, which might more conveniently be shipped from a Vancouver smelter, a circumstance which has, it is understood, already suggested, in at least one likely quarter, a desire, by the aid of British capital, to set up a smelter in the Terminal City.

The people of Vancouver generally appreciate the advantages to be gained from making their city something of a mining centre, and are understood to be ready to approve any reasonable action taken by the City Council with a view to encourage the setting up of a smelter of sufficient size and competent equipment to make a large yearly output. There is, consequently, good reason to expect the taking of early action in the matter by Vancouver's recently elected City Council, which has to redeem many pledges, readily given, of progressive, businesslike administration, with a view to further the general commercial development of what should, in course of time, become one of the western world's great business centres, as well as a great British North American seaport.

The offer of any civic encouragement should, however, be widely made known, in order to attract the best possible smelting equipment, as the outcome of vigorous competition for the right to take advantage of a specially good opportunity. There must be no "hole and corner" tendering, involving favoritism and jeopardizing success, for Vancouver cannot afford a second time to run the risk of failure in this matter.

N. C. SCHOU.

Fire Assays.

H. Van F. Furman, chief chemist at the Denver branch mint, writes as follows as to the general accuracy of the fire assay methods:

There is a popular impression among many miners and others that the fire assay (the usual method) for gold and silver gives results which are not only too low, but that the method frequently gives but a small portion of the precious metal contents of our ores.

Every mining community, and especially Cripple Creek, at the present time is inundated with "process men," who claim that they, by their own particular process, can save far more than the assay value of the ore, "as the fire assay is no good." Practical chemists and metallurgists, of course, pay no attention to such statements, as the discussion is an old one, and the accuracy of the fire assay for gold and silver has been so frequently tested and demonstrated that a discussion at this time would seem futile. While there is some reason for the belief that the fire assay does not return the full precious metal contents of the ore, the truth remains that it gives results which, considered from a commercial standpoint, are most excellent, and so near the actual contents in these metals that the writer doubts if any greater degree of accuracy is attained in the valuation of commercial products than that which is the result of the present Colorado practice for the assay and valuation of ores.

Under the English system for the purchase of base metals (copper and lead) the practice prevails of making an assay as the Cornish copper assay, which is supposed to represent the percentage of base metal which will be obtained in the actual smelting operation. Such a system does not prevail in United States, and as regards the assay for the precious metals the results obtained are supposed to actually represent the amount of gold and silver in the ore, as nearly as possible by commercial methods, the inevitable losses in smelting being allowed for by proper deductions from the price paid for the ore.

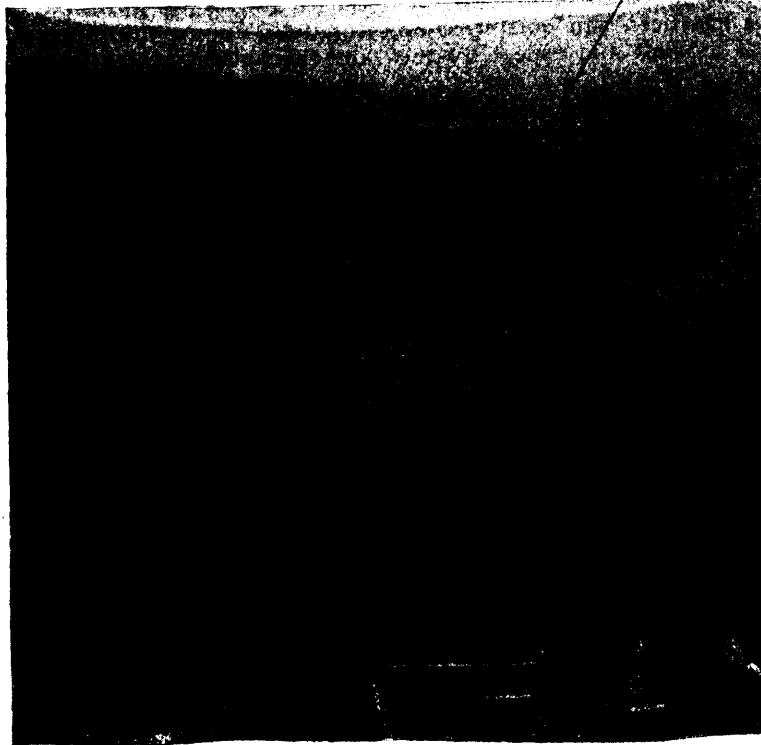
While losses of the precious metals do occur in the fire assay, when the assay is properly conducted these losses are quite small and not nearly as great as many suppose. In a recent series of experiments conducted by the writer the total actual loss of silver in crucible assays was 2.58 per cent. This was the average of a large number of experiments on a variety of material, the charges being made up so as to represent nearly

every variety of ore likely to be encountered. The loss of gold was but 0.3 per cent. In another series of experiments by the scorification method the silver loss was 2.54 per cent., and the gold loss was 0.6 per cent. These assays were all run in the ordinary manner such as would prevail in good commercial work. Recently, the writer examined three samples of Cripple Creek ore, with the following results: By crucible assays—No. 1, 39.0 and 39.5 ounces gold per ton; No. 2, 9.0 ounces gold per ton; No. 3, 22.5 ounces gold per ton. By scorification assay—No. 1, 39.5 and 39.0 ounces gold per ton; No. 2, 9.0 and 8.8 ounces gold per ton; No. 3, 21.8 and 22.0 ounces gold per ton. Before making these assays the samples were divided, and half of each was sent to an eminent eastern chemist, who determined the gold contents by chemical analysis, with the following results: No. 1, 39.0 ounces; No. 2, 8.8 ounces; No. 3, 22.0 ounces gold per ton.

As the chemical analysis should have given all the gold present, the results show that the fire assay may be relied upon. This ore was a high grade telluride, which is popularly supposed to be about the most difficult ore to assay and obtain correct results by the fire methods. The slightly higher results obtained by the fire method will be readily understood by practical assayers.

The Hall Mine.

The Hall Mine Co. Ld., have lately issued their report and balance sheet. The report shows a great deal of work done in the various tunnels in the Silver King which has proven the existence of two separate ore bodies, and by aid of the diamond drill it has also been proven that the ore bodies are continuous. The ore shows heavy yellow and grey copper with traces of peacock. The boring operations on the Kootenay Bonanza have also proven satisfactory. The tramway (illustrated) has been completed and is bringing down ten tons an hour to the ore bins. The ore sales show a return of £7955.16.11.



AERIAL TRAMWAY, HALL MINE.

Mining Near Vernon.

Some of the mineral claims near Vernon promise to become valuable properties when fully developed. They are so near the city that expenses of working will be comparatively low. The six claims held by the Swan Lake Mining Company, of which W. J. Armstrong is manager, have been attracting the most attention. Two propositions to buy or bond have been made, one coming from Mr. Fowler, of Chicago, who was brought up by W. J. Thomson, of Fairview. He was to have made good his offer a day or two ago, but has not been heard

from. The company also has an offer from English parties, represented by Mr. Craven, who lived in Kamloops before returning to London, England. His proposition is to have the right to work the claims for six months without putting up any money. The ore taken out will be shipped, and the returns go to the vendors. At the end of six months the purchasers will pay a price according to the returns got from the shipments of ore. One or other of these propositions is expected to be closed in a few days. The ore is free milling, not of a very high grade, but the body is so large, practically a mountain, that if a very little more than running expenses are made, the property is a very valuable one. On the Bon Diable and White Elephant, staked by Costerton and others on the Barnard property, work is not going on just now. Mr. Lambly, government agent, has given a decision in favor of the locators. These claims are on the other side of a mountain from the Swan Lake company's, and may be a continuation of the same vein.

General Mining News.

With the advent of the New Year the Homestake, at Rossland, has begun regular daily shipments, and the management is now engaged in making contracts to haul the output of their property to the smelter at Trail. Ore has been accumulating upon their dumps for some time past, and the development work is now sufficiently advanced to justify them in guaranteeing the freighters a steady and continuous business. The event is the more notable because the Homestake is the first mine in the south belt to become a producer.

The first transfer of an interest in the Homestake took place on April 21, 1893, when Joe Moris sold his half to Mickey Landrigan, who is now a resident of the Slocan district. Three days later Landrigan sold his newly acquired interest for just what it cost him, \$500, to S. M. Whar-

ton, of Spokane, who, about the same time, bought an interest in the great Cliff mine. Messrs. Wharton & Bordau held the property until July 8, 1895, when Charlie Caldwell, Mike Mahoney and John M. Burke took a bond on it for \$20,000.

Caldwell and Mahoney had been doing some quiet prospecting of the ground and had made a discovery of good grade ore right on the surface and but a few feet west of the shaft in which the owners had hitherto done most of their work. With the assistance of Mr. Burke they did a few hundred dollars worth of work, which resulted in their exposing a large chute of pay ore. John L. Davenport and John M. Burke then rebonded the property from Caldwell and Mahoney for \$35,000,

and proceeding to Spokane, organized the Homestake Gold Mining Company to take over the bond and develop the mine.

In the following November, just two months ago, Mr. Burke went to Vancouver, B. C., and succeeded in interesting D. M. Linnard in the property. The latter gentleman organized a syndicate of Vancouver business men, which took over fifty-one per cent. of the stock of the Spokane company, and then reorganized under the laws of the Province as the Homestake Gold Mining Company, Limited. W. G. Johnston of Vancouver, was elected president; E. E. Evans of Vancouver, vice-president; Osborne Plunkett of Vancouver, secretary; and C. B. Hopkins of Spokane, John M. Burke of Rossland, and J. M. Campion and D. M. Linnard of Vancouver, directors. Mr. Linnard is the local representative of the board of directors, and general manager.

The Homestake mine is located between the two main forks of Trail Creek on the ridge running west of the summit to Deer Park Mountain, and is about a mile south of Rossland. On its west end lies the Monday, which has some good showings of ore, while to the east the ledge is covered by the Gopher, R. E. Lee, Maid of Erin, Celtic, Queen, etc.

Near the east end, adjoining the Gopher, is a shaft sunk by the old owners to a depth of sixteen feet, showing two feet of good ore in the bottom. Near the centre of the claim is the main shaft, down fifty-four feet, from the bottom of which a drift has been run northwest on the vein about fifty feet. The shaft and especially the drift show good bodies of ore.

It is in the No. 2 shaft, however, that the best ore body is exposed. This shaft is sunk twenty-five feet on the surface showing first exposed by Caldwell and Mahoney. This chute has been stripped on the surface for a distance of thirty by eight feet and is all ore. The shaft is in ore all the way down and at no place is the pay streak less than six feet wide. West of the No. 2 shaft some 200 feet, a tunnel has been run into the hill to the west about 100 feet. Over forty feet of this tunnel runs on top of an ore chute, which is supposed to be a continuation of the chute exposed in the shaft. At the west end of the claim an open surface cut forty feet long has been made showing four feet of good ore. Thus ore has been found from one end of the claim to the other and, with the necessary buildings for the men, this constitutes the work done on the Homestake to date.

The ore of the Homestake differs considerably from that on Red Mountain. It is an iron pyrites carrying galena and with depth some copper. The ore carries gold, silver, lead, and copper, and averages throughout a total value of \$30 per ton, though much of it runs from \$50 to \$100, especially in the deeper workings and the No. 2 shaft.

The new company has already built a bunk house for thirty men, a boarding house, three shaft houses, a blacksmith shop, and wagon road connecting with the Trail wagon road. The Trail Creek Tramway runs across the Homestake ground and just below the present ore dump.

Ten men are now employed and machinery will be put in as soon as it can be used to advantage.

Among other properties which have made a favorable showing on the North Fork Quesnelle, is the claim held by James Mathers, formerly a mine drifted to quite an extent on bedrock. Good pay was taken out in early days, but not being as rich as some of the Omineca mines were reported to be, the ground was abandoned twenty years ago and lay without claimant until located

by Mr. Mathers. It is believed to be a good hydraulic proposition. Water is to be taken from a large creek, and it will require a ditch line about seven miles long. In drifting, from \$8 to \$16 to the man per day was made for several years.

On Black Bear Creek, about fifteen miles above the Forks, quite extensive work is planned for next season. A shaft will be sunk to bed rock and the ground thoroughly tested. It was a favorite creek with miners in olden days. There are several owners in the property.

Keithly Point, it is believed, will come to the front as a producer next season. There is no question of the richness of the ground.

With the operations of the various companies now operating on the North Fork and the proposed dredging, opening up of the Fishback Claims, and work on an increased scale by the Victoria, the outlook for this section is good.

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Quite a little excitement was occasioned at Carson the other day when the local assayer tested a piece of float found about two miles from that place on the ranch of Messrs. Coryell and Murray, which ran as high as 2 ozs. in gold to the ton, and contained, as well, some tellurium. Upon the value of the float being made known to the prospectors, they immediately started out to look for the ledge, and after a good, patient search, they were fortunate in finding the outcrop, and immediately staked out their claim, which they christened the Lady Franklin Lode. As soon as the news spread around that claims were being staked out on the hill in which the new discovery was made, quite a number turned out to see if they could not be fortunate enough to make a location, and it is generally thought that the new claim has been staked upon a ledge which is supposed to run through the country for quite a distance, and upon which the American Boy and American Girl claims are located, it is quite probable that diligent search may unearth it in some other place, and more locations be yet made.

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A strike of great importance has been made in the Jumbo. Ore has been found in a large body in the tunnel commenced about two months ago. This tunnel was driven in diagonally on the ledge about 175 feet below the shaft sunk near the top of the hill last summer. The shaft was sunk 40 feet, nearly all in solid ore that averaged \$10 in gold per ton. In order to get better working ground and open up the mine the tunnel was started below. The ledge is very wide and it was difficult to determine at what point it would be best to drive in. Therefore the plan was adopted of running in diagonally. The ledge runs northeast and southwest and the tunnel was driven from the southeast to the northwest. The ore was found on the upper side, 115 feet in, and was 6 feet wide. It is one of the finest bodies of ore ever opened in the camp, but its assay value has not been ascertained up to the time of obtaining this report. It is highly silicious, with solid bunches of iron pyrites here and there. Messrs. Finch and Galusha are to be warmly congratulated on the fine showing now made on the Jumbo. There is hardly a doubt that the name is right and that the Jumbo is one of the big mines of the camp.

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A remarkable discovery was made in the Josie lately. As previously reported, the face of the tunnel for some time has been looking very fine. The ore body has widened out to seven feet with two as fine walls as

man ever saw. Suddenly the men came upon what appeared to be a cross vein. The character of the ore changed and the pitch was different. It was more silicious than the ore which had been taken from the tunnel and bore a strong resemblance to the Le Roi ore. Up to a few days ago the men had not got through the cross vein, or whatever it is, and its width is therefore not known, but they had penetrated far enough to have no doubt as to the great extent of the new body. The discovery is certainly a most interesting one. If it is the Le Roi vein the Josie is in great luck, although it was a good mine before. A cross vein of such extent and richness as belongs to the Le Roi vein would simply add an element of wealth to the Josie which was never taken into account.

Edward Blewett, a well known mining expert from Chicago, arrived in Victoria on Sunday evening, Jan. 12th, and left the following morning on the Joan to examine some mining property on Texada Island. Mr. Blewett will return on Saturday and will go to Alberni to examine the mines there. He is working in the interest of Eastern capitalists who are seeking opportunities for investment in British Columbia mines. Mr. Blewett speaks in the most enthusiastic terms of the mineral wealth of this province. His opinion is this: "I have talked with men that have been in South Africa for two years, I have been to most of the mines in this country myself, and I tell you that the greatest mineral district ever known in the world is in British Columbia, and I am sorry it does not belong to the United States. You have here now mines that would astonish the world if the facts were published, mines that are hoisting 300 tons a day averaging \$60 to \$70 a ton. What mine? The Le Roi. But there are others. And this mining district, you must remember, is altogether in its infancy." Mr. Blewett examined the famous Monte Christo mine, and it was through his report that Rockefeller, the oil king, was induced to take an interest in this property.—*Times*.



PIPE LINE, ANGLO-AMERICAN CO.

In a recent interview, D. C. Corbin, of the Spokane Falls & Northern R. R., speaking of the many mining districts tapped by his road said: "The mines are doing three times as much now as they ever did before. At Pilot Bay, in the Kootenay country, a smelter is running with an output of 20 tons of bullion daily. The Ainsworth camp, also in the Kootenay district, is putting out more ore than ever before, and development work is progressing rapidly. A railroad has been built from Kaslo into the Slocan mines this year, a distance of 30 miles, making the Slocan mines quite accessible.

At Nelson the Hall Mines Co. has about completed a smelter, which will be in operation soon. It is for the reduction of ores coming from the Silver King mine. There is a great deal of activity in the Red Mountain districts, which have been attracting so much attention for the past year. I would not be surprised if there were some wonderful developments in these districts in the future. At present they are shipping 200 tons of ore a day, most of which comes out over my road, bound for the Tacoma smelter. The business of our road has nearly, if not quite, doubled in the past year, and the road is doing twice as much now as it ever did before. Yes, I anticipate great things for our mines. I have been about and in mining countries and mined for the past 25 years, and from the experience I have had, I believe these districts are

going to make the greatest mining section on the continent. Everything indicates it. In the Trail creek country there are only two mines developed—the War Eagle and the Le Roi—but a good deal of development work is contemplated and in progress. There is hardly any limit to the ore there. It appears to become better and be more valuable the deeper the mines are worked. The average ore taken out of these mines runs about \$50 per ton in gold and contains from four to five per cent. of copper and from three to four per cent. of silver. The development and favorable condition of things in the mining districts have greatly improved times in Spokane. There is hardly a vacant residence or business house in the city."

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If the Trail smelter is increased to a capacity of treating 250 tons of ore daily during the present year, as it is reported will be done, they will handle 91,250 tons of ore annually. To this add the capacity of the smelters at Pilot Bay and Nelson and it will give the smelting capacity of West Kootenay, 164,250 tons. It is hardly probable it will reach that figure this year, although there is no question but smelters will be erected in time capable of handling all of the ores of West Kootenay. Matteing plants or smelters are only a form of fire concentration, by which all the waste in ores is eliminated and the cost of transportation materially reduced.

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E. L. Topping, of Trail, was seen by a *Spokesman Review* reporter, lately, and said: "Within ten days the smelter will blow in one copper matte furnace, which has a capacity of fifty tons. As each stack is completed they will blow in until five stacks are in operation. The stack to be used is up about 100 feet and is not quite completed.

"The Tramway Company expect to start at once to lay a track from the smelter to the wharf. The first work will be at the landing where the switches are to be put. The company has arranged with the townsite company for the right of way through town, and grading into town has commenced.

"The town of Trail is growing fast. There are seven hotels, eight stores and about 1,000 people. School commenced with an attendance of forty pupils."

When asked regarding the movements of the Canadian Pacific, Mr. Topping said:

"I believe that it is the intention of the Canadian Pacific to build from Robson to Trail, following the Columbia River, and, also, that next year the Kootenay and Columbia will be connected with the Nakusp and Slocan. If my information is correct it will give us a through line from Revelstoke, and it is not improbable that the line will be extended through the country to Boundary Creek and Okanagan Lake.

"There are now 2,500 tons of Le Roi ore at the smelter, and 350 tons of War Eagle product on the dock waiting for the steamboat to take it away.

"All of the ore teams stopped work on account of the roads being too much worn down; they will start up again as soon as it freezes. One carload of coke for the smelter has arrived and another is expected in a few days."

Mr. Topping located at Trail in July, 1890, and says he made the location for the smelter, although he had to wait over five years, it finally came. He believes that within a year he will have the best town in West Kootenay.

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John H. Moyle, a mining expert, is in Seattle, having gone down there direct from Trout Lake in this Province. "Trout Lake Mines," said Mr. Moyle to a reporter, "are new, no real development work having been done. Men went in there a year or two ago, prospected and made the locations, and have only done assessment work sufficient to hold their claims. The product is mostly galena, very little gold being known, although some assays have gone as high as \$9 a ton, and for that matter the richness of the galena deposits is not known to any extent, as the work has not sufficiently progressed. The location is most remarkable. Above the snow line of the Selkirks, and I suppose fully 10,000 feet above the sea, are the Trout Lake Mines. The snow is now seven or eight feet deep, stopping operations for the winter. To reach there the route is by steamer on Arrow Lake and an arm of it, which extends toward Thompson's Landing, on Trout Lake, the distance is covered by good wagon road. A branch of the Canadian Pacific Railroad, 30 miles in length, is being built from Revelstoke to Arrow Lake, and is now almost complete. The terminus at the lake will be called Arrow Head. There is some talk of a road extending on down the narrow arm, through an easy pass to Trout Lake, and thence to the Slocan district. Such a route would open a rich country, developing hundreds of mines. As it is now we must rawhide the ore for a distance of seven miles to the wagon road; it is then hauled to Arrow Lake and forwarded by steamer. The mines are owned by capitalists of Montana, Spokane, and other places. The one owned by the Nowells is called the Great Northern. There are numerous others, one called the Silver Cup, and another the C. P. R., the latter extending back 20 miles from the lake. The Slocan is a very rich country, and just now there is every sign of activity. This is the busiest season. The town of Sandon, at the terminus of the Kaslo and Slocan Railroad, is very lively. Business places are open day

and night. At four o'clock in the morning as much goods are sold as at any other time. It is peopled by miners of the class which are free with their earnings, and, of course, that is largely a movable, floating population. I should imagine that 1,000 or more people have located there within the few months of the town's existence. It is in the very heart of the Slocan district making it a fine business centre. I have heard a great deal lately about the Boundary District. It will have a rush in the spring. Most of the mineral seems to be beyond the British border, but I am informed that the Colville reservation has been prospected, and claims are likely to be located there in the spring.

Alive and Active. Despite its Detractors.

The Lillooet, Fraser River, and Cariboo Gold Fields, Limited, has recently acquired further valuable mining properties in the neighborhood of the town of Lillooet. These the company proposes to develop on an extensive scale in early spring. The same organization has also acquired an option on the Maple Leaf and Oak Mines, which adjoin the famous Lanark near Illicilliwaet. Some twelve men are already engaged in developing the company's group of mines at this point, and it is intended to construct, in connection therewith, an aerial tramway, and to put up a 100-ton concentrator this spring. There are 30,000 tons of ore in sight on the properties in the Lanark group, and this mass of ore can be concentrated and shipped just as soon as the tramway and reducing works are built.

The Gold Fields, Limited, has also acquired a number of claims in the gold and copper bearing district of Boundary Creek, and these, with other properties near Rossland, will in due course be thoroughly prospected.

Work is actively being pushed on the Abbot group of claims in the Lardeau District, and in the coming summer this enterprising organization of capitalists will extend their operations to Cariboo. There gold has been mined for thirty-five years, but these wonderful treasure vaults are only now in course of being opened by strong financial companies like the Gold Fields.

Another Valuable Find.

One of the various resources of East Kootenay waiting for development is the petroleum found in the Flathead Valley in the southeastern portion of this district. This is a section of country but little known, and is separated from the remainder of the district by a high range of mountains. The natural outlet of the valley is down the Flathead River into Montana, and the nearest railroad is the Great Northern. Some years ago attention was called to this section through the finding of crude oil in the possession of some Stony Indians, who annually hunted in this valley, and they were induced to show some miners where they obtained the oil, which they (the Indians) were in the habit of using as a medicine for complaints of all kinds. The surface indications are good, and two different qualities of oil have been obtained. On Kishneena Creek, a short distance north of the international boundary line, a black oil, similar to the Pennsylvania and Ohio oils, is found. But on Sage Creek, some eight miles north, there is found an oil that is nearly pure, of a light yellow color, which will burn in a lamp as it comes from the ground. Close by, there is natural gas escaping from the bedrock, which burns freely on ignition. Some of this oil sent to the Geological Museum at Ottawa, caused considerable excitement and comment, and was pronounced a fraud on account of its purity. Dr. Selwyn, head of the department, made a special trip to the valley, and was surprised to find the oil genuine, and also that this

oil was found in the Cambrian formation, which was something unknown, as all the oil fields hitherto discovered have been in Trenton limestone. Directly due east of Sage Creek, and on the eastern slope of the main ridge of the Rocky Mountains, in Alberta Territory, there is plenty of surface indications of crude oil. And the finding of these indications covers such a large area, and in the same formation, would go to show that there is a large oil field awaiting capital.

And we may expect that in the near future the oil fields of East Kootenay will be known all over the world.—*Fort Steele Prospector.*

Mineral Export.

FIGURES SHOWING THE IMPORTANCE OF WEST KOOTENAY AND TRAIL CREEK AS ORE PRODUCERS.

The following is a summary of values of the minerals exported during the six months ending December 31st, 1895:

Month.	Gold.	Silver.	Lead.	Copper.
July	\$142,285	\$ 74,669	\$ 21,203	\$17,471
August	123,009	56,097	38,467	3,229
September	124,964	153,481	27,406	10,191
October	123,615	87,988	33,698	12,763
November	71,611	92,339	37,186	8,017
December	18,417	71,331	23,962	2,091
Total	\$603,901	\$535,905	\$181,922	\$53,662

Making a grand total of \$1,375,390. The bullion shipped from the Pilot Bay smelter should be added to this to give the total value of the production of the mines.

The falling off in gold and copper in November and December was caused by the bad condition of the wagon roads from Rossland and because the bulk of the ore from the Le Roi Mine has been shipped to the smelter now under construction at Trail.

FIGURES SHOWING THE IMPORTANCE OF THE COAL MINING INDUSTRY.

The following is the total output of the different collieries during the year 1895:

	Tons.
The New Vancouver Collieries	339,704
The Wellington Collieries	337,146
The Union Collieries	258,542

The Markets.

Bar Silver	\$ 66 3/4
Copper	10
Lead	3 00

SHARES.

	BID.	ASK.
Paris Belle	\$ 09	\$ 10
War Eagle	1 50	1 75

[Under this head the RECORD will be glad to have current prices of any mining shares in B. C.]—ED.

GOLD COMMISSIONERS' NOTICES.

- Placer Claims and Mining Leases are laid over as follows:—
- Cariboo District: From November 1st, 1895, to June 1st, 1896.
- East Kootenay District: From October 15th, 1895, to June 1st, 1896.
- Kamloops, Similkameen, and Yale Division of Yale District: From November 1st, 1895, to May 1st, 1896.
- Lillooet District: From November 1st, 1895 to April 15th, 1896.
- Osoyoos Division of Yale District: From November 1st, 1895, to June 1st, 1896.
- Vancouver Island and Westminster District: From November 14th, 1895, to June 1st, 1896.
- West Kootenay District, Revelstoke Division: From November 15th, 1895, to June 1st, 1896.

Province of British Columbia.

Minister of Mines.—Hon. Col. James Baker.
 Provincial Mineralogist.—W. A. Carlyle.
 Public Assayer.—H. Carmichael.

Gold Commissioners.

For the Province.—W. S. Gore.
 Alberni.—Thos. Fletcher, Alberni.
 Cariboo.—John Bowren, Richfield.
 Cassiar District.—James Porter, Laketon, Cassiar.
 Lillooet District.—Frederick Soues, Clinton.
 East Kootenay District.—J. F. Armstrong, Donald.
 West Kootenay District.—N. Fitzstubs, Nelson.
 West Kootenay District.—J. D. Graham, Revelstoke.
 Yale District.—Chas. Lambly, Osoyoos; G. C. Tunstall, Kamloops.

Mining Recorders.

DISTRICT.	OFFICE.
NANAIMO.—M. Bray	Nanaimo
NEW WESTMINSTER.—C. Warwick	New Westminster
EAST KOOTENAY.—J. Stirret	Donald
F. C. Lang	Golden
G. Goldie	Windermere
C. M. Edwards	Fort Steele
M. Phillips	Tobacco Plains
J. Keen	Kaslo
WEST KOOTENAY.—J. D. Graham	Revelstoke
Corry Minnhennick	Lardeau
A. Sproat	New Denver
John Keen	Kaslo
W. J. Goepel	Nelson
J. Kirkup	Rossland
J. C. Rykert	Rykert's
T. Taylor	Trout Lake
R. J. Scott	Illecillewaet
CARIBOO.—W. Stephenson	Quesnelle
YALE.—W. Dodd	Yale
L. Norris	Vernon
C. A. R. Lambly	Osoyoos
W. McMyn	Rock Creek
H. Hunter	Granite Creek
LILLOOET.—C. A. Phair	Lillooet
CASSIAR.—Ezra Evans	Manson Creek Omineca

British Columbia Mining Papers.

Inland Sentinel.—Kamloops, B. C.; weekly; 7 col., 8 pages; publishes Friday. Circulates in Cariboo, Lillooet, Yale, Kootenay; also in Victoria, Vancouver, and New Westminster cities. Subscription, \$2 per year.

The Golden Era.—Golden, B. C.; published by the Golden Era Publishing Co. Covers the entire East Kootenay District. Subscription price, \$2 per annum.

The Prospector.—Rossland, B. C.; published by W. D. Pratt. Covers West Kootenay generally. Subscription price, \$2 per annum.

The Ledge.—New Denver, B. C.; published by R. T. Lowery. Covers the Slocan District, and circulates generally in West Kootenay. Subscription price, \$2 per annum.

The Claim.—Kaslo, B. C.; published every Saturday by R. T. Lowry. Circulates generally in Kaslo-Slocan country. Subscription price, \$2 per year.

B. C. Mining Journal.—Ashcroft, B. C.; published Saturday by Messrs. Reynolds & Sroufe. Circulation covers Cariboo and Lillooet. Subscription price, \$2 per year.

The Advance.—Midway, B. C.; published Mondays, by Norris & Co. Covers Osoyoos and South Yale. Subscription price, \$2 per year.

The Miner.—Nelson, B. C.; published Saturdays, by the Miner Publishing Co., Charles St. Barbe, managing editor. Four pages, 6 cols. Covers the entire West Kootenay District. Subscription price, \$2 per year.

The News.—Vernon, B. C.; published Thursdays by News Publishing Co., J. A. McKelvie, editor. Covers Okanagan. Subscription price, \$2 per annum.

Rossland Miner.—Rossland, B. C.; published on Saturdays. J. R. Reavis, editor. Covers Trail Creek district. Subscription price, \$2 per year.

The Record.—Rossland, B. C.; published Saturdays, by Elar C. Smith. Covers Trail Creek district. Subscription price, \$2 per year.

The Prospector.—Fort Steele, B. C.; published every Thursday by Pratt & Northey. Covers West Kootenay. Price, \$1.50 per year.

MINING CENTRES IN BRITISH COLUMBIA

—AND—

HOW TO REACH THEM.

ALBERNI.

Alberni.—Steamboat communication with Victoria and by stage with Nanaimo.

Barclay Sound.—Forty miles from Alberni; communication by steamer with Victoria.

CARIBOO.

Barkerville.—Two hundred and eighty-five miles from Ashcroft; stage from Ashcroft. See stage lines.

Bonaparte.—Twenty miles from Ashcroft; stage from Ashcroft.

Big Bar.—Stage from Ashcroft.

Clinton.—Thirty-two miles from Ashcroft station; stage from Ashcroft.

Fort George.—Nearest post office, Quesnelle, where stage to and from Ashcroft changes.

Horsefly.—Nearest post office, 150-Mile House; stage from Ashcroft; change at 150-Mile House.

Lac La Hache.—One hundred miles from Ashcroft; stage from Ashcroft and Barkerville.

Lillooet.—Weekly stage from Clinton, where connection is made with stage for Ashcroft.

Lightning Creek.—Between Quesnelle and Barkerville, by stage.

One Hundred Mile House.—Stage from Ashcroft.

One Hundred and Fifty Mile House.—Stage from Ashcroft.

Quesnelle.—Two hundred and twenty-five miles from Ashcroft; stage from Ashcroft.

Quesnelle Forks.—Stage and pack trail from Ashcroft.

Soda Creek.—Stage from Ashcroft.

Slough Creek.—From Barkerville, twelve miles.

Tatla Lake.—Stage from Ashcroft, changing at Soda Creek.

Willow River.—Stage to Barkerville or Stanley, thence rail.

Williams Creek.—From Barkerville, seven miles.

CASSIAR.

Dease Creek.—

McDame Creek.—

COAL CENTRES.

Crow's Nest Pass.—

Nanaimo.—From Victoria, all rail, 73 miles. Steamer from Vancouver.

Union.—

Wellington.—From Victoria, all rail, 83 miles. Steamer and rail from Vancouver.

EAST KOOTENAY.

Cranbrook.—Nearest railway station, Golden. Communication by steamer from Golden to Windermere, thence by stage.

Fairmont Springs.—Nearest railway station, Golden. Steamer to Windermere, thence by stage.

Fort Steele.—Steamer and road from Golden. Steamer from Jennings, Montana, G.N.R.R.

Galbraith Ferry.—Steamer from Golden. Stage in winter.

Galena.—Nearest railway station, Golden; thence by steamer. Stage in winter.

Golden.—On the main line C.P.R., 475 miles from Vancouver.

Marie River.—From Fort Steele, 25 miles.

McMurdo District.—Steamer and trail from from Golden, 35 miles.

Perry Creek.—Steamer from Golden to Fort Steele, thence by road.

St. Mary's.—From Fort Steele, 20 miles, trail.

Thunder Hill.—One hundred and fifteen miles from Golden. Steamer in summer, stage in winter.

Windermere.—Steamer from Golden. Stage in winter.

Wild Horse Creek.—From Fort Steele, two miles trail to Kootenay river.

WEST KOOTENAY.

Ainsworth.—Twenty-eight miles from Nelson and twelve from Kaslo. Steamer communication.

Albert Canyon.—A station on the C. P. R., 400 miles from Vancouver.

Big Bend District.—Fifty miles from Revelstoke by trail and boat.

Cariboo Creek.—Steamer from Nakusp, ten miles.

Fort Shepherd.—Nearest post office, Trail Creek; communication by rail and steamer from Revelstoke.

Ilecillewaet.—On the main line C. P. R., 407 miles from Vancouver.

Kaslo City.—Thirty-five miles from Nelson; communication by steamer.

Lardeau City.—Forty miles from Revelstoke; communication by steamer.

Lardo-Duncan.—Steamer from Kaslo to head of lake, thence river trail 40 miles.

Nakusp.—North-west terminus of Nakusp & Slocan Railway, 50 miles from Revelstoke. Steamer communication from Revelstoke tri-weekly.

Nelson.—Thirty miles from Robson; is the eastern terminus of the Columbia & Kootenay Railway, and also on the Spokane & Northern Railroad. Steamer from Revelstoke.

New Denver.—Steamer from Revelstoke and rail from Nakusp; all rail from Kaslo. Distant from Revelstoke, 76 miles, from Kaslo, 28 miles.

Pilot Bay.—Eighteen miles from Kaslo, thence by steamer.

Revelstoke.—On main line C.P.R., 379 miles from Vancouver.

Rossland.—Seven miles from Trail Creek by road or stage.

Sproat's Landing.—One hundred and sixty miles from Revelstoke, and one and a half miles from Robson.

Springer Creek and South Slocan Camps.—From New Denver by steamer, twenty miles.

Sandon and Cody Creek.—All rail from Kaslo, 29 miles. Steamer and rail from Revelstoke via Nakusp and Three Forks. Distant from Three Forks, four and a half miles.

St. Mary's Country.—Steamer from Kaslo or Nelson to Davie Township, thence trail.

Three Forks.—Steamer from Revelstoke to Nakusp, thence rail; from Kaslo, all rail. Distant from Revelstoke, 82 miles; from Kaslo, 24 miles.

Trail.—Rail from Spokane to Northport, thence steamer.

All steamer from Revelstoke, or steamer and rail via Nelson. Distant from Spokane, 100 miles; from Revelstoke, 150 miles; from Nelson, 50 miles.

Trout Lake City.—Steamer and stage from Revelstoke.

LILLOOET.

Bridge River, Cayoosh Creek, Fraser River.

YALE.

Boundary Creek.—Nearest railway station on the S. and O. R., Okanagan Landing, thence by steamer to Penticton and on by stage to Midway.

Fairview Camp.—Communication by boat from Okanagan Landing to Penticton, thence by stage.

Kettle River.—Steamer from Okanagan Landing to Penticton, thence by stage.

Midway.—Rail from Sicamous to Okanagan Landing, steamer Penticton and on by stage.

Okanagan Mission.—Rail from Sicamous to Vernon, thence by stage, or by steamer from Okanagan Landing to Kelowna, thence by livery.

Osoyoos.—Rail to Okanagan Landing, steamer to Penticton, and thence by stage.

Rock Creek.—Rail to Okanagan Landing, steamer to Penticton, and thence by stage.

Yale.—Nicola Lake Stage from Spence Bridge and Kamloops, 50 miles.

Any of these points may be reached by rail from Spokane to Marcus, and thence by stage, twice a week.

Mail stage leaves Penticton for Midway every Thursday morning.

Assayers.

Public Assayer.—H. Carmichael, Victoria.

W. Pellew Harvey, Vancouver.

R. C. Campbell-Johnston, Vancouver.

Mahon & Twigg, Vancouver.

G. F. Monckton, Vancouver.

Albert Strolberg, Ainsworth.

Ed. A. Martin, Barkerville.

W. W. Gibbs, Boundary Creek.

W. V. Bowrow, Richfield, Cariboo.

Crowells & Wallinger, Fort Steele.

W. J. Thretheway, Kaslo.

Harry A. Guess, Midway.

Wm. F. McCulloch, Nelson.

Frank Dick, New Denver.

Howard West, New Denver.

A. H. Holdich, Revelstoke.

C. W. Cluett, Rossland.

Frank J. Davey, Rossland.

Chas. M. Wilson, Three Forks.

M. A. Bucke, Sandon.

F. H. Latimer, Vernon.

British Columbia Mining Companies.

BRITISH COLUMBIA MINING COMPANIES—Cont'd.

COMPANIES INCORPORATED.

NAME	Capital authorized	Capital subscribed	Capital paid up	Shares par value	Shares paid up
	\$	\$	\$	\$	\$
Black Creek Hydraulic Mining Co. of Cariboo	300,000			5	
Cariboo Hydraulic Mining Co.	300,000	300,000	300,000	5	5
Cariboo and Kootenay Prospecting and Mining Co	100,000	16,000	16,000	2	2
Horsefly Hydraulic Mining Co	200,000	150,000	150,000	10	10
Maud Hydraulic Mining Co	25,000	25,000	22,500	5	4.50
Montreal and British Columbia Prospecting and Promoting Co.	20,000	20,000	20,000	5	5
Montreal Hydraulic Gold Mining Co. of Cariboo	250,000	150,000	100,000	1	1
Similkameen Gold Gravels Exploration Co	100,000	35,375	35,375	25	25
Van Winkle Consolidated Hydraulic Mining Co.	500,000	500,000	500,000	10	10
Dominion Developing and Mining Co.	500,000			1	
North Saanich Coal Co	25,000			10	

NAME.	Head Office.	Capital Stock.	No. of Shares.	Price p. Share.
Mineral Creek Gold Mining Company	Nanaimo	500,000	500,000	1
Nanaimo-Rossland Mining Company	"	500,000	500,000	1
Good Hope Mining and Milling Company	Spokane, U.S.	500,000	500,000	1
Paris Belle Gold Mining Co	"	800,000	800,000	1
Ottawa Hydraulic Mining & Milling Co	North Bend	250,000	50,000	5
Kootenay Hydraulic Mining Co	Rochester, US	500,000	500,000	1
Cinnibar Mining Co. of B.C.	Vancouver	100,000	100,000	1
Robt. E. Lee Mining Co.	Spokane, U.S.	500,000	500,000	1
The Alexandra Mining and Dredging Co.	Vancouver	300,000	600,000	5
Cariboo Reefs Develpment Company	England	100,000	20,000	5
British American Mining Co	Butte, U. S. A.	500,000	500,000	1
Lookout Mining & Milling Company	Spokane, U.S.	250,000	250,000	1
Le Roi Mining and Smelting Company	"	500,000	500,000	1
War Eagle Mining Co	"	500,000	500,000	1
Eureka Consolidated Mining Company	"	500,000		
Centre Star Mining & Smelting Co.	Butte, U. S. A.	500,000		
Idaho Gold Mining & Smelting Co.	"	500,000		
Boundary Creek Mining Co	Spokane, U.S.	100,000		
Peter's Creek Gold Mining Co. of Cariboo	"	25,000		
Argonaut Gold Mining Co. of Kootenay	Vancouver	500,000		
Poorman Gold Mining Co.	Spokane, U.S.	500,000		
Evening Star Mining Co	"	100,000		
Kamloops Mining & Development Co	Kamloops	30,000	300,000	
Byron N. White & Co	New Denver			
High Ore Gold Mining and Smelting Co	Spokane, U.S.			
Nelson Hydraulic Mining Co	Nelson			
Swan Lake Mining Co	Vernon			
Virginia Gold Mining Co	Spokane, U.S.	500,000	fully pd	
Silverine Mining Co	"	500,000	fully pd	
Richmond Developing and Mining Co	Vancouver	120,000		
Slocan Milling Co	New Denver	100,000	10,000	10
Alamo Mining Co	"	500,000	500,000	1
Fraser River Mining and Dredging Co	Vancouver	250,000	250,000	10
Golden Era Mining Co.	"	8,000	4,000	2
Kootenay Mining & Smelting Co	Jersey C'y. US	230,000	23,000	100
Quesnelle River Hydraulic Gold Mining Co	New Westm'r	600,000	6,000	100
Anglo-American Gold and Platinum Hydraulic Mining Co.	Vancouver	250,000	50,000	5
B. C. Gold Dredging Co	"	150,000	150,000	10
Minnesota Silver Co.	New Denver	100,000	100,000	1
Columbia Mining Co.	Seattle, U. S.	100,000	10,000	100
Horsefly Gold Mining Co	San Francisco	100,000	100,000	10
Provincial Mining & Dredging Co.	Vancouver	100,000	100,000	10
Scott Mining Co	Seattle, U. S.	100,000	1,000	100
American Development Co.	Chicago, U. S.	100,000	1,000	100
North Star Mining Co	Vancouver	100,000	1,000	100
Canadian Pacific Mining & Milling Co	Minneapolis	500,000	500,000	1
Styne Creek Gold Mining Co	Vancouver	200,000	40,000	5
Bear Lake Consolidated Mining Co.	Victoria	500,000	100,000	5
Kootenay & Columbia Prospecting & Mining Co.	Ottawa	40,000	400	100
Canadian Northwest Mining Co	Helena, U. S.	200,000	400,000	5
Delta Mining and Development Co.	Vancouver	100,000		100
Caledonia Consolidated Mining Co	Spokane, U.S.	500,000		1

BRITISH COLUMBIA MINING COMPANIES.—Cont'd.

COMPANIES INCORPORATED.

NAME.	Head Office.	Capital Stock.	No. of Shares.	Price p. Share.
Similkameen Gold and Platinum Mining Co.	Vancouver			
Bonanza Mining Co	Lillooet			
Lillooet Hydraulic Mining Company	"			
Mina Placer Mining Co.	"			
Scum Scum Mining Co.	"			
Vancouver Enterprise Mining Company	"			
Victor Hydraulic Mining Co	"			
Dandy Mining Co	Nelson			
Kootenay Bonanza Mining Company	"			
Hall Mines Co.	"			
Rattler Mining Co.	Osoyoos			
Cariboo & Horsefly Mining Company	"			
Spokane & Great Northern Mining Co	Bound'ry Cr'k			
Great Hopes Mining Co	"			
Confidence Mining Co	"			
Bootanic Creek Gold Mining Company	Vancouver			
Cariboo Hydraulic Mining Company	"			
Laura Hydraulic Co	Kettle River			
Tulameen Hydraulic & Improvement Company	New Westm'r			
Victoria Hydraulic Mining Company	"			
Wolf Hill Mines Co	Victoria	100,000	100,000	1
Islander Gold Quartz Mining Company	"	100,000	100,000	1
Fishback Hydraulic Gold Mining Co	Seattle, U. S.	300,000		
St. Mary Mining Co	Spokane, U.S.			
Caledonia Consolidated Mining Co.	"	500,000	500,000	1
Gabriola Coal Co.	Nanaimo	100,000	100,000	10
Delta Mining and Development Co	Vancouver	100,000	100,000	100
Dixie Mining & Milling Co.	Spokane, U.S.	500,000	500,000	1
B. C. Goldfields Exploration & Concessions Co	Vancouver	500,000	100,000	5
War Eagle Gold Mining Co	Spokane, U.S.	500,000	500,000	1
Slocan Surprise Mining Co.	Chicago, U. S.	225,000	2,250	100
Bellingham Bay Hydraulic Mining Co	Fairhaven, US	30,000	600	50
North Star Mining Co	Pittsburg, US	6,000	120	50
Kootenay Gold, Silver and Copper Mining Co	Vancouver	100,000	4,000	25
Vancouver Gold and Silver Exploration and Concessions Co.	"	500,000	5,000	100
Cariboo Gold Fields Co	England	500,000	100,000	5
Ball Mining Co.	Chicago, U. S.	250,000	2,500	100

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