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THE MONTH.

EARLY in February the War Eagle and Centre Star, the Le Roi and the Hall Mines all closed down so far as the production of ore is concerned. The War Eagle and Centre Star reduced their force from 600 to 200 men, the Le Roi from 360 to 200, while the Hall Mines closed down entirely. This action was unquestionably premeditated and concerted, and has been undertaken to gain control of the labour situation. The rapid development of the mines in the Boundary country and for that matter in Rossland also, and the extraordinary activity of mining throughout the Pacific Northwest from which our miners in British Columbia are largely recruited, had caused such a demand for labour that employers found that to hire men at all was difficult, to get skilled men almost impossible. While labour, through the unions, went on from one demand to another, secure in the fact that the demand exceeded the supply, until the conditions under which mines could be worked at all had become exceedingly burdensome. The ostensible reasons given for closing down were not, except in one instance, that of the Hall Mines, connected with the labour question, but a close analysis of the condition of the different mines shows that this was the determining factor, barring possibly the only case in which it was advanced as such. In the case of the War Eagle and Centre Star the excuse put forward was the heavy cost of mining through defective machinery. This is to a certain extent a valid reason for the action taken. The War Eagle hoist is alleged by the management to be defective, as likewise the new compressor plant to supply power to both the War Eagle and Centre Star. A number of small subsidiary steam compressors have to be maintained as auxiliary forces, while some tons of rock are hoisted and lowered every day in a compensatory skip to enable the hoisting machinery to do its work. This condition of affairs must have added something to the cost of every ton of ore mined and especially affected the Centre Star which could not fairly be asked to bear a proportion of the cost of the War Eagle's apparently disastrous experiment in electrical machinery. While on the other hand the War Eagle could not be expected to supply power to another mine at less than the cost, even if that cost were excessive. The remedy taken has been to close the production from both mines until the Centre Star is equipped with sufficient steam power to supply both and meantime to push ahead development in the properties during the breathing spell. But although this reasoning is conclusive so far as it goes, it does not by any means supply a sufficient argument for the heroic measures adopted. In the first place the blow given to the credit of British Columbia by the sudden stoppage of production is enormous and might be expected to weigh with Mr. Gooderham and his associates. In the second place the blow to their own credit as promoters of mining companies is severe. Look at the facts. That shareholders in the War Eagle have been led to expect a doubled dividend cannot be denied. If they have deluded themselves in this respect they have done so with the connivance of Mr. Gooderham. The rude awakening they have received is attested by the fact that War Eagle Consolidated dropped a dollar in the market on the news of the shut-down coming out. In addition to that it is not so long ago that the Centre Star was promoted for an enormous sum of money. It is hardly going too far to say that Mr. Gooderham and his associates invited the people of Canada to assume the burden of immediate trouble in connection with the mine at a time when the anticipations of such trouble was far from the minds of the people who subscribed for the shares. The comparatively small loss sustained by the increased cost of mining could have been much more easily borne than the staggering depreciation caused by the loss of confidence in the mines and by the all-persuasive doubt as to the integrity of their promoters. The case has only been made so dark against the controlling powers of the War Eagle and

THE CLOSE DOWN IN ROSSLAND AND NELSON.

Centre Star mines to show that there was not sufficient inducement in the business situation apart from the labour market to justify for one moment the course taken. Therefore when it and the coincident action taken by other companies are considered together it is clear that the cause in this case at least must be some factor in the situation common to all of the companies: and that factor is not to be found outside the labour situation.

When we turn to the Le Roi the excuse for closing down production is more absolutely flimsy than in the case of the War Eagle and Centre Star. The Le Roi it is true, as has been frequently pointed out in these columns, has been working under grievous disadvantages in having to hoist all its ore through the old crooked prospecting shaft. But these disadvantages are almost completely done away with, and will shortly have ceased to exist. The efficiency of the mine is vastly greater than it was when the Le Roi was pushing its output to the full extent and will soon be as perfect as can ever be hoped for. There was nothing to prevent the Le Roi from continuing its output except the possibility of saving perhaps 50 cents a ton on the cost of mining and hoisting during the next sixty or ninety days. The Le Roi is governed by what may be called stock-broking considerations. The market is at present dead, there is no hope of floating any of the other properties of the B. A. C. Consequently injury to the credit of that corporation of the governing influence of Canada's greatest mine might be partly compensated by a good showing made when times are better. And it may be expected that Mr. Whitaker Wright is planning a grand coup to come off next autumn when the market is better and the Le Roi meting is at hand. But again it is clear that the compensation is not sufficient were there not some ruling factor in the action of the management of the Le Roi not brought out in the reasons given for it, and that factor cannot be found except in the labour question. But as to the duration of this action on the part of the Le Roi Company it must not be forgotten that in order to earn a satisfactory dividend upon its enormous capital the Le Roi Company must produce ore at the rate of 20,000 tons a month. Nor is it easy to see how the B. A. C. can expect to successfully promote its other properties unless it justifies the promoters of the Le Roi by the increase and maintenance of its output to that amount. The Le Roi may close down production for a short time to affect the labour market but it cannot maintain that attitude in view of its financial exigencies and those of its parent company for any length of time. Of course there is another explanation of the action taken by the War Eagle, Centre Star and Le Roi companies, an explanation the acceptance of which is in fact the method by which the injury done to British Columbia and to the credit of the mines themselves will be effected. It is that the mines are out of ore, have been maintaining production during 1899 in excess of their capacity, have in fact, been vastly overrated and vastly over capitalized. However little this explanation may be justified by the facts it will have a wide currency and a very bad influence on the credit and prospects of mining in British Columbia until it has been demonstrated false. There are certain considerations, however, which although they may not affect the popular opinion on which the country depends for capital are nevertheless reassuring to those who will take the trouble to weigh them. The War Eagle management maintains that there is plenty of ore in the mine, although it admits that the dead work necessary to extract that ore economically has fallen behind through defective power. The Le Roi management has always stated that shipments have during 1899 been carefully subordinated to development work and that reserves of ore have been accumulating. Into the quality of confidence engendered by these statements the personal equation enters, and they must be taken for what they are worth. But the closing of both mines at the same time would be a very remarkable coincidence if it were exhaustion that occasioned it. This argument is strengthened by the fact that another mine in a different part of the country acted upon the preconcerted signal also. While in the case of the Centre Star the ore in sight when it was purchased has not even begun to be exhausted. The plain conclusion is that the Rossland mines closed down to strengthen the hands of employers of labour throughout the country because they could do so at the present time without serious loss to themselves except the loss of credit which may be made up by increased production later on, but that they cannot maintain this attitude for any great length of time without the most serious consequences to themselves and to the mining industry. The Hall Mines, Ltd., is in an entirely different position. From the beginning this corporation has manifested all the vices and none of the virtues of the London management of mines. It has long been known that the mine was rapidly undergoing a process of exhaustion and being reduced similarly to a condition involving the doubtful expenditure of a large sum to restore it. It was galvanized into activity by Mr. Hardman's report. His suggestions apparently have not been carried out in full and it is very questionable whether it would have made a difference if they had. In this case the eight-hour law has really been a serious blow, not perhaps, directly as regards the mine at which under any circumstances work might have been suspended in consequence of the loss of ore-bodies and the depreciation in values; but the last remaining hope of the Hall Mines was in the operation of their smelter on Slocan ores, and the closing down of the Slocan mines has practically destroyed, at least for the present, these prospects.

If it is certain then that in their present action the mining companies have in view of the re-establishment of the equation on a fairer basis between demand and supply in the labour market, and the evidence is fairly conclusive—it is an interesting question whether their action will have the effect desired. There is nothing that will permanently affect the labour market except increase of population which increases the supply or decrease of production which reduces the demand. Now, of course, while the closing of the main mines in British Columbia must cause a temporary reduction in the demand for labour the mining districts are growing fast enough to speedily absorb many more men then have been released. Some of them will go to Cape Nome, some of them to Republic, some to Sumpter, some to Boundary, some to Slocan. They will be drained away from Rossland and Nelson but their presence in other parts of the great Northwest will hardly be felt. At the same time as a demonstration that the conditions of industry may become too burdensome upon the capitalist there may be a certain moral effect visible, that is to say the men as organized in unions may be

brought to see a little reason in reference to their continual interference with the conditions of labour. But upon the labour problem itself as a pure question of supply and demand the course taken by those mining companies may possibly have a disastrous effect. When they wish to resume will it be easy to fill the place of men discharged? The fact is that people are so much accustomed to conditions in old communities where there is a steady pressure of population on the demand for labour that they do not recognize that in a new country, where instruments of production are becoming available much faster than population is increasing, the conditions are reversed, and there is a steady pressure upon population by the demand for labour. An equation is always established naturally. But it is here established by denuding certain districts of the labour necessary to work their resources. Such a denudation adopted as a forced measure of relief to the labour market and for a limited period, must only make it increasingly difficult to secure the necessary labour when resumption is attempted provided the rate of progress in other parts of the territory is maintained. Consequently the action of the companies may be as serious a blow to them in the very respect in which it is designed to give relief as well as a grave injury to the comunities in which they are situated. It may have been made necessary through the arrogance of labour unions and the ill-advised action of the Legislature. It may be the overt and tangible result upon the industry of the province of action taken to benefit it, as a patient may die under the knife of the best intentioned if unskilful surgeon. There is only one moral to be drawn and that is the paramount necessity of increasing conservatism, and here the word is used in no political sense, in the administration of the affairs of the province, and the advantage of the affairs of the province who will think before they act.

The report on the War Eagle mine, coming as it does immediately after the cessation of work in the mine, excites unusual interest. It is a clear and workmanlike document. It sets at rest any existing doubts as to the future of the mine, although at the same time it disposes of the romantic yarns in connection with the War Eagle which have for so long kept the stock at a "fancy" price. The report, as was to be expected, shows that cost has been excessively high during the last year. This has been caused by two main considerations. The first is the defective nature of the machinery employed, and the second is the fact that a larger proportion of profits than has been thought necessary heretofore must be expended in the Rossland mines in exploration work to maintain the mines in a condition to make a steady output. It is evident that where the masses of ore are so large, but show so little uniformity of occurrence although confined with fair regularity to an easily followed and well recognized plane, that every inch of ground must be carefully tested and that the cost of so testing it must be a first charge, and a heavy one, on the profits of the mine. Had this policy been carried out by the old War Eagle Company the mine would never have been sold for $700,000. Two instances of this peculiarity are mentioned in the report on the south branch of the west drift on the fifth level good ore is found to a point 80 feet west of the shaft cross-cut. From 80-foot point to the 245-foot point the vein is too low-grade to pay. But at the 150-foot point an upraise has been made 40 feet which is all in good ore averaging $16. It may be looked on as certain that this portion of the vein contains some good ore and in bodies of sufficient size and sufficiently well defined to be worked. Again on the sixth level on the easterly drift on the north branch of the vein the ore was very low grade for 50 feet and yet an upraise after following a narrow stringer for 20 feet disclosed a very large body of pay ore. With reference to the future of the Rossland mines and their dividend-paying capacity these facts are all-important. They mean greater cost of mining, but they also mean greater possibilities as to result. The condition of the War Eagle mine is at present as follows: The first four levels are practically exhausted, nor is much hope held out by Mr. Kirby that any further bodies of ore will be disclosed in them; the main stope on the fifth level is partially exhausted but still contains a considerable amount of ore. While a subsidiary body of ore has been opened for 120 feet but not yet broken into by stoping. In addition there is a long drift upon more or less barren vein matter which nevertheless discloses possibilities of ore production when the ground opened is further tested. On the sixth level there are evidences of very satisfactory bodies of ore. But the headings and raises are not sufficiently advanced to make them available except in one portion from which 8,000 tons of ore have been taken. It is easy to gather from the report that the War Eagle could have maintained as satisfactory output and still most of the energies of the company have been devoted to systematic development. But this action would have meant mining at heavy cost, not to mention the labour situation on which the action of the management was supposed to have its effect. The present position of the mine is largely due to two facts, the leanness of the fourth level and unexpected difficulties in opening up the resources of the fifth and sixth levels caused by the irregular occurrence of the ore. These levels have, however, shown great improvement over the fourth. It is not beyond the range of probability that the immense developments in the lower levels of the Le Roi may find their counterpart in the War Eagle. While it is not likely that further development either upon these levels or below them will diminish the value of the mine. What have War Eagle shareholders to look forward to? The gist of Mr. Kirby's report is at the close of it:

"On resuming production I must advise that dividends be deferred until a suitable reserve is accumulated in the treasury. This is necessary to tide over the emergencies to which mining is always subject, such as accidents, temporary changes in the ore shoot, etc., etc.

"The rate of production which the War Eagle ore shoot can maintain has a natural limit which is fixed by the size of the shoot and the rate at which it can be followed down. So far as now shown the limit thus indicated is about 50,000 tons yearly, and I must for the present advise this rate of production."

This paragraph contains a rude awakening from their iridescent dreams for the poor shareholders. They have to face a suspension of dividends for nine months probably and after that they are promised the net proceeds on 50,000 tons of ore per annum. It is questionable if the profit per ton will exceed $5.00. Taken at that the year's income will be $250,000 or 12½ per cent on $2,000,000. To maintain this output a level will be exhausted every year. If we allow the

mine a workable depth of 25,000 feet, this means 20 years' purchase on the mine. War Eagle at $1.00 per share is a 7½ per cent. investment, allowance being made for 5 per cent. redemption on his capital to the investor, which, on a mining investment, is by no means excessive. There is one point of great importance to the camp of Rossland in the information contained in this valuable report. It is that the occurrence of pay ore is of so variable a character that every body of mineral in the camp is well worth development and exploration.

The labour dispute in the Slocan is, we fear, only temporarily settled. But the settlement so far effected is upon precisely the terms and conditions of just compromise we have outlined in the MINING RECORD from time to time. In the first place place there is no reduction of wages for the time worked under the eight-hours law. Three dollars a day would have meant an actual reduction of wages, and it cannot be gainsaid that there was a certain amount of justice in the men's refusal to accept it, if the eight-hours law was given as the reason for enforcing it. On the other hand the mine owners have won a great point in the interest of the mining industry, of society and of organized labour itself. They have insisted that no discrimination shall be made between union and non-union men, that the basis of employment shall be merit only. At the same time the union is left perfectly free to pursue those objects for the advancement of labour for which it exists by means of its moral influence over the sympathies of working men. These are the essential features of the settlement and it is well that they should be brought into clear outline at the present time because they are important not only as affording evidence of a permanent and satisfactory basis for the mining industry in the Slocan, but also as setting a valuable precedent for the settlement of other disputes, there and elsewhere, should such arise. The outlook in the Slocan from having been particularly gloomy has certainly improved, notwithstanding there still exists a feeling of disquiet and uncertainty. The mines have been under steady development during the last nine months. Buildings have been erected, machinery installed and all manner of dead work done. Now perhaps they are in a position to handle ore more cheaply and in larger quantities than ever before. During the month of January the shipments from the Slocan amounted to 1,218 tons, and every month of this year should see a steady increase upon that amount. It is only fair to assume that the year 1900 will be a record year in British Columbia's production of silver and lead. If the present settlement may be regarded as permanent its influence will be felt far beyond the limits of the Slocan country: and Moyie, the Lardeau and East Kootenay will experience its beneficial effects. The distrust and fear regarding industrial conditions in those districts which have been interfering with development will be now removed and a settled confidence will take their place. In connection with this labour dispute in the Slocan there are three matters which should attract the attention of outside investors. They are matters in which the province may take a just pride. First there has been no destruction of private property, second, there has been no violation against the person, third a committee of sociological experts could not have devised a more just and fair agreement than that which it is hoped has been arrived at. When these things are compared with the unfortunate occurrences which have accompanied labour disputes in Idaho we may well congratulate ourselves upon the sense of fairness and common sense both of men and masters in British Columbia. The comparison should have a beneficial effect upon the credit and prospects of the province.

If anything were needed to compiete the demonstration that the stoppage of production in the Le Roi, War Eagle and Centre Star was due to the condition of the labour market, it would be found in the simultaneous action taken by the Dominion Copper Company controlled by Messrs. Mackenzie & Mann. But here also we find that other considerations were involved as well. The Dominion Copper Company has been floated but has not so far been offered to the public. The work of development has been carried on entirely at the expense of the promoters. The properties are now nearing the point where the public can be fairly invited to invest. But the market is in such a state that it would not absorb any great number of shares. Consequently it would be gaining nothing and losing something by continuing work at their own expense. Such work would add nothing to the issue price of their shares, but would increase the sum of money they have already expended on the properties. Very few men were involved by this latest development of the situation. Improved market conditions will lead to a resumption of work in every direction.

The fact that certain Toronto stock brokers first got notice of the closing down of the Centre Star and War Eagle mines has naturally caused much adverse comment of the management of these associated properties. Messrs. Gooderham have, as controlling directors, satisfactorily disproved allegations of *mala fides*, but they have failed to show that sufficient care was taken to advise mining centres simultaneously all round of the stoppage of the mines.

Last month we drew attention to the anomaly in the mining law, or in the interpretation placed upon it, and it was pointed out that the clause referring to Crown Grants was open to an ambiguous construction. To the correspondence already provided the following letter from a surveyor and the Minister's reply thereto may be added:—

"The Hon. J. Fred Hume, Minister of Mines, Victoria.

"Sir: In reference to the new requisition now being enforced, compelling five assessments to be recorded and five fees paid in order to obtain a certificate of improvements on mineral claims, I would beg to call your attention to our particular case. We have for some time back been taking contracts for survey and Crown granting mineral claims, counting, of course, on the usual custom. Now this change, if enforced, will cost us alone four hundred dollars, besides endless trouble, on the work which we had considered done. Taking the ———— for example, which is one of a large group of claims in about the same position. This claim was located April 24th, 1895, recorded May 1st, 1895; certificate of work recorded April 21st, 1896. In this year nearly $2,000 worth of work was done. A certificate of work was recorded April 30th, 1897, certificate of work recorded April 30th, 1898, survey recorded as assessment April

28th, 1899. All steps have been taken and papers deposited for certificate of improvements with the Mining Recorder. Now the Gold Commissioner says we must record another assessment, but cannot now record any of the $2,000 worth of work done in 1896; therefore we must pay in $100 or do another $100 worth or work. In one group of eight claims this would mean to our clients doing $1,800 worth of work over and above the $500 per claim called for by the Act. I hear of one claim which has already been let go by default owing to this, and we have some which our clients must certainly lose if immediate favourable action is not taken. Cases vary so much that I would venture to ask that Gold Commissioners should be allowed to use their discretion in each case until Order-in-Council comes into force fully governing such cases, and that when such Order-in-Council is passed that it should allow cases in hand to go through according to the custom in force when all steps had been taken in accordance therewith. We have some very pressing cases before the Gold Commissioner here and I would beg of you to instruct him to deal with those according to the foregoing.

"I am, etc."

Mr. Hume's reply to this letter reads as follows:—

"Department of Mines,

"Victoria 29th January, 1900.

"Sir: I beg to acknowledge the receipt of your letter of the 24th inst., asking that special instructions may be issued to the Gold Commissioners giving them a certain latitude of power in dealing with applications for certificates of improvements affected by the recent interpretation of the Act with respect to the necessity of recording five assessments before such certificate can be granted. I beg to inform you that having given my decision in this matter it is quite beyond my power now to authorize the Gold Commissioners to exercise their discretion in dealing with exceptional cases of hardship entailed by this decision. I would also point out to you that no alteration has been made in the law in this respect. My attention was called to a considerable diversity of opinion that existed as to how the law should be interpreted, and I instructed the Gold Commissioners accordingly as to my interpretation of it for their guidance.

"I am, sir, your obedient servant,

"I. FRED HUME."

We are glad, meanwhile, to be able to state that the Mining Committee of the Legislature has taken this matter up, and that an attempt will be made to remove the several ambiguities of the mining laws as they now appear on the Statutes.

Mr. W. R. MacInnis, the general freight agent of the Canadian Pacific Railway, with headquarters at Winnipeg, last month visited the Boundary Creek district with a view to summing up the situation as regards freight possibilities. Afterwards he informed the Rossland *Miner*, so that paper states, that the ore from the Boundary would not be sufficient to keep the Trail smelter in operation. It is to be presumed that this statement is not intended to be so far prospective as to cover, say, the year 1901, but even so it may be regarded as a significant commentary on the statements that certain mines are shipping ore, which from time to time appear in Boundary district newspapers and are as well either quoted from them by outside newspapers or are received by the latter from their district correspondents. The fact is the local newspapers and correspondents too often lack candour; they are indefinite in their statements and so suggest an importance to which from a shipping point of view the Boundary Creek district has not yet attained. This custom does the district no good, since it improperly conveys the impression that there are mines shipping ore in quantity regularly when as yet, with perhaps the exception of the "B. C.," they are not. The sending out of two or three carloads of ore, or ten times that number, generally for test purposes, does not make a mine, from a sound mining standpoint, a "shipper." The mineral resources of the Boundary district are undoubtedly extensive and there is good reason to believe that development will prove them both permanent and profitable. Misleading statements of this description are, however, to be strongly deprecated under any circumstance. The chief need of the Boundary country continues to be development work, and until this shall have been done on a much larger scale than has yet been undertaken most of the talk of mines shipping will be talk only, unsupported by a steady output of ore sufficient to warrant it.

Meanwhile there are signs of large early development in Boundary Creek. One of these is the immediately intended incorporation of Phoenix, an important mine centre of that district. Another is the fact that the Granby smelter will begin ore roasting towards the close of this month and it is expected commence operations in full about the 15th of April.

Mr. Frank D. L. Smith, a travelling correspondent of the Toronto *World*, recently contributed an article to his paper on the "closing down" of certain mines in this province. We quote the following excerpt as illustrating this gentleman's style of comment:

"To cap the climax, a despatch from Rossland last night states:

"'There is said to be a probability of still other instances of wholesale discharges and shuttings down before the middle of the present month.'

"This last item may forecast the stopping of work by the Dominion Copper, Old Ironsides, Knob Hill, Mother Lode, Sunset and other companies who are operating on a large scale, and employing thousands of men in the Greenwood or Boundary Creek sections of British Columbia. The fact of the matter, therefore, to-day, is that over half of the big mines in the Coast province are now idle; that three of the reduction works which they supply with ore have followed suit, and that within a few days, if the mine-owners' programme is carried out to the full, the remaining big mines in the province, and the only other reduction plant will be in the same postiion."

So far as the Boundary Creek district is concerned Mr. Smith's "forecast" appears to have been as greatly exaggerated as was his statement that there are "thousands of men" employed by the mines in the Boundary Creek section. As Mr. Smith last year largely discounted his usefulness when "writing up" the mineral resources of the Boundary country by his eagerness to obtain from claim owners "honororiums" or whatever else negotiable "considerations" may be designated, it is just possible his "forecast" may have been prompted by an inspiration of a like nature, and be similarly open to suspicion. Be this as it may, this fact remains that while it is true the Dominion Copper Co. has discharged 35 men employed on its Brooklyn claim, in Phoenix Camp, " the Old Ironsides, Knob

Hill, Mother Lode, Sunset and other companies operating on a large scale" are continuing to together employ—not "thousands" as mis-stated—but hundreds of men, with no present prospect of shutting down their mines. It is a pity that the Toronto *World*, which has probably published more information—and much of it reliable, notwithstanding its representative's failing above referred to—should lend its columns to scare-producing ends and so foster a lack of confidence in Boundary stocks when local conditions do not really warrant such mistrust.

It seems impossible for some newspapers no matter what side they are taking in the eight-hour law controversy, to refrain from exaggeration or misrepresentation,—not necessarily intentional, yet none the less unreliable—in support of their view of the position. In this connection the Toronto *World* is referred to in another paragraph. The following is from the Nelson *Miner:* "Another large mine has closed down, that of the Dominion Copper Company, of Phoenix. It is not large yet in production, being a new company, but it is one of the largest in the province in capitalization and promise, and had entered vigorously into operations. The manager assigns as a reason the eight-hour law. The suspension is for an indefinite period, and will prove most prejudicial to the business interests of Phoenix and of the Boundary country generally."

Now exception may reasonably be taken to several of these statements. First the Brooklyn, the mine closed down by the Dominion Copper Co., and which employed only 35 men, cannot fairly be classed as a "large mine," and next it is surely a gross exaggeration to make it appear that the discharge of 35 men will prove "most prejudicial to the business interests of the Boundary country generally." The suspension of work in any mine employing even a smaller number of men than at the Brooklyn is to be deplored, but the Boundary district residents as a whole will probably resent the implied suggestion that the comparatively unimportant incident referred to by our contemporary is likely to seriously affect business in their large and important district. Mines of more present consequence, situated in the immediate vicinity of the Brooklyn and operating on a much larger scale, continue working and are likely to do so. What is most needed in this regard is a fair statement of facts; misrepresentation will not in the long run serve the least interests of either mine owners or men.

The Similkameen country has lately received much notice in the Coast press and interested parties have not been slow to take advantage of this readiness to give publicity to the district. Newspapers published in the interior are also assisting in booming this El Dorado. The Greenwood *Times* recently gave prominence to the opinions of a precocious youth known locally as "Charley the Trader" who, though without the requisite experience either theoretical or practical to make his opinions of any value at all, with characteristic "cheek," said: "From a careful examination of the Similkameen district I came to the conclusion that the evidences of mineral wealth are fully equal to any other section of the province." Then as a further proof of the value, or valuelessness rather, of this testimony the *Times* states that its informant during his three weeks' visit to the Similkameen travelled 550 miles "on the hurricane deck of a cayuse." It did not mention though in its notice of this trip that this enterprising young man has shares in a Similkameen mining venture and town lots to sell, hence perhaps his enthusiasm. Next the Grand Forks *Miner* is the medium through which "Crazy" Brown occasionally gives the public the benefit of his opinions of the Sunset claim on Copper Mountain, which, for the time, has quite eclipsed Brown's former mania, the Volcanic, on the North Fork of Kettle River. Then the Rossland *Miner* finds another "hurricane deck of a cayuse" man —this one travelled only 400 miles in four weeks—who unloads upon the public the burden of his experiences all through which appear those entertaining story-tellers "Volcanic" Brown and Robert Stevenson. The Similkameen may be and probably is rich in mineral resources but the development of these will not be greatly aided by the publication of such matter as is here noticed. What mining men of experience and means require is simple and thoroughly reliable facts. The publication of these, if any be obtainable, will be of real service to the district, but fairy tales and camp fire yarns will seldom do it much good.

The report of the Cariboo Camp McKinney is an exceedingly satisfactory document. During 1889 this mine produced $675,000 worth of gold, paid dividends of one per cent. per month regularly, and opened up reserves of ore for three years sufficient to keep a battery of 40 stamps in operation instead of 20 as at present. The company lately purchased the remaining one-quarter of the Okanagan claim and has extended its drifts into this ground. The vein continues strong and its contents very rich. The Cariboo mine has been opened for 1,000 feet horizontally. The whole contents of the vein, which of course has varied in thickness, have averaged 18 dwt. in gold per short ton. The Cariboo group may justly be considered the greatest gold mine in British Columbia. The remarkable uniformity of value and great extent to which the vein is workable render it an unique investment. A curious thing about this mine is that its latent richness would never have been discovered had it not been for a blowout of rich ore on the surface near the site of the present shaft. If we are not mistaken this is the only spot in Camp McKinney where really rich ore has come to the surface. But it looks very much now as if the veins which traverse the mineral belt would all be worked through their entire length. There is nothing to prevent ore of the character found in Camp McKinney being worked at a minimum of cost. It should make one of the greatest and most prosperous camps in British Columbia. If the temporary inactivity in gold-copper mining does something to divert attention to the resources of this district it will have had advantages as well as drawbacks.

It is a very extraordinary thing that neither the Provincial nor the Dominion Government have taken the necessary steps to determine the latitude and longitude of any of the principal centres of trade or industry in this province, except in the cases of Revelstoke and New Westminster. Such a strange omission has already caused much confusion and inconvenience to surveyors and others and it is therefore to be hoped that now the question has been brought up, the importance and necessity of moving in the matter will be at once recognized.

We have received a copy of the prospectus of the

"Golden Placer and Quartz Mining Co., Ltd." a concern recently promoted from Golden, B.C., and Knowlton, Quebec. The company "is now being incorporated under the Companies Act of British Columbia, with a capital of $1,500,000," of the par value of $1, "500,000 shares being retained in the treasury." These shares are offered for subscription at 10 cents. The company owns (1) a placer "mine" at the mouth of Canyon Creek, south of Golden, on which the prospectus states "a trial shaft has been sunk with satisfactory results" (what these results are is not mentioned) but gold, it is added, "it is not expected will be found in paying quantities until the vicinity of the bed-rock is reached," (2) the company is acquiring two mineral claims, "the lead being an immense body of quartz-impregnated with iron pyrites," roughly estimated as over 200 feet wide, but to quote again from the prospectus "the dip of the vein it was impossible to determine owing to there not as yet having been sufficient work done." A *surface* assay gave $15.50 per ton gold values. Open confession is no doubt good for the soul, but while this prospectus is refreshingly candid we can hardly see how the promoters have the effrontery to offer, or how they can expect, the public to take shares, in, such a palpably wild speculation as this. And yet the prospectus naively describes these two unexploited prospects and the undeveloped placer claims, as "desirable mining properties," which "would seem to offer an almost absolute security for intending investors." Personally we would prefer the chances offered by the "nickel-in-the-slot machine." We regret to note in the list of provisional directors of this highly speculative venture the name of the Hon. Mr. Justice Lynch, of the Supreme Court Bench of Quebec.

There is much extravagant booming of the Howe Sound copper properties, which were recently acquired by a syndicate organized by Mr. H. C. Walters of Spokane. So far as can be ascertained by impartial experts, there seem to be very extensive deposits on the claims of low-grade copper. This will need to be most skilfully and economically worked and concentrated on the spot and very large expenditures indeed will also be necessary for aerial tramways and other plant. Then it is thought, on the strength of present indications, that sufficiently profitable results should accrue. But as already stated, large actual capitalization, representing money laid out; and most careful working are absolutely necessary conditions to success. The value of the Howe Sound ore is not sufficiently high to permit of a margin for waste, extravagance or inefficiency.

A correspondent, an independent mining engineer, sends us a very encouraging account of the conditions and prospects of the Van Anda Company's properties on Texada Island, and we are none the less gratified at receiving these good tidings, because of the fact that for some time past we have had misgivings as to the successful working of the Van Anda mines, and there were seemingly good reasons for mistrust. In the first place the property was most outrageously "boomed;" next, the erection of a smelter at a time when none of the properties had been proved beyond the prospect stage, and last but not least the enormous capitalization were all distinctly unfavourable factors in viewing the undertaking from a business standpoint. But even as matters stand now, much has yet to be accomplished before the large capitalization is justified; and while Mr. Treat, the manager, is entitled to a good deal of admiration and praise for the plucky manner in which he has "stayed by" the Van Anda, it must be owned that the present apparently more hopeful state of affairs is due more to good luck than to good management. Our correspondent, meanwhile, informs us that the Van Anda properties have now been opened up to an extent of 2,000 feet, that the showing in both the Copper Queen and Cornell is very promising, and that from a casual examination it would appear that there is sufficient ore in sight in these two mines to supply forty tons daily to the smelter.

Prospectors in the outlying districts will, no doubt, appreciate the proposal of the Government—not yet, however, made public—to appoint Deputy Mining Recorders with power to receive and transmit records and affidavits, in localities far removed from the main offices. In some districts such as Cassiar and Omineca a prospector, after locating a claim, would not infrequently be obliged to travel a hundred miles or even more in order to record his discovery, and in localities where the working season is of short duration, this long journey was naturally considered a hardship. The proposed appointments will, however, go far towards remedying the grievance.

In the first annual report of the Geographical Board of Canada, a list is published giving the decisions of the Board as regards the correct and official spelling and designation of places in Canada, heretofore in dispute. Thus the word "Omineca" which even in Government reports and maps has been spelt in no less than four different ways, as "Omenica," "Ominica;" "Omeneca" is now officially written "Omineca;" "Stikene," not "Stickeen" nor "Stikeen;" "Skagway," not "Skaguay" or "Shkagway;" "Yukon," not "Youkon," etc. Some of the rules of nomenclature and orthography of geographical names are as follows: When the priority of a name has been established by publication, particularly when such publication has occurred in any standard or authoritative work or works, that name should if possible, be retained. When names have been changed or corrupted, if not too firmly established by local usage or otherwise the original forms should be restored As a rule the first published name should be retained. The possessive form should be avoided whenever it can be done without distroying the euphony of the name or changing its descriptive application. It is desirable to avoid the use of the words "city" and "town" as parts of names. The form "canyon" shall be used instead of "cañon". The Board suggests that the initial letters of generic or descriptive parts of geographical names, when used in reports or other documents, should not be capitals. French names in Canada are to be spelt according to the rules of the French language. The spelling of native geographical names should represent, approximately the true sounds of the words as pronounced in the native tongue. The Board, moreover, adopts the rules of the Roval Geographical Society for the orthography of geographical names.

We extract the following from the London *Critic:* "My excellent British Columbia contemporary, the MINING RECORD, is somewhat put out. It objects to

the warning I recently issued against promoters and claim sellers from the Pacific Province of Canada. With reference to this my British Columbia correspondent writes to inform me that besides the Kootenay and Atlin properties that are to be hawked about London, speculative Omineca and Cassiar concerns are to be unloaded—if possible. As far as my recent note is concerned, my correspondent, after noting the MINING RECORD ascribes to the *Critic* views to which it gave no utterance, proceeds thus:—Your British Columbia contemporary, while twisting your views and trying to be smart at your expense, unconsciously endorses The *Critic's* opinion. It claims that 80 per cent. of the British Columbia failures were schemes promoted by British people as against, at the outside, a failure of 20 per cent. of American-promoted mining enterprises in Western Canada. The blame for the numerous disasters which so far have befallen British mining ventures rests, the MINING RECORD declares, upon the Grant-Govans, Morris-Cattons, Horne-Paynes and other members of the London promoting fraternity. Precisely; and who induced the fraternity to commence business in British Columbia? None other than the claim sellers and the option holders. The MINING RECORD should not revive memories of the 'numerous disasters' at the present juncture."

Mr. Hess has the reputation, which he has justly earned, of being a very clever man. But why then does he employ so illogical a person as this British Columbia correspondent evidently is, to contribute to the columns of the *Critic?* Because among the London promoting fraternity there were certain knaves and fools, who made a mess of things in this country, we are told the claim-sellers and the option holders are responsible. What utter inconsequent twaddle! The *Critic's* brilliant B. C. correspondent is probably under the impression that the poor innocent London promoter is as a general thing "held up" by the bold bad option-holders from the wild and woolly West, and compelled for fear of his life to float the claims and over capitalize, mismanage, or perform with them other conjuring tricks at the expense of the British shareholder. In our original comment which called forth this absurd reply we merely wished to point out that (1) there are good mining properties in this province; (2) that British capital has not gone the right way to work to secure meritorious claims; (3) that because a man goes to England with the object of selling a claim or an option, that is not in itself evidence that he is dishonest or a sufficient reason why the *Critic* should publish a warning to "investors" as if the unhappy man had hydrophobia or monomania or any other dangerous affliction. The claim-seller or option-holder may have a very good thing to offer, or he may not. It rests with the promoter, or the investor or the capitalist to make the necessary investigations. We want capital badly in British Columbia and before long we shall get all we want. In the meantime those who know the history of the "numerous disasters" to which we have referred, will not be in the slightest degree prejudiced against the country.

The London Morning *Leader* has evidently the same low opinion as we always entertained of Mr. Morris Catton and his British Columbia and Yukon Mining Company flotation. Our contemporary speaks as follows an the obtaining of an order of court in London for the compulsory liquidation of that ill-starred venture, the "Klondyke and Columbian Goldfields, Limited." "We are glad to learn that the petition for the compulsory winding up of Mr. Morris Catton's wild cat Klondyke and Columbian Goldfields, Limited, presented by Mr. R. W. Friday, and other members of the shareholders' committee, has succeeded. Mr. Justice Cozens-Hardy in giving his decision said that the circumstances connected with the promotion and formation and conduct of the company were suspicious in the last degree, and it must be taken to be admitted that the present chairman of the board and the original directors received from the so-called promoter, who was the chairman's clerk, a large portion of the deferred shares. That was a secret profit, and he thought it could well have an epithet to it much stronger than 'secret.' There were transactions pre-eminently fit for such examination as would be made after a compulsory order. He held that it was just and equitable and, indeed, necessary that there should be a compulsory winding up. He therefore made the order asked for." Mr. Justice Cozens-Hardy is, it may be remembered, one of the strongest judges on the British Bench. The enquiry directed should lead to instinctive and suggestive revelations, one outcome of which should be the "warning off" of British Columbia public men from lending their names too readily to certain classes of mining ventures floated in London by promoters of no sufficiently guaranteed bona fides.

The annual report issued by Wells, Fargo & Co. of San Francisco, with regard to the gold, silver, copper and lead production of the Western States, British Columbia and the Yukon gives some interesting data in respect to the output of 1899. The total value of the metals yielded by the States, Territories and Province included amounted, according to the statistics before us, to $203,541,907, of which $90,190,167 represented gold, 38,804,496 silver, $59,244,994 copper and $15,302,248 lead values. The greatest producer of the metals in 1899 was Montana, which yielded a worth of $50,695,000; Colorado came next with $43,180,913, then British Columbia and the Yukon (grouped together) with $23,862,941. Arizona meanwhile produced metal values of $20,353,421, Utah $13,654,682 and Idaho $12,736,860. Alaska is credited with $4,740,846, of output, mainly gold, and California has quite fallen behind Montana and Colorado as a metal producer, the total yield from this State in 1899 being $18,953,117, or less than half that of Colorado. Taking British Columbia alone, our annual metal production at this moment stands approximately equal to that of Utah or Idaho with every prospect of soon passing each of these States. It will, however, be long ere we reach the position of Colorado with its more than $43,000,000 of annual metal output, of which over $26,000,000 stands for gold values.

The second annual report of the consolidated Cariboo Hydraulic Mining Company, Ltd., reaches us just as we go to press, and we are, therefore, unable to do more than give it a brief notice. As this report, however, contains matter of very great interest to a large number of our readers it will be published in full, together with photographs kindly sent us by Mr. Hobson, in the April issue. Meanwhile, the last season's operations seems to have been again largely confined to equipment and preparatory work, the total expenditure for the season being $194,520, as against an expenditure of $238,844 last year. The value of gold recovered for the period of 144 days and eight hours of working was $92,678, which is twelve thousand dollars less than the return for 1897-98. The report states that the equipment of the property is now complete and that consequently the mine "may be considered in first-class condition to produce large and profitable results hereafter."

THE TROUT LAKE DISTRICT.

(By R. Leckie-Ewing.)

HAVING SPENT some three months last summer in the vicinity of Trout Lake I availed myself of the opportunity afforded me to gather an idea of the mineral possibilities of this promising section of the province. The information I was then able to obtain I propose now to give, for what it may be worth, to the readers of the MINING RECORD.

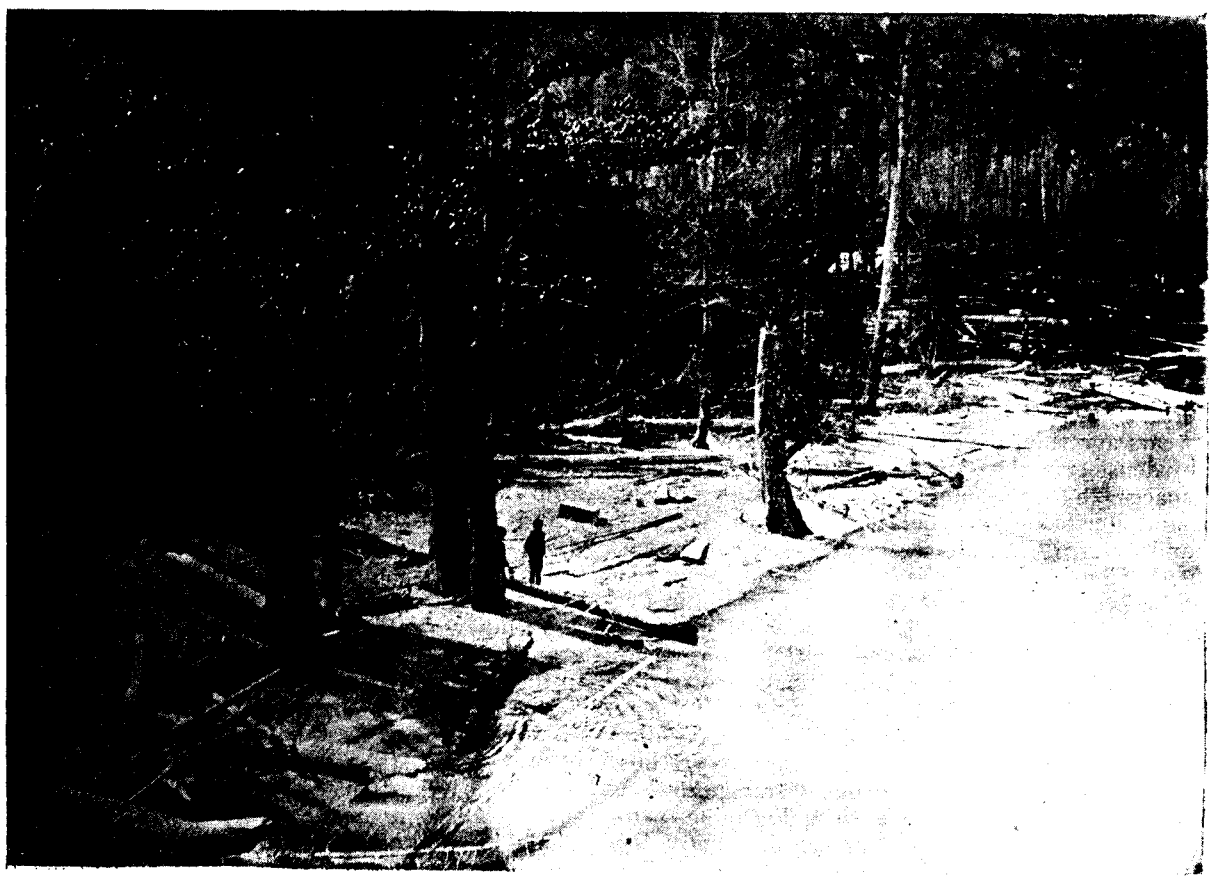
Trout Lake City is situated a matter of forty-eight miles southeast of Revelstoke, and is easily accessible from that point via Arrowhead and thence by steam boat to Thompson's Landing. From Thompson's Landing travel to Trout Lake City or to Ferguson, which last is the most convenient centre of the mining territory, is accomplished by stage coach or saddle. Four years ago the sites of these two towns were covered by dense growths of timbers, but of late considerable spaces have been cleared and both Trout Lake and Ferguson now boast of substantial buildings and enterprising, albeit at present, small populations. Considering the natural difficulties which had to be overcome the progress already made in the development of this district is eminently satisfactory. With the completion of the railway to Ferguson, however, there can be no question but that activity in the future will be decidedly more marked. In fact, the great drawback under which the Trout Lake district laboured during the last two or three years has been indifferent and quite inadequate transportation facilities; and the great expense to which mine owners have been put in sending out ore, has naturally acted as a check on all mine development and discouraged capital from exploiting this field.

To the sportsman the district does not, unfortunately, offer many attractions. Bear and cariboo, numerous enough some few years ago, are now very scarce, especially the latter. One may come across bear, both the black and the silver tip variety, however, in the early spring with the assistance of good guides. I tried the fishing on several occasions, both in Trout and in Stobart Lake, but with poor success. There are no fish that will look at a fly; though very large trout are caught with spoon and minnow by trolling. I had the satisfaction of hooking one of these gentry, which weighed no less than eighteen pounds. He was a big ugly fish and showed little fight, but the biggest I have ever caught. Trout Lake itself is a wonderfully beautiful sheet of water—and even in British Columbia noted for the picturesque beauty of its inland waters none, I think, surpass Trout Lake in loveliness; and that is saying a good deal. Its length is about seventeen and its width from one to two miles; and on either side stand out grand snow-clad summits whose slopes from lake shore to timber line are densely clad with conifers. On a bright summer's day, with the sun shining brightly on the water, and lighting up forest, glacier and snowy peak, the effect is almost indescribably grand—and I certainly can hardly hope to do justice to the subject.

The new mining town of Ferguson.

But to come to the mines. The Duncan-Lardeau district, although as I have pointed out, its mineral resources are still practically undeveloped, notwithstanding gives promise of becoming one of the richest silver-lead camps in the whole of British Columbia—which is tantamount to saying, the whole of North America. Nature has been very lavish in her distribution of galena veins in this section. These veins

The Great Lime Dyke, Trout Lake District.



By the Lake Shore—Trout Lake District.

A Good Showing—Trout Lake District.

are, as a rule, judging from the present showings, large and well-defined, and occur in both diorite and lime formations at elevations of from four to six thousand feet. The natural advantages of abundant

A Typical Miners' Cabin in the Trout Lake District.

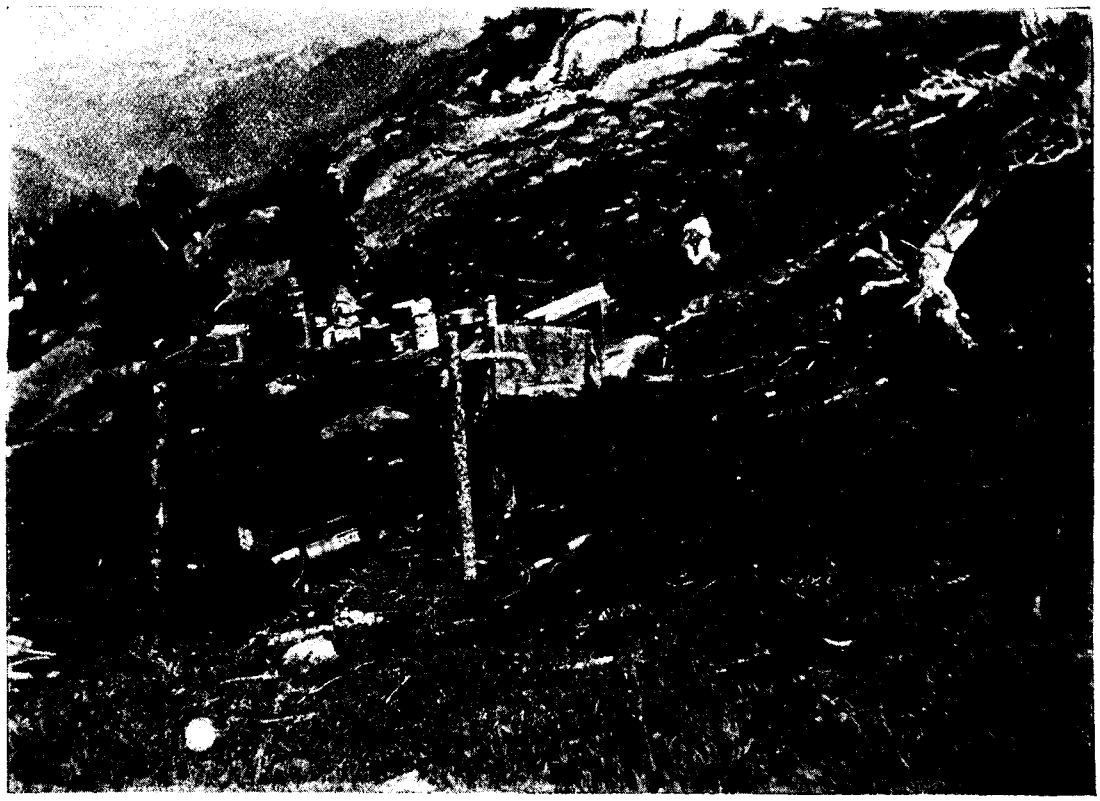


Table d'hote at the Mines.

wood and water supply is also to be noted. The district seems to be traversed by dykes of diorite and lime, which vary in width from forty to eighty feet. The limestone formation is both over and underlaid by slate and shales and appears to be the apex of a steep anticline, or else it has been elevated to its present position along a line of faulting. On the southwest side, the line between the lime and slates may be followed for many miles, and here much of the prospecting in the district has been carried on, although with a few exceptions the best veins have been found in the slate and schist formations, both near and

A Prospector's Camp.

several miles distant from the lime belt. The limestone itself is very solid and highly altered, and so far as known, traversed and influenced by intrusions of igneous rock. The veins found in the lime belt are believed to be the same as those crossing the slates, but this has not been conclusively proved. The belts of slates and schists, which have been found to be most important ore-bearing formations, are in part well interlaminated with narrow bands of quartz, as well as crossed by barren white quartz in irregular forms.

The characteristic ore of the district is argentiferous galena, with which is **associated** in some cases, tetrahedrite or grey copper and gold. Zinc blende is also generally present and often copper and iron pyrites.

Cup. Ore is galena, with considerable grey copper, silver 585 oz., lead 68 per cent.

Towser.—Ore is a coarse cube galena, in company with considerable iron, and a little zinc. Silver 88 oz., lead 58 per cent.

A good body of this nature has been uncovered by recent development and shipments will be made during the present winter, as development is being vigorously pushed.

Nettie L.—Situated along one of the strata of diorite. Ore is extremely rich in grey copper. Some times three or four tons of almost pure grey copper are found in a bunch. This grey copper assays about 3,000 oz in silver, zinc blende and iron pyrites are also present as in other properties.

Felling Timber—Showing forest growth in the Trout Lake District.

face of white quartz, with spathic iron, and while much Many of the veins have a large showing on the surof this quartz may be barren, it is in parts well mineralized with pyrites and galena which is often found segregated into bands of solid ore; or so disseminated through the quartz as to require concentrating. The strike and dip of the veins nearly coincide with the strike and dip of the enclosing slates or schists, and are found to cut across the planes of stratification with a dip of 45 to 50 degrees from the horizontal. I give below a few particulars of the mines and properties in this locality:

Silver Cup.—Average ore, gold 4 oz., silver 200 oz., lead 50 per cent., and zinc 7 per cent.

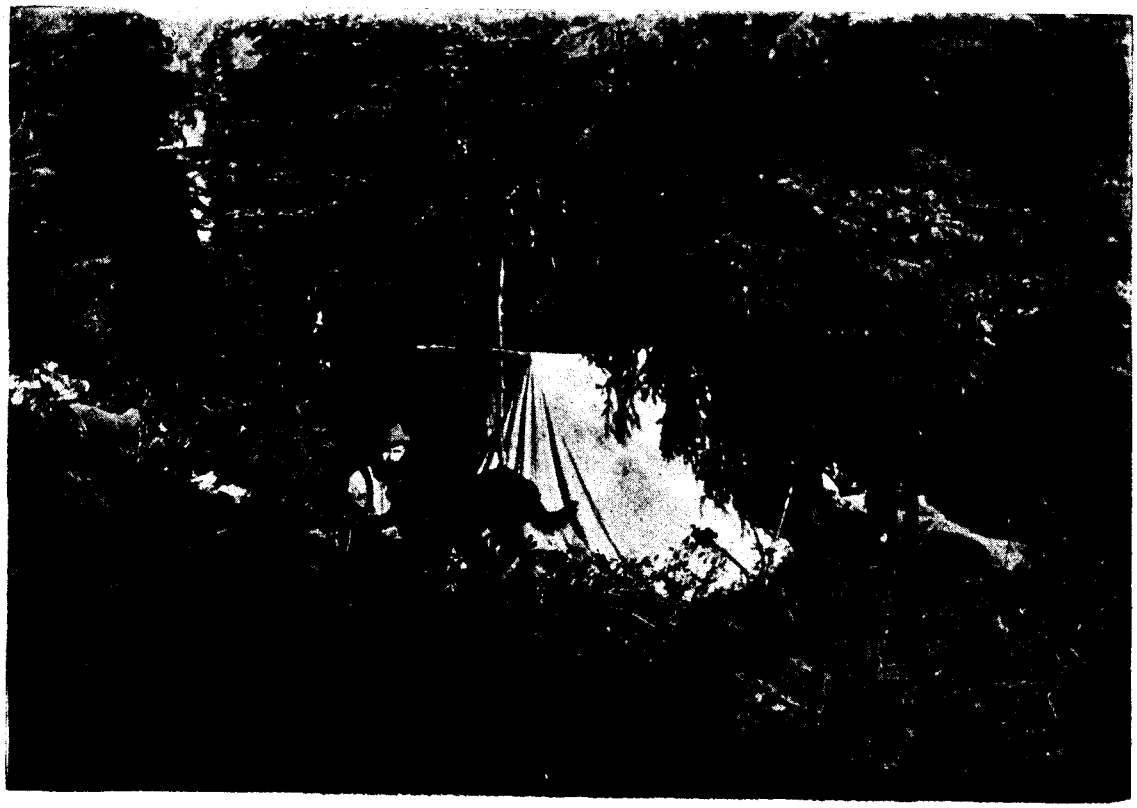
Sunshine.—Average ore, gold 10 oz., silver 160 oz., lead from 30 to 60 per cent., zinc 15 to 25 per cent.

Trinne and Enterprise.—Largest and richest surface showing in the district, situated above the Silver

Development work in this property is also very active; a tunnel of over 500 feet is at present being driven and when it reaches the vein will give great depth. Over 100 tons of this rich ore is ready for raw-hiding.

Broadview, Great Northern, St. Elmo, True Fissure and Silver Queen on the Great Northern Hill lie somewhat to the south of the diorite dyke belt, and compared with the ores of the claims in the belt are somewhat low-grade.

We now come to the lime dyke belt, which is characterized by a very thick strata of line on the northern side, and then alternating with slate and schist for over a mile. There are several lesser strata of lime. The stratum of lime in the lime dyke is over 400 feet thick. In the lesser strata, south of this they range from 20 to 60 feet. The ores in this belt are principally galena, varieties of the antimonial lead



My Summer Quarters.

sulphides which are rich in silver and chalcopyrite, also some iron pyrites and considerable grey copper.

Bad Shot.—A large body of high-grade ore, consisting of galena and antimonial lead sulphides, with some grey copper. Assays from 200 to 400 oz. of silver and 60 to 70 per cent lead.

Empire Cabin under construction, Aug. '99.

Lade.—On border of lime dyke belt, and about a mile south of Bad Shot. This property is somewhat unique, in that it is a high-grade gold proposition. The gold is associated with bismuthinite, or bismuth glance. Numerous stringers cross-cut from the main ledges through the slate, and it is on these that some development work has been done. The gangue in the stringers is spathic iron, and the bismuth glance with the gold runs through this. Assays of a fair average sample was 42 oz. of gold and 5 oz. of silver. As high as 100 oz. of gold has been obtained from picked samples.

Silver Belt.—Another property upon which considerable development work has been done. Average assays obtained from grey copper ore run to 150 oz. in silver and 60 per cent. lead and $10 in gold. An assay was recently taken which went 700 oz. silver, 65 per cent. lead tnd $10 in gold.

In this group consisting of six consecutive claims, the three ledges varying in width from one to four feet, can be traced as distinctly as waggon roads running through the entire group. By cross-cuts varying in depth from six to ten feet along three of the claims have shown up galena for the entire length of the property, averaging by assay returns 25 oz. silver and 70 per cent lead.

I am indebted to the kindness of Mr. Shannon, assayer, Ferguson, for much valuable information with regard to the values of ore on the properties I have mentioned.

In submitting the above list I have only touched upon a few of the many rich properties which abound in this district but enough has been, perhaps, said to give some idea of the great potentialities of the Trout Lake mining district of the Duncan-Lardeau.

Camp on Empire Mines, Trout Lake District.

Towards Fish Creek are the Primrose, and Old Gold, the Little Robert, Black Diamond and Big Five groups. High-grade ore consisting of antimonial lead, sulphides and grey copper are found in all; the Black Diamond furnishing especially fine samples of grey copper. Three leads cross the Big Five group of galena, rich carbonates and antimonial lead sulphides, the silver values ranging from 60 oz. to 600 oz.

Towards the Duncan, prospects are also numerous, and considerable development work has been done on such properties as the Wagner, Abbot, Bannockburn and Empire. It is on the last named that the writer spent most of his time and where the accompanying photos were chiefly taken. This property furnishes a splendid example of what I have already mentioned as one of the chief characteristics of the Duncan-Lardeau properties, viz., clear and well defined veins.

THE AURIFEROUS ALLUVIUM OF THE FRASER RIVER AND ITS TRIBUTARIES.

By J. D. KENDALL, London, Eng.

(Continued from February.)

III.—GEOLOGICAL AGE OF THE FRASER.

Along some parts of the Fraser the adjoining hills are neither high nor of striking outline; but between Pavilion Creek and Yale, especially between the former point and Lillooet, it traverses some of the grandest scenery in Brtiish Columbia. The mountains on either side, in places, rise with rugged abruptness to heights of 5,000 and 6,000 feet above the river, giving to the valley for miles together the appearance of an immense canyon. But notwithstanding the enormous magnitude of the work done by the river (as-

sited, of course, by frost and rain and chemical decomposition) in cutting out this colossal water-way, it has not taken much time—geologically speaking—to accomplish it, for some of the rocks through which the valley has ben excavated are relatively very young. On the Dry Belt there occurs a large expanse of rock—mostly volcanic—of Miocene age. The extent of these rocks, within the Fraser area, is partly shown on and it will be seen therefrom that the river, between Quesnelle and Fountain, has cut its way partly through them. In places they occupy all the country betwen the mountain tops and the river-bed so that since the close of the middle Miocene period the Fraser valley must have been deepened in places at least 4,000 feet.

Except a few small outliers of Miocene strata in the neighbourhood of Quesnelle Lake, there is nothing to show that the rocks of that age had extended eastwards of the Quesnelle River, and therefore the age of the Cariboo creeks can only be fixed inferentially, but as the tributaries cannot be older than the main river the rich gold-bearing creeks of Cariboo must also have come into existence since the middle Tertiary period.

IV.—EXTENT AND CHARACTER OF ALLUVIAL DEPOSITS.

Auriferous alluvium occurs in the Fraser Valley almost from its upper end to near the sea, and in almost every tributary as well. It occurs partly on and below the levels of the rivers or creeks, and partly above them. In some places the alluvium on the river-bed is partly above the water, at low level, and partly below it, but during flood-season it is entirely covered. The part that is uncovered at low water-forms what it known as a bar, and is then worked by the miner with his rocker or such other appliances as he may possess. These deposits consist usually of coarse gravel and boulders, the latter ranging in weight from a few pounds to several tons. It is from the working of these bars on the Fraser, especially between Hope and Lillooet, that a large proportion of the gold output of 1858-59 and 60 came, and since those years, in the same, and other parts of the river more or less gold has been obtained every season.

The gravel which is covered by water at all seasons can only be reached by dredging or other apparatus that can work under water, or by the method known as wing-damming. Several efforts have been made to dredge the Fraser and Quesnelle, but none of them appear to have been conspicuously successful, whilst some were decided failures. Wing-damming has also been extensively practiced. On some of the rivers, gold was obtained in that way years ago, but more recent adventurers, without due enquiry, have spent considerable sums of money to get it. The failure that inevitably awaits such enterprises will, doubtless, prove injurious to the reputation of the district affected, but the fault clearly lies elsewhere.

Sometimes a considerable quantity of alluvium occurs on and below the level of a creek, but the quantity of water in the creek being relatively small it can be dealt with in many ways so as to permit the underlying alluvial deposits to be worked without the help of dredgers or other similar contrivances, or even without wing-dams. Many of the deposits in the Cariboo creeks are of this description. Some are shallow, so that the bed-rock and rich ground lying on it are easily reached. In other places the alluvium is so deep that shafts ranging from 36 to 155 feet were needed to reach bed-rock. In Lightning Creek, at the Victoria claim, and the South Wales claim there is the same kind of deposit, but the creek in the latter is clear of alluvium, and apparently above the level of it. A claim located on this deposit would be called a "Hill Claim," whereas, if staked on the former, where the alluvium is mostly above the level of the creek, it would be called a "Creek Claim."

Of deposits occurring above the level of the rivers or creeks, some occur in more or less uniform layers on the sides of the valleys, others in terraces. By far the greatest part of the alluvial deposits occur in one or other of these forms—chiefly the latter. The terraces occur for hundreds of miles along the rivers extending upwards, in places, to 700 or 800 feet above the level of the latter. One of the most striking examples of these terraces is to be seen from the village of Lillooet. They must, however, be familiar to everyone who has travelled along the Canadian Pacific Railway between Ashcroft and North Bend. Interesting deposits occur on the Thompson River near where it is joined by the Nicomen River. It was somewhere in that neighbourhood, as already stated, that alluvial gold was first found in British Columbia in any appreciable quantity. The deposits there consists largely of sand, fine and medium sized, but well-rounded, gravel with some sub-angular gravel, in which are three fairly persistent layers of coarse gravel and boulders, the coarsest of which occurs on bed-rock. Some of the boulders will weigh 4 or 5 tons. Many of those that weigh from 10 to 150 pounds have a flattened ellipsoidal form, but the larger boulders are usually sub-angular unless rounded by chemical decomposition, as often happens with granite, Syenite and other similar rocks. The interstices between the boulders are filled with sand and gravel, forming from 15 to 35 per cent. of the whole. In some places the gravel on bed-rock is fine, the lowest coarse layer being about 45 feet above that level. The greatest thickness of the deposit on the left band of the river, a few hundred yards above the rope tramway, is about 250 feet. On the right bank it is probably about the same, notwithstanding that the upper surface of the bench there is much higher than that on the other side of the river.

A good illustration of the nature and extent of these river terraces may be seen on the Quesnelle River, about 20 miles below Quesnelle Forks. There are three or four terraces on each side of the river. Some of them are short and interrupted. Others are very persistent, notwithstanding the modification they have undergone through the operation of the various meteoric and other denuding agents. The aggregate width of these terraces is over a mile and a half. The thickness is uncertain, but it will probably average 90 feet. The average height of the main terraces above one another is about 180 feet, so that the average thickness of the alluvium is, probably, at least half of that. The character of the deposit is very variable, consisting in places of a sandy clay, locally known as "slum." In other parts it consists of fine and coarse sand, or of fine and coarse gravel. Often on and near bed-rock are numerous boulders, many weighing a quarter of a ton, and some much more. Some of the ground was worked a few years ago by Chinamen. Near bed-rock of the particular place referred to is a layer of coarse "wash" about 2 feet 6 inches thick, which as usual, carries most of the values. The ground was worked entirely for the gold in this layer and was washed by means of a sluice. When the cost of removing the overburden, added to that of getting and washing the richer layer on bed-rock, exceeded th

value of the gold obtained, the work was abandoned. This is a fair illustration of hundreds of pits along the benches of the Fraser and its tributaries. With the primitive appliances at hand the early miners could only, in such cases, work profitably along the outcrop of the coarser wash, or where the poorer cover was thin. Consequently they were ever on the move, scratching the surface here and there and taking away a little of the wealth that is buried in these enormous deposits, but leaving the great bulk of it for those that will surely some day follow, equipped with better appliances and under more favourable conditions.

No matter where these terraces are found they have the same, or nearly the same, inclination longitudinally as the river alongside which they occur. This feature distinguishes them from other alluvinal terraces which are known as hill terraces. The latter are level, or as near level as it is possible to determine in their present more or less modified form. Another feature of these terraces is that crosswise they always incline towards the river. The grade may be steep, sometimes as much as 1 in 5.4, or it may be easy as on the bench adjoining the Quesnelle River, above referred to, which slope about 1 in 57.

Sometimes deposits are met with, more or less connected with the bench-deposits just described, but they have not the usual bench form. Such a deposit is that worked by the Cariboo Hydraulic Mining Company on the south fork of the Quesnelle River. This deposit occupies an old river channel, the bed of which, where now seen, is about 135 feet above the level of the Quesnelle River, opposite. Whether this channel formerly carried the Quesnelle or some other river it is not possible at present to say. Old or buried channels are the placer miner's great desire, and, in his fanciful moments, he can often trace them out for miles, sometimes even along quite impossible lines, as a little knowledge of stratigraphy would readily show him. One of these unscientific users of the imagination recently endeavoured to persuade the writer that a certain post-glacial gravel-bench he was examining passed under a mass of rock belonging to the Juratrias and came out to the river again about a mile lower down. At the Cariboo Hydraulic Mine, however, a buried channel really exists. There is very probably also one on the Quesnelle at the point referred to above, and often elsewhere they are found, but not with the frequency, nor always in the places, that one would be led to expect if implicit reliance were placed on the statements of claim owners.

In the China pit of the Cariboo Hydraulic mine the layer on the top is gravel, below that is a boulder clay, which overlies gravel and sand with numerous boulders, many of them large. In the South Fork pit, a little to the east, two deposits of boulder clay occur, separated by about 125 feet of sand and gravel.

On Baker Creek, about two and a half miles west of Quesnelle there is a deposit of gravel, overlain by basaltic rocks of Miocene age, which, although not belonging to either the Fraser or any of its tributaries may here be referred to. The Golden Province mines undertook to exploit this deposit, but suspended operations before the ground had been sufficiently tested. Doubtless there are many deposits of this description covered by the Tertiary rocks that occupy such a large portion of the plateau within the Fraser watershed. The alluvial deposits of the early Miocene rivers were doubtless buried by the volcanic and other rocks of the middle Miocene period, just as they were in California but whether they are of the same economic importance here as in that State remains to be proved. Practically nothing is known about them in British Columbia. Unaided imagination has restored the orographic features of the plateau in early Miocene times, but the hammer and pick have much to do before we can hope to have even a remotely accurate picture of the country that was buried so long ago.

V.—DISTRIBUTION AND CHARACTER OF GOLD.

In this connection three general statements may be made: (1) The steeper rivers or creeks carry the coarser gold. (2) In any particular river or creek the gold is found to become coarser up-stream and to be more mixed with quartz and pyrite. (3) The coarser wash includes the coarser gold.

Of the gold from the bars, on the Fraser, that found below Yale, was what is known as "flour gold." From about sixteen miles above Yale it was relatively coarse (over eighty per cent. being in the form of "scales"), at is was also from a point about midway between Lytton and Foster Bar up to Fountain. Coarse gold was also found on the Thompson, near Nicoamen.

In the benches and other deposits, the size of the gold depends, in a great measure upon that of the alluvium. If it be clay, there is almost certainly an absence of gold. In sand and fine gravel the gold is sparsely scattered through the mass, but its particles seldom exceed a fourth of a grain in weight. In coarse gravel with boulders, nuggets are met with now and again, weighing several ounces. In the Cariboo Hydraulic mine last season, one was taken out of the sluices, at the final clean-up weighing about six ounces, but by far the greater number of the gold particles do not exceed a grain, in deposits along the larger rivers. According to Mr. Hobson, the manager of the Cariboo Hydraulic mine, the top gravel in their China pit carries gold of the value of about 5 cents per cubic yard. The boulder clay contains little if any gold, so far as is known, but the gravel and bouldery ground on bedrock is rich, the final run in the season of 1898 in that ground realizing 67.15 cents per cubic yard.* Taking the entire pit and including the barren boulder clay, which forms a large part of the whole, the average yield of 1,225,776 cubic yards (the ground worked during the last five runs) was over 19 cents per cubic yard. That, however, is less than the real average, for but a very small proportion (only about a 34th) of the rich ground from the bedrock was included.

In the steeper creeks the general size of the gold is larger and in some, pieces weighing five grains are quite common. The smaller and medium-sized pieces are much flattened and have the appearance of having ben severly hammered, fine grains of quartz being driven into them occasionally. Where the bedrock is stratified and dipping at high angles or, if not stratified, where it is much jointed the gold very frequently makes its way down into the crevices. It is then of a much duller appearance than the gravel gold and is often stained with peroxide of iron, or is "rusty," as the miners say. From a quantity of mixed dust it is, as a rule, quite easy to pick out the bedrock gold. The Cariboo Goldfields on Williams Creek have not yet got fairly to work, but in nine short runs made in the season 1898 they obtained from

*First Annual Report of Directors, Cariboo Hydraulic Mining Company.

ground 10 feet deep and 8 feet above bedrock yields, ranging from $1 to $8 per cubic yard. But until the ground has bene worked on a large scale the average value will not be known. Tests on a small scale of the overlying ground varied from nothing to 5 cents per cubic yard.

In some of the benches several layers of coarse gravel and boulders occur, all of which may contain coarse gold, whilst that in the intervening layers of finer material is not only much less abundant but mostly fine "scales" and "flour." Often the upper part of a bench contains quite a concentration of the precious metal for reasons which will be evident when the genesis of the deposits is considered.

The minerals and metals usually associated with gold in the alluvium are :

Almost always—Limonite, magnetite and pyrite.

Less frequently—Platinum, copper, chalcopyrite, galena, arseno-pyrite and garnets.

The value of the gold ranges from $14.50—when mixed with quartz—to $18.80 per ounce. The fineness of some random samples from the Fraser, Quesnelle and Thompson Rivers is given below:

	Fraser.	Quesnelle.	Thompson.
Gold	.860	.800	.940
Silver	.100	.191	.058

The colour of the Thompson River samples was of sovereign gold. The Fraser and Quesnelle gold were much paler in colour, approaching that pyrite. The gold from the Cariboo Hydraulic mine is about .825 fine.

VI.—AGES OF THE DEPOSITS.

The various deposits that have been referred to may, in considering their age, be divided into four principal groups:

1. Middle Miocene.
2. Pliocene.
3. Inter-glacial.
4. Post-glacial.

To the first group belong the very little known deposits that are overlain by basalt, like that on Baker Creek. It is quite possible that even older deposits than that will hereafter be found occurring under the lower volcanic group, and therefore belonging to the early Miocene, or to the Oligocene period.

Of pliocene deposits we have an illustration in the rich bouldery gravel underlying the boulder-clay that occurs in the China pit of the Cariboo Hydraulic mine. The gravel underlying the lower boulder clay in the South Fork pit, of the same mine, also belongs to this period.

Inter-glacial deposits are represented by the sands and gravels occurring between the upper and lower boulder clays in the South Fork pit just alluded to. The gravel overlying the boulder clay in the China pit is almost certainly of the same age.

Post-glacial deposits include all the bars and perhaps all the alluvial terraces, as well as many, if not most, of the auriferous accumulations worked by the "Creek" and "Hill" claims.

VII.—GENESIS OF THE DEPOSITS.

The terraces of the Fraser are such a marked feature of the valley that it would have been surprising had their origin not been referred to in some way or other by the several writers who have, at various times, noticed the alluvial gold deposits of British Columbia. A favourite explanation was that they had formed the shores of former lakes, their successive steps indicating the different levels at which the waters had stood as the barriers were cut away. Dr. George Dawson* considers that "these terraces are cut out in the material with which the valley were partly refilled after the removal of the boulder clay." That is most probably the correct explanation, but the modus operandi is only indicated by him in a very general way, and practically nothing is said as to the manner in which the alluvial deposits were laid down in the valleys.

That the terraces were not formed along the shores of lakes is shown conclusively by their having the same inclination as the rivers. Had they been lake-shore deposits they would have been level, longitudinally.

Not only is it necessary to account for the terraces having the same grade as the river, but also for the fact that the upper surface of the alluvium, which once partially filled the valleys and out of which the terraces were formed, had also an inclination more or less corresponding to that of the rivers.

The only force at present in operation capable of producing such deposits as those under consideration is river action, but the magnitude of the work done requires much larger rivers than those flowing to-day. Just, however, as we have, annually, early summer floods from the melting of the enormous masses of snow and ice that had accumulated during the long continued glacial period. But given the necessary river-power, how did it operate. Rivers with rapid current like the Fraser and its tributaries do not form deposits beneath their beds, which cause the latter to gradually rise as the deposit accumulates. The action of swift flowing rivers is rather to deepen their channels. But the rivers which deposited the gold-bearing alluvium under consideration flowed as fast as those of to-day, if not faster, as is clearly shown by the character of the material they were able to move. How then were the valleys filled with detrital matter to a depth of several hundred feet. We know that similar deposits are forming wherever such rivers enter either lakes or the sea, but there the tendency is to produce a flat topped or gently sloping delta, in which the materials are disposed very differently from those under review.

Besides accounting for the upper surface of the alluvium having the same grade as the river, it is necessary to explain the existence of the coarse wash in the old channels on bedrock. Deposits in lakes or in the sea, if the relative level of land and water remains unaltered, present an order that is almost the reverse of this. The finest material being longest suspended in the water, is carried farthest out, and settling on the bottom is eventually covered by coarser and still more coarse detritus as the delta advances outwards.

If it be assumed that a slow and gradual settlement of the land (which eventually submerged the country to a depth of about 2,500 feet) was taking place during the time the post-glacial rivers were disintigrating with the help of other agencies) and reforming the deposits accumulated by the then dead glaciers we have all the conditions necessary to bring about the

*Manager's Report.

*Geological Survey Canada, Vol. VII., p. 3c4B.

facts which are observed. As the land subsided the coarse wash in the river beds would be covered by finer deposits and the upper surface of all would be more or less parallel to the river-beds. The alternating coarse and fine material might result partly from variations in the transporting power of the rivers due to alterations of volume and partly from oscillations of the land. A slight rise of the latter would cause the rivers to re-excavate the deposited alluvium, by increasing the gradient and thereby the carrying power of the water, so that coarser material would be borne down and lodged on the finer sand and gravel deposited before the elevation, and whilst these parts of the rivers had a less gradient.

The included gold is accounted for like any of the other materials. Doubtless it was derived from the destruction of quartz veins in the rocks that, by the various denuding agents, have since been transformed into sand, gravel and clay. Like the alluvium, the gold would naturally be finer the farther it had travelled. Moreover, gold that was originally fine would travel farther from its source than that which was coarser. Being very malleable gold would, by hammering among the boulders, be flattened as we now often see it, and not be broken up into grains like the more brittle rocks. The latter, by pounding, become further reduced in size, and by attrition become more or less rounded and converted into sand.

Let us now further assume that, after the subsidence had proceeded to the extent previously named, re-elevation ensued. The rivers would then begin to cut through the deposits they had just laid down, and in the course of time would again reach the old channels and cut even below them, as has been the case on the Fraser and some of the rivers running into it. The courses of the new rivers not everywhere, for several reasons, correspond with the old one; beds of greater or less extent might be cut off and in other ways portions of the old channels might remain buried, to form, at some later day, the happy hunting ground of the placer miner.

It is here suggested that the probable manner in which the alluvium was excavted and the terraces formed, was as follows: Rivers seldom flow in straight lines, the varying resistance of the rocks, forming their sides, rendering this impossible. They wear away their banks, on their convex sides, at the same time as they are deepening their channels. The consequence of these two actions is that the river-channel moves sidewise along an inclined plane. In time it probably reaches rock, which, being harder than alluvium deflects the river and causes it to attack the other bank. Its course is then continued downwards along a plane sloping in an opposite direction to the first until it again meets with something harder than the alluvium, and so on, stage by stage, until it reaches its old channel.

The river-bed naturally contains much gold, for it may be looked upon as a huge ground-sluice through which has been washed the whole of the alluvium removed in forming the terraces. That the ground on or near the top of the terraces should frequently be richer than that immediately below is to be expected seeing that it formed the bed of the river for a longer or shorter period during the re-excavation of the valley.

VIII.—EXTENT OF WORKING AND METHOD EMPLOYED.

Since 1858 the miners have run over the principal rivers and creeks in the Fraser watershed, but only such gold has been got by them as could be worked by the most primitive methods. The early workers attacked the bars, the outcrops of the coarser wash in the terraces, and the deposits in some of the creek and hill claims, with no other tools than a pick and shovel, rocker or sluice. In the deeper ground below the Canyon, in Williams Creek, as also in Lightning and other creeks, they had to resort to sinking and drifting, but the apparatus used was necessarily very inferior to that which could be employed to-day for the same purposes.

The methods adopted in the early days have, with declining vigour, been continued down to the present day by white men, Indians and Chinamen. No other methods were attempted until about eighteen years ago, when hydraulicing, on a small scale, was introduced, but with indifferent success, for several reasons. In Cariboo the gathering-ground above the level of the creeks is not large and being steep the rainfall quickly flows off, so that to secure the large volumes of water needed in hydraulic mining considerable impounding reservoirs, or works to effect the same purpose, by utilizing some of the lakes, have to be constructed. These were not then made and consequently the hydraulic mining initiated at that time did not increase the output of gold to the extent it might have done. Another reason why more success was not achieved is that then, as now, works were undertaken without adequate preliminary investigations. Pits were opened in the wrong place and works constructed before the value of the ground had been even approximately ascertained.

Within the last six years several companies have been promoted for the purpose of working deposits in different parts of the Fraser area and by different methods. Some like the Golden Province mine, which proposed to work the deposit under the Zasalt, on Zaker Creek, by drifting, have suspended operations without arriving at any very definite results. Others, like the Cariboo Goldfields and the Golden River Quesnelle have completed their equipment and had some preliminary runs, so that they may be expected to commence washing in earnest soon. The former company intend to work the deep ground at the lower end of Williams Creek by means of a hydraulic elevator having a vertical lift of about 88 feet. For this purpose they have made about 16½ miles of ditch and flume so as to bring water from Ground Hog and other lakes. The cost of these and other incidental works—including a drain tunnel 3,100 feet long and a double sluice 800 feet long—is stated to be about £56,000.* The Golden River Quesnelle Company have, at considerable expense, formed a dam at the outlet of Quesnelle Lake, so as to lay dry the south fork of Quesnelle River during a portion of each year. While the waters of the lake are thus held back they propose, for about three months in each year, to work the gravel on the river-bed by ordinary sluicing. It is to be hoped that this undertaking will be successful, but it is said that a considerable portion of the South Fork was wing-dammed, years ago.

The Cariboo Hydraulic mine has been a dividend-payer for two or three years, but they have been ex-

* Director's Annual Report, March 1891.

tending their works all the time and are only now really ready to commence operations on a scale commensurate with the splendid run of ground they have to work. During last season they ought to have made a good record. The following figures from the report of the directors are interesting.

	Gravel Run. washed, cu. yds.		Duty per miner's inch cu. yds.	Value per cu. yd.
1897—				
9	413,058	(mostly top gravel*..	3.84	17.2c
10	345,231	" " ...	3.44	16.1c
11	81,817	" " ...	5.12	6.9c
1898—				
	350,000	" " ...	2.44	21.0c
	35,670	(bottom gravel)	1.1	67.15c

The operating expenses were :

	Per cu. yd.
Labour	3.8c
Explosives	2.4c
Maintenance of Plant	2.58c
Management and office expenses	1.05c
Sundries	1.77c
	11.60c

These figures relating to cost should be reduced in future when the output is larger and the work more regular.

In the Horsefly district an attempt is being made to reach a deep-buried channel by sinking, but there has not been sufficient work done yet to afford a reliable indication of its economic prospects. Other mines might also be mentioned, but their description would not add to the record of successful work.

In the area under review there are many splendid opportunities for alluvial mining, but unless care and foresight be exercised in selection, equipment and management it is more than probable that we have not seen the end of solicited failures. On the other hand, if proper preliminary tests be made, skilful management secured afterwards and the capital kept within reasonable limits, there is in this section of British Columbia an extensive field for legitimate and profitable alluvial mining.

VERBATIM EVIDENCE IN THE IRON MASK-CENTRE STAR LITIGATION.

HAVING been requested by many of our readers throughout the Province to publish in these columns a verbatim report of the evidence in the Iron Mask-Centre Star litigation, Mr. H. F. Evans, our Rossland correspondent, was enabled through the kindness of Mr. J. B. Hastings to carry out our instructions to copy the official report of the proceedings and evidence taken, and which are in consequence enabled to publish in serial form.

(Continuation of Counsel's Argument, from last month's issue.)

He could not have used that language had he so supposed, because of the very case that he refers to. Now, I do not care whether it is not in the material, or whether the Judge overlooked it in the material, it is very immaterial which it is. He said that if that were so it would be a different case. Now, we say that that is so, and that the work we ask to do is that fifteen or sixteen feet of work at the present time, at any rate, between these two points where we have established the vein; in other words, to do just what Mr. Justice Drake says practically ought to be done, or would have been ordered had the evidence shown those facts.

Mr. Davis—No, my Lord: nothing whatever.

The Court—On either side?

Mr. Davis—No, not at that point.

The Court—That is the vital point in one sense.

Mr. Davis—No, sir; nothing has been done, and your Lordship knows what the evidence was—absolutely conflicting. And my learned friend said at that time it was not a question of credibility of witnesses at all—both sides agree to that. My learned friends, Mr. Daly and Mr. Bodwell, both agreed that the witnesses were not impeached on either side.

The Court—They did do that.

Mr. Davis—They forgot themselves a little after they got into the argument, but that is what they started at. They said they did not question the credibility of witnesses on either side.

The Court—There were a few angry words on one side and the other now and then.

Mr. Davis—That may be, because they were swearing to inferences which they drew from facts which they never saw and that will be what they will do again unless this work is done. It may be that after this work is done further inferences will be drawn from it, but there is a vast mass of evidence that will no longer be conflicting, that can be reconciled. And that is what we want to bring about by this work, if possible. My learned friend says this was merely a trial of the injunction.

The Court—This is the trial.

Mr. Davis—There is an action for $50,000 damages My learned friend is merely putting in that claim for damages in a nominal way, and really does not claim any damages, and that $50,000 is put in a sort of fancy sketch, or the most important part of the trial could be for damages. He can take whichever horn of the dilemma he wants. If he takes one he is abandoning his claim for damages, and if he takes the other, it is in the exact opposite of what he stated a moment ago. It is not a claim for injunction then. There is a claim for damages for trespass, and that will be res-judicata when it is settled, so far as these points are concerned, and therefore it is of the utmost importance, even apart from the question of damages itself, that we should have a decision which is in accordance with the facts in this case. It would certainly be a most remarkable travesty on justice if, owing to the fact that certain work was not done, so that we could see just what the facts are; we had one decision one way in the case of the Iron Mask against Centre Star, and then subsequently work was allowed to be done, and the case of Centre Star against Iron Mask in which the same questions were involved, was decided the other was. And that is what might happen if work is not allowed to be done in this case, and should be allowed in the other case.

The Court—That was in my mind long ago.

Mr. Davis—My friend speaks about the difference between a drain and a vein. That is the only difference between Lumb vs. Beaumont case and this; in tracing the drain they were tracing something which is placed there by the hand of man, and in doing the

* Including the boulder clay.

work which we ask to do we should be tracing something which has been placed there by the hand of God. The one is artificial and the other is natural, and that is the only difference that can be found between Lumb vs. Beaumont case and ours. They did not know in the drain case where the end of the drain was,they did not know that the other end of the drain was in the plaintiff's house and that the drain which they knew about ran over to the other drain. They surmised that the same as we surmise that their vein runs down to the other point, but they did not know it any more than we can know, until that soil is dug up, that the vein above is the vein below. There is really no distinction between the cases, only the one follows the artificial and the other the natural.

Mr. Bodwell—Your Lordship will remember that I was stopped. I did not address any argument to your Lordship on that point.

Mr. Davis—I should like to be heard.

The Court—Yes, if Mr. Davis wants to make any reply, I shall be very glad to hear it.

Mr. Bodwell—I am not going to wear your Lordship's patience out.

The Court—No, indeed.

Mr. Bodwell—Your Lordship said you wanted me to discuss the question whether the judgment of the Full Court decided the point, and I did confine my argument to that, but my friend in his opening and closing has travelled from that subject continually, and has appealed to your Lordship's discretion as if it were open to you. There is one of two courses to be adopted with reference to that part of the argument. Either that part of the argument can be adjourned until after your Lordship has decided whether it is open to you or not, but there is one thing I want to say anyway, that it is very possible, if your Lordship should find that you have the power to exercise the discretion now that all the work we have been put to in getting ready for the trial would be thrown away, and we would have had an indefinite postponement of this trial.

Mr. Davis—No; or course, not from your point of view.

Mr. Bodwell—Unless we are to sit down and invite these gentlemen to come in and take ore-bodies, it would be a different proposition altogether. Of course, there are two theories about what may happen if that winze were sunk. One is, no ore will be found there. Either one of the propositions we have our theories upon. We are prepared upon this case as it stands now to go to trial. If further work is going to be done, we may or may not be prepared to go to trial now, because there may necessarily be a very large amount of development work done,; then there is that which we have done in order to make the furtive proof which may be set up. It may be a very nice thing to let our friend be allowed to shove his winze through and then go to trial when we are not ready. But that is not the point which is, whether the question has been settled up to date and the point on that was, where the judgment of the Full Court shows on this, continuity, exactly like there are many other issues upon which this case can go outside of that point altogether, and that it was thought that the Court might never reach it—might never reach that point—and it may be never necessary to consider this bogy man which my friend has hung up—that your Lordship will not be able to understand the evidence that will be before you.

Mr. Davis—My friend stated that the doing of this work might cause an adjournment of the trial. He suggests nothing in support of this, except a vague statement that if that work was done——

Mr. Bodwell—Well——

Mr. Davis—If my friend has anything more to say I shall be glad to sit down and hear him say it.

The Court—Pass this Bogy vs. Bogy.

Mr. Bodwell—No; I am serious in that statement. If my friend quotes my language, I object to his quoting it, because he never can quote it correctly. That is the only reason I interrupted.

Mr. Davis—I have the reply in this case, and I suppose we want to get through some time. If my learned friend has anything more to say I wish he would say it now, and then I will reply, because I have a reply, and I intend to exercise it, as I have a right to do. My learned friend says, doing this development work might mean an adjournment of the trial, and I say it again, that if he disputed it we will have the reporters read the notes. The only reason that he suggested as supporting that statement was a vague idea of his, that if that work were done it might become necessary for the Iron Mask people to do a lot of other development work. That is the only reason he gave.

The Court—Just now.

Mr. Davis—Yes, sir; that is the only reason he gave. If my learned friend says I am wrong, we might still resort to the note to settle it.

The Court—That is right. Let us go along.

Mr. Davis—When my learned friend makes a statement of this kind he should give his reasons. We are not asking for work to be done all over the place, so far as this application is concerned. We are asking for fifteen feet to be run through from the foot of the winze to the top of the drift. Now my learned friend, if he had any foundation for the statement which he made, why didn't he give your Lordship the reasons? As he says, when that fifteen feet are run through they are liable to find ore there or they will not. Whatever way it is, unless he shows your Lordship something to the contrary he is just as ready for trial then as he ever could be, except that it might turn out that he might have something that he could not get over as easily, but he has the same thing, and he has taken the same position as to the Centre Star No. 3 shaft, that is, that there is ore all down there, or practically all down; it is not a vein at all, and I presume that is the same position he would take if the ore was found in the Centre Star winze between the present bottom and the bottom of the drift. But, however, that may be, that has nothing to do with the application here. My learned friend could have done development work that he wished, because all of the development work is in his own ground. They could have done any work which they chose to. We are the only people who are being prevented from doing work. We have been prevented by them; they have opposed every application we have ever made to the Court, in the most strenuous way, and with the Full Court having decided the jurisdiction, as the Full Court has decided it, that is, referred the question to the discretion of the trial Judge, and the trial Judge came to the conclusion that some work ought to be done, it is for them to make an application for that purpose, and your Lordship can deal with them just the same as you are dealing with us.

The Court—I think I would like these two affidavits. I would like that Barringer and Adams au-

thority that you are reading, and if you have any further information, Mr. Bodwell, about that being an extra-lateral or not an extra-lateral case, you can hand it in to me to-night, because it was a point I wanted to know.

Mr. Bodwell—I can get the case by to-morrow night, if I haven't it with me. I think I have it with me. I think I have 58 Federal here.

The Court—It will be found in Lindley.

Mr. Bodwell—No; at least, a reference to it.

The Court—But as to it being an extra-lateral case?

Mr. Bodwell—No; I don't think it is cited there at all.

Mr. Davis—That is where the question of extra-lateral rights arose. There is not any question about it, whether that language was used with reference to extra-lateral rights. I don't say that the question arose there. I state to your Lordship that Dr. Raymond was a witness.

The Court—It will surely appear in the index whether it is there.

The Court—What arrangements have you made? I believe you have made some arrangement that will be most convenient for all of you about the time. The case you refer to of St. Louis' Milling and Smelting Company against Montana, etc., is in 23 Pac. Rep. It is referred to in section 873.

Mr. Davis—I know it is in 58 Federal.

The Court—Nine, Montana; you have not got that here; 23 Pac. Rep. 510, section 873. This is a law peculiar to Montana. In Montana the law authorizes an inspection and survey without suit whenever any person shall have any right to or interest in any lead, lode or mining claim which was in the possession of another party.

Mr. Davis—No, that was another St. Louis and Montana case. There were three St. Louis and Montana cases. The one you are reading now went to the Supreme Court, and it is in the Supreme Court of the United States now, but the one I refer to is a separate case altogether.

Mr. Davis—It is not in Lindley, my Lord, that case.

The Court—You must have quoted that case before the Full Court, because Mr. Justice Drake ——

Mr. Davis—No, I did not.

The Court—Just listen (reading): "It would be a denial of justice, and utterly submissive of the objects for which Courts were created for them to refuse to exert their power for the elucidation of the very truth of the issue between the parties."

Mr. Davis—I did not know of that case at that time, Dr. Raymond mentioned a case to me as soon as he came here. But that is not the case that I cited, my Lord, at all. It was another case of the same name.

The Court—It must be the case, because this case states that the origin of the right of inspection and survey was of original English Equitable Jurisdiction.

Mr. Davis—The case that you are referring to now was a case in which an order was made under a Montana statute is before the Supreme Court of the United States now, but it is not the case which I cited to Your Lordship. As I say, Dr. Raymond was a witness in the case that I am referring to, and knows this other case, and was a witness in that case, too—knows the other case well.

The Court—There were two Montana cases then, of the same name.

Mr. Davis—Yes, there were three, in fact.

The Court—I am not saying that there were not. Has any one got Bainbridge here? That is a good work.

Mr. Davis—I have looked for Bainbridge on Mines in this suit, and it does not touch it. There is only one case where it has come up in the United States.

The Court—There is some arrangement made between you gentlemen about the sittings. So far as I am personally concerned, any hour in the morning suits me, but we have arranged, as I understand, that it would be more convenient for both of you, as you are going to have the evidence copied off, and each sees then what he wants in the evening. Will it be more convenient for you to sit from 11 to 4 with an intermediate half hour?

Mr. Bodwell—No; 11 to 1 and 2 to 4?

The Court—Yes.

Mr. Bodwell—Or half-past two to half-past four.

The Court—Why can't you make the time in the middle of the day nearly an hour?

Mr. Bodwell—Whatever your Lordship would rather have.

The Court—I know, but we will never get through with the work with short hours.

Mr. Davis—The number of hours are the same.

The Court—You want from 11 to 1 and 2 to 4?

Mr. Davis—I suppose that having an hour and a half at lunch might be of use in the way of seeing witnesses.

The Court—The best way to settle that is to ask for it and then keep it, because I want to get through There are a number of valuable maps and plans which will be produced by both of you, and there is no security for them. What are you going to do?

(The Registrar stated that he could not take care of them.)

Mr. Davis—The Registrar is the custodian of these documents, and he has got to be responsible for them.

The Court—I have nothing to say about it further.

The Court then adjourned to meet to-morrow, April 18 1899, at 11 o'clock a.m.

(To be continued.)

BRITISH COLUMBIA'S MINERAL PRODUCTION AND THE PROGRESS OF MINING.

(By B. Thomas, C.E. & M.E., Vancouver, B.C.)

PRIOR to 1887 mining in this province was entirely confined to (1) placer mining, (2) coal mining. Mining for coal was carried on, in a moderate way, as far back as 1836, but until 1887 the production was very limited. Since, however, the industry has assumed important proportions and its development can easily be gathered from the accompanying diagrams.

The first returns from the metalliferous mines were made in 1887, when 17,690 oz. of silver and 204,800 pounds of lead was produced. Gold production from lode mining amounting to 1,170 oz. was recorded for the first time in 1893, and in the following year copper mining was inaugurated, the yield being 324,680 pounds. Since 1894 the increase in the production of these metals has been very marked. For the rest the diagrams are self-explanatory.

BRITISH COLUMBIA MINERAL PRODUCTION

PROGRESS OF MINING

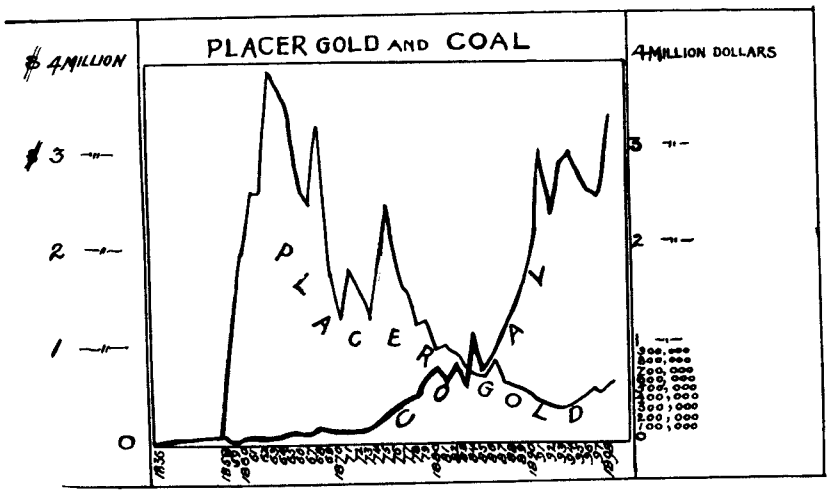
TABLE II

WORKED OUT FROM THE ANNUAL REPORT OF THE MINISTER OF MINES

BY

B. THOMAS - C.E. & M.E.

VANCOUVER, B.C.



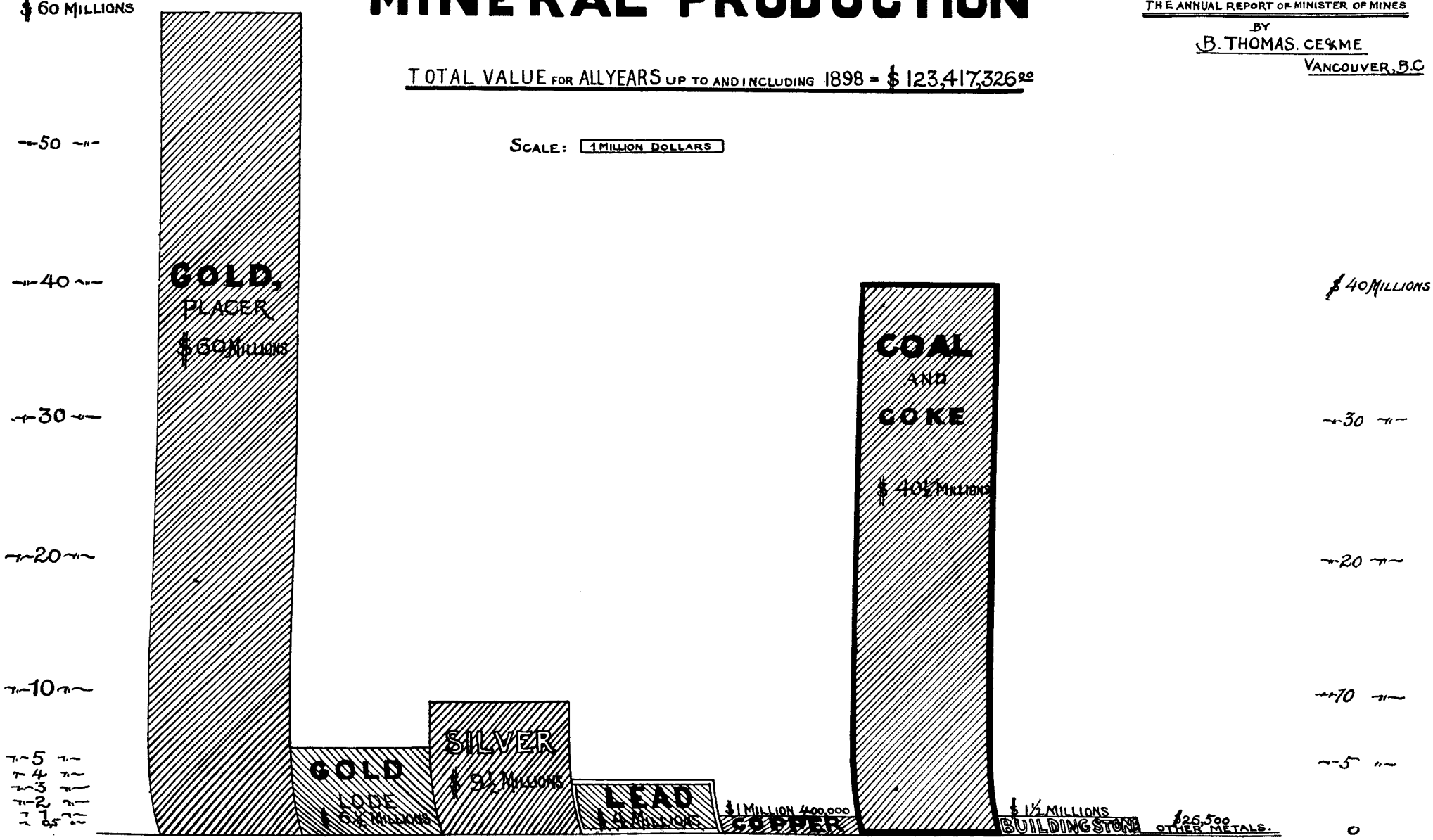
BRITISH COLUMBIA
MINERAL PRODUCTION

TABLE I

WORKED OUT FROM THE ANNUAL REPORT OF MINISTER OF MINES
BY
B. THOMAS. CE & ME
VANCOUVER, B.C

TOTAL VALUE FOR ALL YEARS UP TO AND INCLUDING 1898 = $ 123,417,326.00

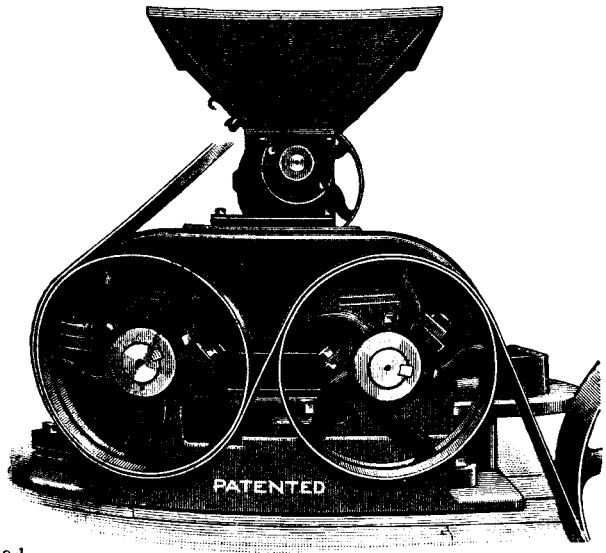
SCALE: 1 MILLION DOLLARS



CENTRIFUGAL ROLLS.

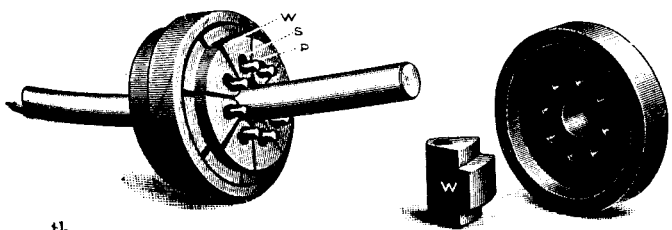
OUR readers will probably agree that in describing centrifugal rolls we are introducing them to machines of unusual interest.

Centrifugal rolls are so named becaues they alone crush by utilizing the immense centrifugal forces generated by their rotations. No springs are needed to force the roll faces together, and, although, the space between the tire faces opens and closes, as in common rolls, yet, in centrifugal rolls neither shaft or roll or bearing has any backward or forward movement. For these reasons no crushing push can be transmit-



ted to the roll shafts. These entirely escape the direct shocks, and the pounding caused by the backward and forward movements of the heavy common roll and its bearings.

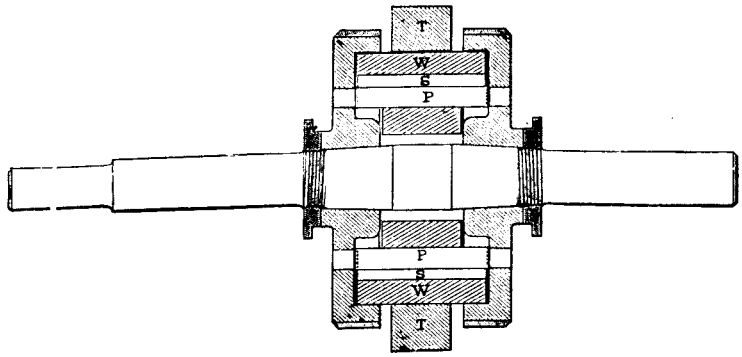
Centrifugal rolls have also the singular property of automatically balancing themselves. They, therefore, run with nearly the steadiness of dynamos. Since the output of common rolls is directly as their peripheral velocities, centrifugal rolls, which easily run three times as fast as other rolls of equal size, should have



three times their capacity, and as a matter of fact, their output exceeds their capacity.

The following description and cuts will enable our readers to understand their construction and operation:

The centrifugal roll consists of but three important parts, viz: the shaft, the segment weights (W) and the tire. The segment weights together, in operation, form a roll, over which is placed the tire. Each weight is held to the shaft flanges by the pin (P) passing through the weight slot (S). Each weight rotating with the shaft, is set out by centrifugal force, and together the weights form, as before stated, a strong roll. The segment weights are prevented from giving expanding pressure to the tire by strong steel hub flanges.



The slots (S) permit each weight to move back on its pin toward the shaft, but its backward movement can transmit no push to the shaft.

It is plain that the weights (W) in running hold the tire in position by the immense power of centrifuual force.

The tires in a pair of rolls can only be pushed back towards their shafts by a superior force, and as no rock is strong enough to exert such force it is easily crushed. If a bit of uncrushable steel gets between the rolls, and forces back the tires and weights, no harm is done; for no crushing shocks are transmitted directly to either shaft. The roll shafts are not pressed back at all.

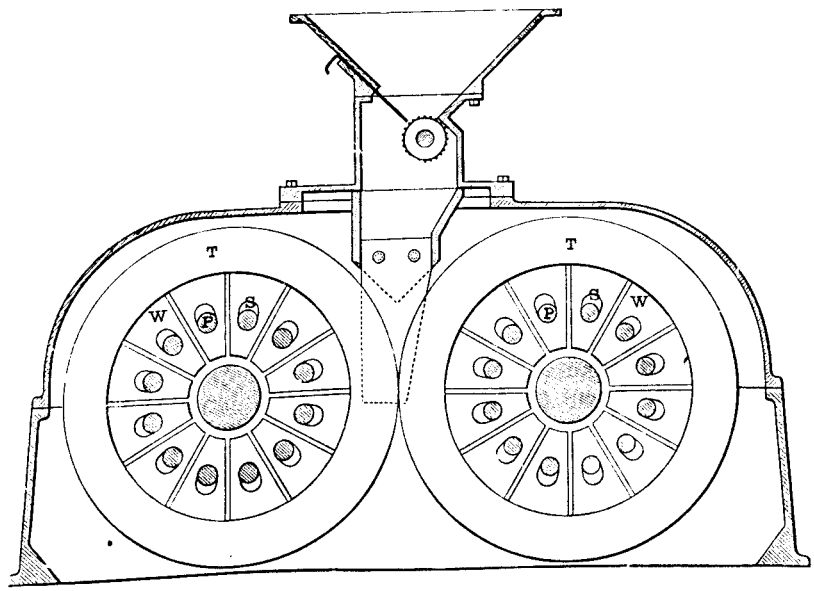
This action may be illustrated by a weight rotated from a shaft by a cord. The weight may easily be pushed back, but no push can be transmitted to the shaft. It is thus seen that if centrifugal rolls faces are set as clearly together as wanted no springs are needed to keep them in position.

Centrifugal rolls, balancing themselves, run easily at all speeds. In the large sizes very moderate speeds give to centrifugal rolls ample crushing power.

All rolls benefit by high peripheral speeds; but while common rolls cannot run fast, centrifugal rolls can, and thus they have marvellous effectiveness without large diameters.

Small centrifugal rolls do extraordinary work. Centrifugal rolls of even moderate size do more and better work than the largest common rolls that can be constructed. They run easily, as shown in the cut, with small driving pulleys, and they require so much l ss power than slow running common rolls that no balance wheers are needed.

Please remember that centrifugal rolls of very moderate dimensions do work enough. That centrifugal rolls, being smaller cost less to buy, cost less to transport, cost less to set up, cost less to run and cost less for repairs, which are all comparatively small.



RECENT PUBLICATIONS.

The New Gold Fields at Cape Nome: Their History, Location and Output; by Ivan Brostrom. San Francisco. Phillips & Smith. Price 50 cents.

There has been so much nonsense written about these new gold fields, that it is quite refreshing to find in the pages of this little booklet, what is evidently a plain and unvarnished account of the Cape Nome diggings. There can, meanwhile, be no doubt concerning the existence of really rich placer ground on several of the creeks of the district, while the beach-claims have in many instances been very profitably worked with the most primitive appliances. The discovery of gold was first made in 1898 by a Swedish missionary who had been informed by Indian converts that the precious metal had been found by them in the rivers emptying into the ocean at Cape Nome. In consequence of this information prospecting parties were organized and promising ground discovered on the Snake River and its tributaries. News of these discoveries was reported at St. Michaels on the 25th of November, 1898, and "people by the hundreds flocked over the ice to Cape Nome, when they staked, not only the creeks, gulches and benches, but also planted their stakes high up on the sides and tops of the mountains. . . . ." Thus, through what is termed a "Power of Attorney," the whole country, within 25 square miles, was taken possession of by a few hundred people. The richest stream as yet proved, is a tributary of the Snake River, known as Anvil Creek, and it is stated that last summer, gold to the value of $50,000 to $150,000 was recovered from individual claims, while from a claim in Snow Gulch $300,000 was taken. The gold from the bench diggings is very fine and difficult to save with the crude "rocker," but notwithstanding, the average clean-up per man for six weeks' work, is estimated at $600. And when it is remembered that there were no less than two thousand workers crowding each other on this narrow strip of sea-beach the estimate, if correct, shows sufficiently well. The concluding pages are devoted to hints on the best method to employ in recovering flour gold from beach gravel, and a description of the conditions of life in this far-northern Eldorado.

THE MONTH'S MINING.

TEXADA ISLAND.

ON the Copper Queen at the 400-foot level a body of ore was struck some weeks since. and on February 10th had been drifted on for 40 feet, the ore having been mined from the drift so as to expose a thickness of about twenty feet at the thickest part. This ore is high-grade bornite carrying gold values, the gangue being composed of fibrous hornblende, with many actinolite crystals and garnets. This ore body occurs on the contact between limestone and felsite, the latter being on the foot wall side. Apparently the ore fills a cavity in the limestone. It has not been determined whether this body is connected with the ore bodies on the upper level, but in all probability it is not.

The Cornell mine is being thoroughly exploited, comprising at present 450 feet of workings which have been carefully surveyed, and the connection between the occurrences of ore is thus being determined. This property has been an ore producer from the grass roots, but the permanency of the ore bodies or their structure has not been fully determined as yet. The ore in the Cornell occurs on the contact between limestone and felsite. The smelter is being supplied from the company's own properties chiefly. A limited quantity has been bought from the Marble Bay property, the iron mines on the West Coast and the Lenora mine at Mount Sicker on Vancouver Island.

Until upraises to prove the connection of the occurrences of ore on the various levels in the Copper Queen mine are made and the drifts extended, it would be very difficult to correctly measure up the ore in sight, but from a casual examination it would appear that in the Copper Queen and Cornell mines there is sufficient to furnish the smelter with about 40 tons a day for a year.

SHOAL BAY.

AN UNSATISFACTORY OUTLOOK.

"To be or not to be" a mining district? that is the all-absorbing topic here just now, for never have affairs in general or mining in particular been duller than at present. There are those who have stayed by the camps in the face of all discouragement, but even their faith is oozing away, for we are deserted by the present paternal government, whom we have helped to enrich by many a thousand dollars, who with all their high falutin twaddle about helping the miner by "eight-hour" laws, and "Acts to regulate the length of hair to be worn by miners," etc., etc., have done nothing as yet for this portion of British Columbia. It cannot be said that the wault lies with the district, for large ore bodies have been found, which could be profitably worked on a large scale, but capital is scared to invest in a country where it has no guarantee against legislative freaks.

KAMLOOPS.

(From Our Own Correspondent.)

There has been a very active enquiry in regard to Kamloops mining properties during the last month, which has resulted in the "bonding" of several highly promising groups of mineral claims to representatives of outside capital. Among others the Gordon group on the South Thompson has been bonded to a M. Grauer until April 1st, 1900, on behalf of a French syndicate. This is a promising gold-silver proposition. The veinstuff is quartz and the values are carried in iron pyrites. The vein is massive and shown by surface work for 2,000 feet. A shaft is down over 50 feet and there is also a considerable extent of drifting all in ore. Some bands carry 1.5 ozs. of gold in addition to silver values, the whole body averaging $12 to $15 in gold and silver.

The Homestake on Jamieson Creek, North Thompson, is bonded to an English syndicate, who will commence development work on a large scale early in the spring.

The Kimberley group on Coal Hill has been bonded by Mr. F. Jackson, of Rossland, who makes a cash payment of $8,000 and agrees to deliver to the owners 20 per cent. of the stock in a company to be formed to work the property. This group possesses a very fine copper showing. The vein is 60 feet wide, some bands carrying 15 per cent. to 20 per cent. copper with $3.00 to $6.00 gold values. A good deal of developent work has been done on this claim, including a tunnel which has been driven 230 feet to cross-cut the vein and is now 18 feet into the vein, showing good values. It is estimated that a syndicate repre-

sented by Mr. R. H. Bellamy, of Nelson, will put a dredger on the North Thompson in the spring. The values in the Thompson gravels are good and there are also stretches of benches on the North Thompson known to be gold-bearing. Consequently, should the dredging operations in question prove successful it is possible that other placer mining enterprises will be inaugurated.

The Tenderfoot claim is being developed by a local company with marked success. A short tunnel has cut the vein diagonally and is now in 16 feet on ore averaging 6 to 10 per cent. copper, and having also small gold and silver values. The copper occurs as bornite in a gangue of dolomite. Drifting will be commenced as soon as the tunnel is through the vein and the working force will shortly be doubled.

Work has continued steadily at the Python with the exception of a short cessation of work for two days in consequence of the breaking down of the hoist. Some good ore is being met on this claim.

Many of the other prospects have been idle during the winter, but everything points to an active season.

BOUNDARY CREEK.

(From Our Own Correspondent.)

Three months have elapsed since the C.P.R. construction department assumed charge of the Greenwood end of the Columbia & Western Railway. Shortly afterwards it was announced that the work of construction of branch lines to several mining camps would be hastened and, it was understood, would be completed before the middle of winter. Sanguine expectations as to the amount of ore that would be shipped without delay, were thereupon voiced, but unfortunately these have not been realized to any considerable extent. One important cause of this disappointing state of affairs is the non-completion of the branch lnies to the mines. Apart from this though, it must be admitted that only two or three mines are yet prepared to continuously ship ore in quantity. In stating this there is no desire to in any way depreciate the importance of the district but rather to acknowledge as a simple fact that it is still premature to talk or write of Boundary district mines shipping regularly any appreciably large quantity of ore. It is no discredit to the district to admit that its mines are not yet, as a rule, sufficiently developed to allow of their shipping enough ore to keep a smelter running steadily. On the other hand it is distinctly to its credit that it can be claimed that in not less than five of its camps ore is being blocked out and other necessary preparations are being made to maintain a steady output. These are Deadwood Camp, in which the Mother Lode mine is farthest advanced in this respect; Phoenix Camp, with the Old Ironsides, Knob Hill and Victoria the most forward group; Wellington Camp, with the Winnipeg and Golden Crown both opening up stopes; Central Camp, with the City of Paris group now sending out ore, and Summit Camp, which has in the B. C. the only mine in the district that has as yet shipped more than 300 or 400 tons of ore. Long Lake has, in the Jewel, a comparatively well-developed property, but this mine is not included as a probable shipper, for the reason that its gold-quartz ore will be treated near the mine, either by the cyanide or such other process as shall be found most suitable for its reduction.

PROSPECTS OF ORE PRODUCTION

It must not be supposed though that the few properties mentioned are all that the Boundary Creek district has to depend upon to contribute to its prospective large output. The list of properties that will probably ship before the close of the current year includes the Sunset, Morrison, Gold Bug and Buckhorn, in Deadwood Camp; the Stemwinder, Brooklyn, Snowshoe, War Eagle and Gold Drop in Phoenix Camp; the No. 7 and Norfolk in Central Camp; the Oro Denoro, Rathmullen, Emma and Mountain View in Summit Camp; the Hartford in Wellington Camp; the Golconda in Smith's Camp, and the Last Chance in Skylark Camp. There are at least a score of others that already give sufficient promise to be classed as possible producers. It is so easy to go far wide of the mark in suggesting what the aggregate output of ore will be after all these properties shall have been developed to a producing stage, but it will do no harm to point out what a low average daily tonnage from each of the twenty-six named above would aggregate. Assume that six months hence an average of twenty tons each per day—and surely that is a low estimate — from these twenty-six mines or claims were assumed, that would give a daily output of 520 tons or say 3,500 tons per week. This would be at the rate of 182,000 tons per year. Now the report for the year 1899 of the Gold Commissioner for the Trail Creek (Rossland) mining division placed the year's output of that division at 180,300 tons of a total value of $3,211,400. It will readily be seen then that a liberal reduction may be made both in estimated probable output of this district and in value of same and still leave quantity and value large enough to constitute these together a very important item to demonstrate the producing capabilities of the Boundary Creek mines. And it is by no means a stretch of imagination to think it quite possible the second half of the year 1900 may show returns proportionate to the total here suggested.

AS COMPARED WITH ROSSLAND.

Up to the third week in February recent ore shipments from the district were approximately as under: From B. C. mine, say 1,000 tons; from Winnipeg mine, say 200 tons; from Mother Lode mine, say 200 tons; from City of Paris mine, say 200 tons; from Gold Bug mine, say 35 tons; from Last Chance mine, say 20 tons.

The Oro Denoro also sent out some ore and perhaps the Rathmullen, but what quantity and whether any other property sent out a test carload is not now remembered. At any rate it will be quite safe to conclude that by March 1st the aggregate of ore shipments from this district will not have exceeded 2,500 tons and possibly not 2,000 tons. It will be remembered that the probability of discoveries of ore on other properties than those named above has not been taken into account.

A brief summary of the work on the more import ant mining properties in the district follows. In Dead Camp cross-cutting both ways from the north drift at the 200-foot level has been suspended pending receipt of a cage—to facilitate hoisting—already ordered from the Wm. Hamilton Manufacturing Co. of Peterborough, Ont. The big plant for the Sunset is now nearly all installed; a massive gallows frame has been built and a strong and roomy building to house the machinery is well advanced towards completion. This plant will shortly be in running order and thereafter development work will be pushed be-

DEADWOOD CAMP

low ground. The Buckhorn has a compact and smooth-running air compressor plant and steam hoist, doing good work in sinking a main shaft, which should have reached the 200-foot level by the time this appears in print. A cross-cut at the 100-foot level is now in well mineralized rock, improving all the while. The company owning the Morrison having been placed on a new basis giving additional treasury stock, is resuming work in the mine. The Ah There is expecting to shortly receive a small steam plant and to then resume sinking the shaft, now down 70 feet, and the Gold Bug has three or four men on running a tunnel to gain a depth of 80 feet lower than the one from which a quantity of rich ore has already been taken.

In Phoenix Camp the Old Ironsides, Knob Hill and Victoria—known as the Graves group, are employing more men than any other mine or group in the district. Developments at the 300-foot level are very satisfactory in both the Old Ironsides and Victoria. The Brooklyn has been closed down and its 35 men paid off, it is stated, as a protest against the eight-hour law. This is the only case of shutting down for this reason known to have occurred in the district, notwithstanding erroneous statements to the contrary which were lately published in the Toronto *World*. The Gold Drop, Snowshoe and War Eagle, all equipped wtih steam plants, are working steadily right along. The delay in completing the branch railway line to this camp is responsible for the fact that no ore has yet been shipped from it.

PHOENIX CAMP

Wellington Camp is represented by the Winnipeg, Golden Crown and Hartford. The Winnipeg is turning out about a carload of shipping ore daily. The Golden Crown is opening up its ground at both the 150-foot and 300-foot levels preparatory to maintaining a steady output of ore. The Winnipeg and Golden Crown are adjoining claims and the respective companies owning them have wisely decided to amalgamate.

WELLINGTON CAMP

The City of Paris group is doing most work in Central Camp and the company owning it has lately been endeavouring to make arrangements for hauling daily 100 tons of ore from the mine to the Granby smelter at Grand Forks. However, teams were not available, so for the time only about 50 tons per day are being sent out. The Nonpareil and several others are also at work in this camp.

OTHER CAMPS.

Summit Camp is making a good showing. The B. C., which was wrongly stated by the Toronto *World* to have shut down on account of the eight-hour law, is daily shipping three or four cars of ore to Trail, and is also blocking out more ore in the mine. The Oro Denoro is also opening up the ore bodies by tunnels. The Jewel in Long Lake is reported to be looking better than ever and its management is understood to be contemplating the early provision of a modern reduction plant. Much more might be added, but time and space forbid mention of other deserving properties this month.

ROSSLAND.

(From Our Own Correspondent.)

With the war in Africa, with internal difficulties which may be said to be provincial in character, and with a number of minor troubles it was not reasonable to expect that Rossland and its mining business could escape the penalty of hard times which a stringent money market necessarily produces in a community like this. It is yet too early to feel the effects of a partial suspension of mining operations, but a denuded pay-roll and the cessation of ore-production must necessarily only tell in a very short time, and with the exception of the Iron Mask ore shipments have been suspended. That the eight-hour law has entered more or less into the suspension as a whole is not to be doubted, but it has not been the sole reason. This law has now been very much discussed, without any substantial results except what we hear recently from the Slocan. There what the people want most is to see the cars outward bound, and laden with ore, and there is a strong feeling amongst the friends of the law that the miners cannot have the law and the ten hours' pay too. It is a variation of the adage that Jack cannot eat his cake and have it too. Both cannot prevail. It is for this reason no doubt that the Slocan miners have conceded a point or two.

THE PARTIAL SUSPENSION OF THE MINES.

One has only to talk with people here to learn how little sentiment enters into the question of trade. Rossland has anywhere from 6,000 to 8,000 inhabitants, and the business population are in favour of any policy that will keep the mines going. The pay-roll has been reduced by one-half at the most. It is perhaps now not over $75,000 per month, and the ore shipments to date are about 31,700 tons valued at upwards of half a million dollars (about $553,000). Had it not been for the suspension of ore shipments the output for January and February would have amounted to 60,000 tons, valued at about $1,000,000. For the corresponding period of last year (January and February) the output amounted to abount 7,000 tons, valued at $126,000.

Just now Rossland is undergoing one of those periods that must be expected sooner or later in every mining community. There has been a pannicky feeling for some time. This has been especially emphasized since the partial suspension of operation in the chief producers. In addition to the suspension of ore shipments by the Le Roi, War Eagle and Centre Star, the men from the B. A. C. workshops have been discharged and the "tall chimneys" which were erected as evidences of the staple industry of Rossland do not any longer emit fire and smoke from their interior.

The traders, too, as if influenced by dark forebodings, have signed a round-robin, of which the following is the tenor: "We, the undersigned merchants and others, doing business in the city of Rossland, in view of the partial closing down of the mines, and realizing that in the event of a general strike or lock-out of the miners in the Rossland camp we should not be able to continue the system of credit now in vogue, have agreed, and do hereby give notice that should such a calamity as foreshadowed occur, we shall entirely discontinue giving credit to anyone whomsoever, and shall sell nothing but for spot cash. We are compelled to this action solely with the view of self-protection—we might almost say self-preservation—and because we have been advised by the banks doing business in Rossland and by the wholesalers that we would not receive from them such credit and accommodation as would enable us to carry on our business on the same lines as at present:"

The notification has been signed by 63 firms, by far the great majority of the trading establishments

and the publication and form of this notice are very much questioned. Rossland has always had a natural growth. That growth has been sound and healthy. Its artificial growth, its "boom progress," on the contrary, has been quite unhealthy. Those that have lent themselves to the latter must be held accountable for much of the wreckage, the bank managers themselves having in times gone by given too much rein to "wild cat collateral."

The wisdom of publishing such a notice as the foregoing is very much questioned, that is to say the form of the notice, while the admissions made therein are regarded as a confession of judgment to certain creditors and the banks.

Amongst mining men of all classes this move, though perfectly justified on the basis of a cash system is, it is claimed, likely to give an erroneous impression abroad. Though the notice is not confined to miners alone as it includes all classes, the manner and form have been objected to by a few staunch firms that declined to sign the round-robin because they are not affected by the alleged condition into which the signers have plunged themselves. One of the partners of a leading firm that declined to enter the agreement said to your correspondent that his firm had given thousands of dollars' worth of goods to miners on credit, and had no cause to complain. The firm generally used good discrimination, and required no bank accommodation by which to carry on business. They saw no cause for the apprehensions which had influenced the signers in other respects, and thought that there was a better way to meet this question than the one which had been adopted.

As a matter of fact there is no strike here nor is there any probability of it. Shipments have been suspended because the mine managers have demanded it mainly on account of defective machinery, and the necessity that exists for more economic working than has hitherto prevailed. It is perfectly true that ore values have declined year by year, but these values are still within the pay limit.

THE WAR EAGLE MINE.

Mr. Edmund B. Kirby, general manager of the War Eagle mine, in his annual report to his company just submitted, says of this mine: Almost the entire production of the War Eagle mine has been derived from its main vein. This shoot has a dimension of 300 to 450 feet along the vein, and has now been confined to the sixth level, a depth of 755 feet measured on the vein. As usual, the vein area included within the shoot limit carries patches of ore interspersed with barren material, or ore of too low grade to be worked at a profit. The different pay ore bodies vary from $30.00 to $40.00, and down to the pay limit. The structure is somewhat complicated by numerous dykes and faults and by branching of the vein. Moreover, its width in places and the irregular distribution of the pay bodies increase the proportion of development work necessary. About 640 feet east of the shaft the main vein is crossed at an angle of 55 degrees by a smaller vein. In it an excellent ore body, apparently another ore shoot, has recently been discovered. It has a dimension along the vein of 120 feet with an average width of 11.1, and has been stoped to the surface, yielding 5,966 tons averaging $23.28 per ton gross smelter value. So far as known the first four levels are practically worked out. The fifth level is but partly worked. It requires more development to prepare the discovered ore bodies for stoping, and there is a possibility of discovering others. About 40 feet west of the shaft the main vein flits into north and south branches, both of which carry pay ore.

The sixth level also shows the north and south branches, both carrying pay ore. Their juncture lies east of the shaft. Between the levels the largest and richest ore mass is found along the line where the trio branches join. The shoot on the sixth level is only partially developed. The developments are still opening up pay ground, but as yet the extent of the pay ground is not determined, but it is evident that the quantity of pay ore is large. The main shaft is now down 880 feet the south level, and cross-cutting on this level to the vein will soon be under way. The ore product with depth is lowering in grade, but as the cost of mining and smelting has decreased the pay limit has been lowered. Mr. Kirby estimates the quantity of ore above the sixth level to be about 20,000 tons.

Red Mountain has not yet yielded the bulk of its treasures, and there has not been sufficient cause for the alarms that have recently been sounded. It is clear that there is always room for economic methods, yet there is nothing so far as the ore outlook is concerned to justify at present the grave apprehensions entertained in some quarters or the dastardly slanders made on the hardworking men that have been delving into the ore veins and shoots of the great producer here. Such an attack is utterly without cause, and a reflection on the management which is held responsible for the work done, and which for a long time has been very efficient. I think that a better feeling will prevail when I put in my next report.

YMIR.

(From Our Own Correspondent).

Owing to the unsettled state of affairs existing between the mine owners and the miners, development in this section has not been what it would have had there been no friction between the two classes. As it is announced that the Silver-Lead Association have arrived at an understanding with the Slocan miners, we are hoping that the difficulty and misunderstanding which exists here will soon be removed. As I have stated before, this camp has an excellent mineral reputation and all that is required is capital to open the big deposits which are already known to exist. However, in spite of the labour trouble, a large number of men have been steadily employed at the different mines, as the following table shows:—

	Men.
Ymir mine and mill	150
Yellowstone mine	33
Tamarac	12
Arlington	50
Nevada	7
Good Hope	12
Big Horn	10
Different prospects	40
Total	314

The machinery for the addition to the Ymir mill has arrived and is being taken up to the property and installed. The long tunnel from the mill which will tap the ore bodies at a depth of nearly 2,000 feet has been commenced, and is being made large enough for two tracks and when completed will be approximately 3,000 feet in length. We are looknig forward to big returns when the mine is working full strength and the 80 stamps running.

NELSON.

(From Our Own Correspondent.)

This month the Hall Mines announced that their mine (the Silver King) and smelter would be closed down on the 15th instant. This will entail loss of work to some three hundred men. The Dominion Copper Company which owns several properties in the Boundary district, also announces a close down. The number of men employed there is not known, but the present action at Rossland and Nelson and Boundary probably affects 1,000 men. Of these about one-half are union men and the organization, without outside help, cannot stand their being transferred from subscribers to pensioners. At the present time of writing (14th February) it is said that the union has decided to raise the embargo against men working in the Slocan mines, which will result in the re-opening of all those properties. This action, however, is probably only anticipated by a short time, as the union has received one or two heavy blows in that locality. The first of these was the successful introduction of outside labour by the Payne. The second was the persistent habit of the men on strike of spending their dollar a day, which they received from the union, on whiskey, letting the storekeepers and boarding house keepers have the benefit of their custom on credit. These latter worthies were getting tired of the honour. The men themselves are getting tired of the tyranny of the unions and will be only too glad of a change of circumstances, which permits them to go to work again. As it is, half the men at the Silver King, the Athabasca, the Granite, and other mines, are union men working in defiance of their union rules. But "one must live" is the motto that effects miners as well as others. Many of them are honest, straightforward men who are too proud to live on charity when plenty of work at ample wages is to be had for the asking. It must be remembered that the case of the miner in the Western part of this continent has nothing analogous to that of the 'piece workers' of Europe and Eastern America. There, it is a question of a living wage. His earnings barely permit a workman to live. Anything in the shape of the mildest luxury is unknown to him and how he clothes himself and his family is a mystery. Here, the miner is charged from $5.00 to $7.00 a week for his board and lodging and he has the balance—at least $60 a month—to spend as he liges. He is seldom married, and if he is his wife lives comfortably and anything like want is unknown.

THE CLOSE DOWN AT NELSON.

The hardships of the present close down will fall upon the non-union man. It is no fault of his that he now finds himself out of work, with at any rate a month or two of winter yet upon his hands. Some relief will come to him in the construction of the railway from Nelson to Balfour, just about to be commenced, but it is a poor consolation, as the wages will probably be small—$1.75 or at the most $2.00 a day, with accommodation considerably inferior to what is afforded at the chief mines.

The closing down of the Hall Mines is not altogether owing to the labour situation. It is the natural sequence of the course which the Board of Directors in London, contrary to the advice of the officials on the spot, has thought fit to adopt. Ever since Mr. M. S. Davys was appointed superintendent of the mine, some years ago, he has never failed in his reports to the directors to warn them that sufficient attention was not being paid to the development of the reserves of ore, and that at the then rate of working, the available ore would be speedily exhausted. The time has arrived when the prediction of Mr. Davys has been fulfilled. There is practically no more ore in the upper workings, and the new shaft and its drifts to tap the deeper deposits are about six months short of completion. If there had been no close down in the Slocan, sufficient ore would have been obtained from the different mines with which satisfactory contracts had been made to keep the smelter going, and the smelter would have paid the piper or rather the miner, for the progressing development. Unfortunately that source of revenue was cut off and the board in London supplied no other. A closing down was not to be avoided.

The War Eagle at Rossland is in somewhat similar least $60 a month—to spend as he likes. He is seldom only lack of certain machinery are more easily relieved. This, at any rate, is the reason given by the management.

It is announced to-day (February 16th) that the strike in the Slocan is off. Doubtless your special correspondents in that district will send you full accounts of the collapse of the union and the resumption of work. From the miners themselves and especially from union men one hears nothing but expressions of relief and gladness at the turn events are taking. The bulk of the men had no love for the union and its leaders. The language in which they express their contempt for the latter is picturesque, if perhaps a trifle forcible and would be quite unfit for your columns. Still it is the language which the majority of Westerners constantly use and by its vigour one can judge of the intensity of a man's feelings.

The miners' unions of Kootenay were organized by men from across the border. There was a sufficient leaven of miners from Montana and Idaho here to spread the propaganda amongst our honest but somewhat easily led Canadians, and so they fell beneath the baneful yoke. Now they are rejoicing in their freedom.

A miners' union in itself is a good thing and benefits owners and men alike. Could one only be formed on proper lines and not under the leadership of ruffians from the Cœur d'Alenes and other desperadoes, it would lead to the best understanding between the men and their employers.

A strict quarantine is being maintained against the districts of the United States in which at present there is an epidemic of smallpox. The Board of Health has ordered compulsory vaccination and large numbers of people are willingly complying. There are, however, certain of those misguided people called anti-vaccinationists who howl about the tyranny, uselessness and danger of the practice. Judging from their cries and complaints one would almost think that they were condemned by a cruel Inquisition to the state itself. Where an epidemic of smallpox exists, it would seem to be the duty of everyone to the community at large to take the simple precaution offered by vaccination. The names of those who refuse or neglect to take it should be conspicuously advertised as enemies to society and they should be treated not less severely than criminals. In spite of all precautions one case was brought into town on the steamer *Moyie* on the evening of the 15th

THE SMALLPOX EPIDEMIC IN WASHINGTON.

and doubtless before long others will occur. The form which the malady has taken is fortunately an extremely mild one, but the danger is there. At any moment it might become malignant and precautions are not to be neglected. The Government Agent, Mr. W. J. Goepel, and Dr. La Bau, the Health Officer, are not men to be trifled with and they seem both able and anxious to neglect nothing that may tend to keep the enemy at bay.

SLOCAN.

(From Our Own Correspondent.)

The town of Sandon has been very busy during the past ten days since the labour troubles have come to an end. Every train has been crowded with men and the streets once again have taken on their old-time activity. Some of the mines are unable to take on many men on account of the roads and trails to mines being blocked. The Noble Five and Slocan Star mills would both work but for insufficiency of water for power and washing at this time of the year. The latter expects to start full blast on April 1st.

The Payne has 110 men at work and is increasing its force every day. Last week this property shipped 310 tons of high-grade ore. Most of it went to the Trail smelter.

The Last Chance has now put on 40 men and expect to double its force shortly. At present one car of ore per day is being shipped.

The Ivanhoe, owned by the Minnesota Silver Company, has increased its force from 17 to 30 men and has just struck ten feet of rich ore in the lowest tunnel. This property has now been developing for over two years and promises to be one of the richest silver and lead mines in British Columbia. Over $80,000 has been spent in development work to date. An aerial tram and mill will be built in the early spring in Sandon.

It is expected that the Ruth will start up this week at both the mine and mill with 50 men to start with, but this force will be increased shortly.

About sixty men have been put to work on the Whitewater. The mill will start in a few days when more men will be put on and regular shipments will be the order of the day.

The Monitor and Hustler Fraction, situated near Three Forks, remarkable for the side values of gold, has been bonded to some English capitalists represented by Mr. Maurice Guitzberger. The deal is virtually a cash one and the amount somewhere in the neighbourhood of $120,000.

The Bosun and Queen Bess have both increased their working force and will continue to do so.

I fancy the Slocan is again on the eve of another era of prosperity, provided the next Government will leave well enough alone and not try and harrass the mining industry, as the past Government has heretofore done. I think any Government now that gets into power will have the support of the entire Kootenay if they will promise to leave the Mineral Act alone and not tax and distress the only industry in the province which brings in any substantial revenue.

RAWHIDER.

REVELSTOKE.

(From Our Own Correspondent).

From Nelson come the very unsatisfactory tidings that the Hall Mines have resolved to close down their smelter and the Silver King also indefinitely, which will make things very quiet in that quarter, so that for activity in mining matters we must fall back upon the Lardeau district which promises to be exceedingly lively this year and to astonish British Columbia with its wealth of mineral. In the Big Bend mining will probably go on in its usual style, no great full about anything in particular, but steadily developing the properties already opened up, especially the Rosebery and the Eureka groups which are reported to be looking in first rate shape. The Boston and B. C. Company have not yet made any preparations for re-opening their Standard Basin claims, and it is reported that this company is being reorganized—which apparently it seriously requires, even if the wonderful original prospectus has been quietly dropped. Some fresh capital was invested last fall in the Smith Creek placer claims, and it seems likely that the promises from that locality will be fulfilled. In the Lardeau, things are looking very bright. A tunnel is being driven on the Moscow in high-grade galena from the start, and a shipment may be expected shortly even if a small one only. Near this claim are the Eva and Iron Dollar, which have been bonded to Eastern capitalists for some $50,000 and are looking very well, the ore being valued at over $400 per ton, and keeping its richness with the depth. The vein is said to be 30 feet wide, but probably most of it is concentrating. The Beatrice also has commenced to ship some of its products, but the very mild weather has interfered seriously with transportation, as in the Lardeau district the roads can not be held as examples of what roads should be like by any means. The Silver Cup has shipped about 100 tons to Trail smelter, notwithstanding the difficulties of hauling, caused by the unaccustomed lack of snow this season, and no doubt the returns will be highly satisfactory as the richness of the ore is almost proverbial. The Scottish Canadian, Primrose, Lodestar and other groups too numerous to mention, are all busy with development work, and in all cases the most cheering evidences of permanent prosperity are seen; the ore bodies often increasing in both size and value as depth is gained. The Nettie L. shipped about 100 tons recently to Trail, and the returns are extremely satisfactory, though the management regarded this rather as a trial shipment than a true sample of the mine's produce. The long lower tunnel is now in some 600 feet, and has reached the expected vein, so that from now onwards, barring the continual trouble of transportation, regular shipments may be expected. A contract is being arranged for driving a third tunnel considerably below the second one, which is expected to be fully 1,000 feet in length, and when this is completed there will be available such a mass of valuable ore as will at once place this mine far ahead of others which have been less patiently and economically developed; although doubtless as time goes on many properties will come forward and rank high which are now merely prospects and quite in their infancy.

THE BIG BEND.

LARDEAU

H.

GOLDEN.

(From Our Own Correspondent.)

The only properties which are at present being operated in this district are the Porphry and Iron Hill on Canyon Creek, and the Certainty on Fifteen-Mile Creek, both being operated by the Certainty Gold and Mining Company, an Eastern Corporation. On each property about 600 feet of tunnels and drifts have been run since the company started operations in June last. At the Porphyry and Iron Hill the veins run north and south, the lead on which the work has

been done dropped at 45 and had an extensive surface showing of ore, of which a continuous chimney has been struck, but as the dip of the lead has altered towards the level it is now supposed that it is merely an offshoot from another vein outcropping above, and a tunnel is now being run towards the point of juncture with a view to ascertain the probable value of the deposit. A quantity of ore had been sacked and hauled to the Columbia River for shipment to the Hall Mines smelter; but the closing down of the smelter has stopped the shipment of this ore and operations will be confined solely to development work till the smelter again starts up. The ore is very high grade in copper, the picked ore averaging between 14 and 15 per cent. of copper with small gold and silver values. Bunches of ore have been assayed showing from 20 to 24 ozs. in silver in addition to high copper values. The formation in the neighbourhood is a quartzite and slate, traversed by dykes of felsite porphyry and amygdaloidal trap. The footwall on one side of the contact of the dykes is quartzite consisting mostly of silicious grains, but including some felspathic and argillaceous matter, also a considerable proportion of lime, and on the other side of the line of contact the formation is slate. The hanging wall is felsite porphyry. The ore is a chalcopyrite, high in iron and low in sulphur. This is the first property on which development work has been done to any extent in this part of the district and the results are being watched with interest as there are numerous indications of copper deposits on a strong dyke of felsite porphyry which crosses the mountain range from Fifteen-Mile Creek to Canyon Creek, a distance of about ten miles.

THE CERTAINTY MINE.

Encouraged by the results of the development work done by the Certainty Company the Empire Mines Company, who have been operating in the Lardeau, propose to start development work in the spring on two claims which they hold on Canyon Creek, about two miles further up the creek than the Certainty Company's property. The assays which they had from this prospect ran over $100 in gold and copper.

The Certainty Company's property on Fifteen-Mile Creek is entirely a different proposition from the Porphyry and Iron Hill. The veins on which development work has been done have a dip of about 80 degrees and strike at various angles of N. 60 W. to about east and west, being contact veins filling the fissures between slates and quartzites and accompanied by felsite dykes, or filling fissures in the quartzite alone. There are four veins on the property and all have been cut at greater or less depth by the three tunnels and their cross-cuts which have been run. One vein, twenty feet in width where cross-cut failed to show payable ore, though carrying good copper ore on top. The other three veins showed ore in the various cross-cuts assaying from 3½ to 17½ per cent. copper with small values in silver and gold. These veins vary from one foot to fourteen feet in width. The ore is an excellent concentrating ore and very little ore has yet been struck which would be fit for shipping direct without concentration. One ore body has now been developed by three tunnels covering a vertical depth of 580 feet, pay ore having been proved in each cross-cut. A contract has been let for the further extension of the low level tunnel, which is now in between three hundred and four hundred feet, and the work of extending it another two hundred feet or so is now in hand. In the spring another low level tunnel will be started at a point about 200 feet still lower down the mountain side. The company have under consideration the building of a road and the inauguration of electric power and power drills in the spring.

FIFTEEN MILE CREEK

Both properties of the Certainty Company are especially well situated for transportation, the Porphyry and Iron Hill being only ten miles from Golden with which it is connected by a good road, while the Certainty property on Fifteen-Mile Creek is only eight miles from the Columbia River and the shipping point on that river is eight miles from Golden.

The prospectus is published of the Golden Placer and Quartz Mining Company, with a capital of a million, of which 500,000 remains in the treasury. This company is to operate a placer claim at the mouth of Canyon Creek, five miles above Golden, and two quartz claims on Canyon Creek, about half a mile from the property being developed there by the Certainty Company.

CORRESPONDENCE.

The Editor does not hold himself responsible for the opinions which may be expressed in this column. No notice will be taken of communications unless accompanied by the full name and address of the writer.

DEVELOPMENT IN BRITISH COLUMBIA.

TO THE EDITOR:—As one having large interests in and old associations with the province, I trust I may be allowed some space in your journal for ventilating my ideas on a few facts bearing on that progress in British Columbia which we all so much desire; but which, I think we must confess, comes with undue slowness, considering the undoubted latent wealth of the country.

On one point all are agreed; that what is wanted is development, which implies capital. How is this want to be best met?

I have read in your issues many controversies on this subject, and as regards English investors, the arguments seem to travel in a "vicious circle." The colonist wants capital with which to develop his properties: the English investor only cares to invest in developed properties, bringing in a more or less sure and immediate return for his money: he is not so speculative as your American neighbours, and it must be remembered that he is not so near the spot for the purpose of judging for himself: it must not be forgotten, either, that in past "boom times" he has been sorely bitten by much wild cat. Therefore, it is best for British Columbians to recognize the fact that they can only for the most part depend on realizing capital from England, upon enterprises to a certain extent developed or fairly safe to make a speedy and reasonable return.

Now, the first and greatest factor in the development of a new country is railways; and if only English capital can be induced to embark in these a double purpose is served, for the railway itself is thereby constructed, and by that fact facilities are afforded for the investment of otherwise reluctant capital in mining and other ventures, brought within the scope of practical working by moderate freights for machinery, goods, and passengers.

As you truly state, in your January number, a great stride in this respect has been made by the construction of the Crow's Nest Pass Railway. In fact, so far

as the southern portion of the province is concerned, when the promised extensions westward through the Boundary district are completed, that section will be by no means ill-served with railways.

But how have these railways been constructed and financed? "Heaven helps those who help themselves," and the colony has procured this railway system by taxing itself in the form of subsidies, guarantees or land grants, which have rendered the financing of the undertakings possible by eliminating the element of risk and thus permitting the bonds to be placed at a moderate rate of interest.

I presume no one will be bold enough to say that British Columbia can do without further railways, but what have been the recent steps taken by your Provincial Government in regard to railway extensions? They have stopped all subsidies, guarantees and land grants, and the result of that policy will infallibly be, from the prevailing economic conditions, that no further railways will be built unless the Government itself builds them.

If the colony could afford the initial outlay, this would no doubt in the end be the best solution; witness the great financial success, after the first few years' working, of the Cape and Australian Government railways; the former now pays in net revenue from 7 to 8 per cent. on their cost, and I believe the Australian Government lines to be almost equally successful; but the circumstances as regards wealth and population are dissimilar, and British Columbia has to consider which method of obtaining railways it can best afford, whether to take the entire risk and reap the whole ulterior profit, or to subscribe a portion of the cost and make the best arrangement it can for a share of profit after the payment of interest on the remaining cost.

To descend to particulars, I will ask if there is any line of railway in the province more needed than a northern trunk line from the Canadian Pacific Railway, at Ashcroft or its neighbourhood, to Quesnelle and Cariboo; thus opening up a huge extent of practically neglected agricultural and pastoral country and mining districts such as Cariboo, Horsefly and Omineca, now only waiting cheap and speedy transit to become great centres of industry. The withdrawal of the subsidies has killed all chance of the construction of this line, by those who had already obtained charters or by fresh aspirants.

Let us consider, as far as we can, some of the figures and circumstances involved in the construction of this line. The exact data as to population and probable traffic are impossible to obtain, but I will endeavour to make as near and fair an estimate as possible.

I have been informed that the yearly freights by wagon shipped from Ashcroft northwards are from 4,000 to 5,000 tons. To this may be added, say, 1,000 tons carried by pack trains and private conveyance, making in all, say, 6,000 tons. This tallies reasonably with the wants of a population of 10,000 partly supported by food staples grown in the upper country and of which the local shipments for short distances might total another 4,000 tons, making a total of one ton per head for the population, which I suppose, may be fairly put at about 10,000.

Were a railway built large quantities of machinery and other heavy goods, the freight on which is now prohibitory, would be shipped; and, with the existing population, the traffic might reach a yearly aggregate of 20,000 tons, taking long and short freight into account, or say the equivalent of 15,000 tons of freight in point of receipts.

During the year—also with the existing population—the through passengers might be taken at 2,000, and the passengers for other distances as making up the equivalent in point of receipts of another 3,000 through passengers.

I take it that in view of making the railway an ultimate commercial success, the maximum rate for through freight which could be charged would be $20 per ton, and for through passengers, averaging first and second class, $20 each.

We should then have as total receipts:—

Freight—1,500 tons at $20	$300,000
Passengers—5,00 tons at $20.....	100,000
Mail carriage and sundries, say	25,000
	$425,000
Deduct working expenses at 60 per cent.	255,000
Net receipts	$170,000

The cost of a standard guage line about 300 miles long through an average line of country such as this, and allowing a fail contractors' profit, interest during construction, etc., cannot fairly be put at less than $30,000 per mile, making a total of $9,000,000. Interest on this at 4 per cent., the lowest rate on well secured bonds, would be $360,000 per annum.

It will be seen that a large deficit exists between the net earnings and this sum. This deficit would without question be speedily reduced and ultimately wiped out by the great increase of population and traffic which a railway would cause; but what I want to point out is that no investor will accept this risk and delay unless counterbalanced by large subsidies, and that the country can only insure this great development of its resources, by taxing itself to provide these subsidies or build the line.

If the Government elected to do the work itself, it could borrow the money in England at about 3 1-3 per cent., thus reducing the yearly interest to say $300,000; and to my mind this is by far better finance than the granting of subsidies. The Dominion Government should also give some aid to the undertaking; —if that Government contributed only $3,000 per mile towards the cost, the loan to be raised by the British Columbian Government would be proportionately reduced and the yearly interest to be provided would be, say, $270,000, or only $100,000 in excess of the estimated net receipts from the first year's working. Surely, considering the certain yearly increase in the takings and the great probability of an ultimate profit, this would be but a trifling price to pay for such a vast boon to the country.

I hope sincerely that this subject may receive from the members of your Parliament and their constituents the consideration which it merits.

As I have said, I cannot lay claim to exactitude in the figures I have given; but I believe them to be roughly accurate, and the Government can readily obtain estimates of the cost of construction, and are in a better position than others to check the estimates of traffic.

It is useless for the colonist to sit still and grumble because capital does not flow into the country. He must bestir himself to make his country attractive to a capitalist; if he does this, he will surely attain his end, and I know that your magnificent province contains

"potentialities beyond the dreams of avarice," if only they can be laid bare.

I am, sir, your obedient servant,

R. BYRON JOHNSON.

London, Eng., February 1st, 1900.

PRODUCING MINES.

ROSSLAND.

OUR Rossland correspondent telegraphs on the 26th inst: "Ore shipments from this camp for January and February amount to rather over 320,000 tons. Much development work is being carried on at the B. A. C. and other properties surrounding Rossland. The production for the last week in February was about 350 tons from the Le Roi and Iron Mask.

NELSON.

The January returns from the Athabasca mine show at total return of $13,300 for 405 tons crushed, or an average of $32.83 per ton, exclusive of the concentrates.

COAL EXPORTATIONS.

The following shipments were made in January:—

	Tons.
New Vancouver Coal Co.	32,286
Wellington	7,811
Union	19,788
Oyster Harbour.	20,034
Total	79,919

For the three weeks, ending February 20th, the New Vancouver Coal Company's shipments were:—

Date.	Vessel.	Destination.	Tons
2—	SS. R. Adamson	San Diego	4,433
2—	SS. San Mateo	Port Los Angeles	4,284
5—	SS. Mineola	Port Los Angeles	3,180
7—	Bark Onaway	Lahiana, H. I.	1,323
7—	Str. Pioneer	Port Townsend	24
7—	SS. New England	Alaska	54
11—	SS. Titania	San Francisco	5,813
16—	SS. New England	Alaska	53
17—	S.S. San Mateo	Port Los Angeles	4,285
18—	Str. Sea Lion	Port Townsend	29
19—	SS. Mineola	Port Los Angeles	3,189
Total			26,667

THE METAL MARKET—FEBRUARY.

Compiled from special telegraphic quotations to the B. C. MINING RECORD from the *Engineering & Mining Journal*, New York.]

SILVER.

THE activity in this market at the beginning of the month, as a result of Indian demand, has since given way to a temporary dullness, though prices continue firm, and another advance is expected in the near future. The highest point reached during February was 60⅜, and the lowest 59¼. The average price of silver in January was 50.30c.

COPPER.

Copper has been decidedly active, and very fair business at advanced prices is reported. A feature worth special mention is that while the price for Lake has declined, electrolytic copper has advanced, thus bringing the value for the two kinds closer together than for some time past. This change is the natural result of market exigencies. The abnormally high prices which have been ruling for Lake have restricted sales in this class, whereas, the requirements for electrolytic have been constantly increasing. The latest quotations are: Lake, 16 to 16⅛c.; electrolytic in cakes, bars or ingots, 15⅝ to 15¾.; electrolytic copper in cathodes, 15½ to 15⅝c., and casting copper 15½c.

LEAD.

This market has shown practically no change in New York, the price remaining at 4.64 to 4.70c. In the West, however, there appears to be an easier tendency, and sales at 4.60c. are reported from St. Louis.

SPELTER.

The demand has been very high, the price remaining fairly steady at 4.65c. New York.

THE LOCAL STOCK MARKET.

SOME consternation has been caused this month by the partial closing down of the Le Roi, War Eagle and Centre Star and the cessation of shipments from these mines for the next few months until new machinery is installed, and in the case of the War Eagle until further development work is done in addition to getting new machinery. The Hall Mines have also closed down as well as the mines of the Dominion Copper Company in Boundary district.

ROSSLAND.

Since our last report War Eagle has fallen from 2.80 to 1.33, Centre Star from 1.7c to 1.30, and Iron Mask from .56 to .39.

SLOCAN AND NELSON.

The alleged settlement of the labour trouble and the resumption of work on a number of of Slocan properties has had a good effect on Slocan stocks, and Noble Five in paricular, which fell to the absurdly low price of 8 cents, has recovered somewhat, but the price, 11 to 13 cents, is still unsatisfactory. Payne advanced from 92c. to $1.27, but again declined to $1.20, Dardanelles has fallen to 5½c. and Ramblers from 55 to 42c. Molly Gibson has advanced from 35 to 40c.

COAST MINES.

Van Anda has been very active from 3½ to 6 cents, present quotations being 5 to 5½c. Treasury Mines shares have advanced from 2 to 5 cents. Brittania shares have been selling at $625.00.

CARIBOO.

The Horsefly Gold Mining Company has been re-incorporated under the laws of British Columbia and is now known as the Ward-Horsefly. The new shares are quoted at 55 cents and last season the profits of this mine over and above operating expenses, were $17,000.

BOUNDARY CREEK.

It is reported that the Winnipeg and the Brandon and Golden Crown are about to consolidate into one company. This will lead to more economic working of the two properties and ought to strengthen rather than weaken the stock as soon as the public realize the value of these two excellent properties. Knob Hill has fallen from 85 to 65, Brandon from 28 to 24, Winnipeg from 28 to 24, King from 21 to 20, Morrison 6 to 4, Rathmullen 6 to 5.

CAMP M'KINNEY.

Cariboo is quoted at 85; Minnehaha has fallen from 14 to 12, Waterloo 12 to 7½, Fontenoy 13 to 10. It is rumoured that the aWterloo, Fontenoy and Wiarton are about to amalgamate under one company.