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THE MONTH.

THE present prevalence of labour disputes and disastrous strikes is giving rise to severe heart searchings in quarters where no sympathy exists with socialistic ideas. In an extremely able article, our excellent contemporary, the *Mining and Scientific Press*, of San Francisco, compares the method of settling labour disputes in New Zealand with the method, or want

THE
NEW ZEALAND
METHOD OF
COMPULSORY
ARBITRATION.

of it, in vogue in British Columbia, very much to the disparagement of British Columbia. It might be asked why British Columbia should have been singled out any more than California or Colorado, with regard to which the only difference appears to

be that the feature of armed violence is frequently added to those of economic waste and destruction common to both British Columbia and California, and it might also be hinted that the special mention of British Columbia in this connection on the part of a San Francisco authority savours somewhat of the historical attitude of the kettle towards the pot, were it not that we believe it has been done in order to point out the comparison in two

cases where a similar dispute has arisen, and not with any intention of excluding California, or any portion of the United States, either from the strictures employed or the conclusions arrived at. The article in question is remarkable not merely from the pointed comparison it contains, but also from the character of the journal in which it appears. The *Mining and Scientific Press* is, like the MINING RECORD, a periodical published purely and exclusively in the interest of invested capital. In exposing fraud, to whose depredations the mining industry seems peculiarly liable, in enabling the producer to follow understandingly market conditions affecting the industry, and in bringing into purview economies of labour and power by the introduction of improved machinery, such publications perform a most important function in the interests of those who control and direct the world's store of capital, without whose continual protection and renewal the whole fabric of society would immediately be disintegrated. There is abundant evidence in present day society of the existence of the widespread impression that capital is an engine of oppression, by means of which an unfair percentage of the produce of labour is extorted from the labourer and applied in some way which is not clearly explained to the selfish enjoyment of the capitalist. As a matter of fact, except that portion which is wasted in the vice and luxury of both the rich and poor, the surplus of wealth produced turned into fixed capital is the guarantee of the progress in comfort and well-being of every individual born into the world. The greater the economy of production and the larger the surplus, the more widely diffused is its beneficial effect. It so happens that no incentive to economy of production and investment in reproductive fixed capital has yet been found more powerful than the desire for, and sense of power obtained through, the acquisition of private property in the capital so accumulated. The discussion of that aspect of the question, journals published in the interest of particular industries may safely avoid. So far as they trespass upon the domain of social ethics they may be content to rest upon the foundation that capital wisely garnered from the product of labour, and cautiously and prudently invested, is the guarantee of prosperity not merely for one class of the community but for all members of it, whether they are actually engaged in the production of wealth or in ministering to the necessities of those who do.

It may seem an unpardonably circuitous method of arriving at the point we desire to make in connection with the article of our contemporary, but in this age

when the extraordinary accumulation of masses of capital in the hands of individuals is only equalled by the extent of the opinion that individuals or groups of men who become excessively wealthy are criminals against society, it is worth while to turn aside for a moment and to quote what the wisest man who ever lived said of the possessor of great fortune: "Where much is, there are many to consume it; and what hath the owner but the sight of it with his eyes," and to quote further the comment on these words of Solomon by the second wisest man of whom there is any historical record, "The personal fruition in any man cannot reach to feel great riches; there is a custody of them; or a power of dole or donative of them; or a fame of them; but no solid use to the owner." To translate these words of Bacon into more modern language the "solid use" of riches is in their reproductive investment whose benefit accrues to the whole community in the increase of its numbers and the extent to which the members of it are enabled to minister to the comfort and well-being of each other.

The rich man, the capitalist, is merely the trustee for the community of its necessary accumulations of capital and his instinct for gain, the means by which Nature has provided for this accumulation. Now, journals representing the interests of invested capital view with jealousy anything which will check the accumulation of capital by transferring a greater proportion of the wealth produced to those who insist on consuming immediately everything on which they can lay their hands; just as they view with horror those frauds upon capital by means of which previous accumulations are dissipated and destroyed. But after all it is the community interest in the increasing sum of capital invested, which they have in view, and it is being brought home not merely to the *Mining and Scientific Press*, of San Francisco, but to everyone who stops to think, that labour disputes as carried out on the North American continent are imperilling not merely the selfish interests of the capitalist, but the ever-increasing accumulation of capital upon which the future of society depends. The economic waste occasioned by strikes is reaching appalling proportions, and as both capital and labour are becoming more perfectly organised and federated, the tendency appears to be for even smaller original causes of dispute to bring about even more widely spread industrial anarchy. Capital is destroyed, labour is impoverished, and the well-being of everyone lessened. Such being the case, it is not perhaps surprising, but it certainly is interesting and significant, that the press representing industry should be turning its eyes towards a method of settling labour disputes by force of law, without resorting to the barbarous expedient of a strike or lockout.

This legislation in New Zealand, now more frequently commented on than condemned, was passed in the face of the most violent opposition. It was brought about by the frank admission that the condition of industry in that country had reached a stage than which

nothing could possibly be worse, not even its total destruction and the relapse of the inhabitants to a mere hand to mouth existence on the soil. Now it certainly has been successful in obviating strikes, and it may be that it would be advisable to apply something of the kind to British Columbia. But before being adopted it should be understood, and its workings investigated. How has it affected the average condition of the people of New Zealand? How has it affected the internal accumulation of capital in the country itself? How has it affected the inflow of capital from abroad and the reasonable anticipation of adequate returns? In general terms, are the people of New Zealand progressing equally with those of the United States and Canada, in material comfort, social well-being, intellectual development, and aesthetic culture—all those things to acquire and enjoy which men labour at all? If they are, and if, at the same time, they have removed the dark cloud which is ever menacing the industry all over North America, then the sooner we learn the lesson they have learned the better.

The condition of affairs in British Columbia, while not so bad as in many portions of the United States, is sufficiently acute to warrant the investigation of a means of relief which has been tried and is claimed to be a success. It seems to us that a careful inquiry into the industrial conditions of New Zealand, made by a competent commissioner on the spot, would be of great value to British Columbia and might form the basis for a practical attempt to solve the labour problem in a rational way.

It would indeed be remarkable if a country which, a few years ago, was openly accused of having been driven into all sorts of erratic courses by the desperation consequent upon its own extravagance and waste, should, within so short a time, be recognised as having merely adopted rational principles of industrial regulation, between the adaptation of which, to their own circumstances, and revolutionary anarchy, every civilised country would eventually be obliged to choose.

The official liquidation of the British America Corporation and of the Standard Exploration Company, has resulted in disclosures which illustrate the corruption of English finance in more startling outlines than even

WHITAKER
WRIGHT
FINANCE.

the Hansard Union, through which Mr. Bottomley acquired a lasting and evil reputation, the Liberator scandal, or the bankruptcy of Mr. Ernest Terah Hooley. It would be impossible within reasonable limits to fully describe the series of operations by which the mining industry of British Columbia has been involved in a horrible and disgusting saturnalia of swindling and corruption. But this we do say, that it would be far better that our mines should never be developed at all than that they should be made the glittering bait by which the accumulated

capital of Great Britain is exhausted, and an era of feverish and unreal prosperity induced in the Province to be followed by ruin and disaster. There is plenty of mining capital in Canada and the United States to develop the mineral resources of British Columbia on a business-like basis, and we are sure that we express the sentiment of British Columbia when we say that if British capital cannot be introduced into this Province except on such terms as those on which the capital of the British America Corporation was subscribed and applied, we do not want it here at all. The loss which such methods entail upon the investor does not, in the long run, benefit us.

The British America Corporation was formed in December, 1897, to exploit certain options acquired by Mr. C. H. Mackintosh, and sold by him to the London and Globe Finance Corporation for £100,000. The sale, however, for £100,000 was, we shrewdly suspect, entirely dependent upon the successful flotation of the British America Corporation which agreed to take over those options from the London and Globe at the price of £500,000. Now, here we have an illustration of a difficulty of doing business with London promoters of which more companies than the British America Corporation have afforded an example. It is this, that the introducer of a property on the London market insists on making \$4 out of the sale for every one dollar which the vendor receives. Consequently the vendor must either sell for one-fifth of the value of his property, or else that property must be represented to be worth five times as much as it really is worth. As no owner of mining or any other kind of property is, as a rule, content to sell that property for twenty per cent. of its value, it is easily to be understood that the terms on which the British investor is allowed to invest in British Columbia mines are not particularly desirable, nor is the class of property which falls into his hands particularly attractive. To return, however, to the British America Corporation: a point which has been overlooked by the English financial press in dealing with the matter is that the options transferred by Mr. Mackintosh to the London and Globe Finance Corporation for £100,000, and transferred by the London and Globe Finance Corporation to the British America Corporation for £500,000, were not worth one brass farthing. In cross examination Mr. Mackintosh has been constrained to admit that as to the options upon property which had a real value, they were had upon such extravagant terms that *there was no intention of ever taking them up*, even at the time when they were made the excuse for the transfer of extravagant sums of money upon the London financial market. As for those options which were taken up they were upon a class of undeveloped property where no prospective purchaser need have feared any competitor such as might make an option to purchase necessary or advantageous.

This transaction appears once more in the history of the Corporation under most peculiar circumstances. The options having expired, or having been merged in

the properties over which they were exercised, the directors had to face the wiping out of half their entire capital. They wrote off £250,000 of the amount, and for the purposes of their balance sheet received a present of £250,000 in shares from the London and Globe, being thus able to show a large profit. These shares, however, were retransferred to the London and Globe for the purposes of its balance sheet, and the same shares appeared as assets to their full value in the balance sheets of both companies.

Most people in British Columbia will remember the sudden cessation of investment which took place when the British America Corporation was in full career. This took place not because the Corporation was out of money, but because it was forced to lend its money to the London and Globe, to enable that company to carry on its operations in the Westralian market.

The most extraordinary application of Wright finance, however, was the brilliant idea of floating six companies upon three properties, and using the full nominal value of the shares of all six for what may be called balance sheet purposes. In the meantime most of the cash capital, and all of the cash profits of the B. A. C., had been lent to the London and Globe. Then it occurred to the presiding genius to enter into a partnership with the London and Globe and transfer half of the assets as well. Then the London and Globe paid off its debt for cash advanced with the shares of worthless companies which had not been liquidated when all their valuable property had been sold, shares which it had received for nothing in pursuance of the partnership idea. So that having milked the B. A. C. dry, it brought it out in debt to itself after a time-honoured fashion.

Why British Columbia should receive any discredit on account of all this is one of the things which cannot be explained. We are quite sure that no one in British Columbia had any idea that such things were going on or could go on, in a civilised country with an organised system of criminal courts and police. In Great Britain there is a most cunningly devised company law; a large body of skilled accountants are maintained in a chartered organisation to pass upon the accounts of companies and other bodies; every step of company organisation and action is carefully regulated by law; and shareholders are supposed to be under the ægis of names associated with the idea of death before dishonour in the minds of a credulous and trusting people. If the kind of thing we have been describing can flourish, not merely in spite of but actually by means of these ineffective safeguards which give rise to a sense of security without guaranteeing the reality, the sooner the whole system is swept away the better, and the shareholder left upon the native honesty of directors, with an appeal to some short, sharp, process of summary criminal jurisdiction in the background. It would appear that the attempts of law to protect him merely expose him to more cunning and highly organised rapacity. It is, however, not our business to agitate for changes in English company regulations, but merely to express the

heartfelt hope that companies of the character of the British America Corporation will hereafter choose any field for their enterprise rather than the mines of British Columbia.

Among minor causes of congratulation is the fact that the Standard Exploration Company had nothing to do with British Columbia. Its only connection with this country was the borrowing of £200,000 from the British America Corporation. But that seems to have been the purpose for which the B. A. C. existed, and for which one or two of the mines in British Columbia were exploited under its auspices.

The Standard Exploration Company started life with a number of properties in Australia, valued at £1,000,000, and a cash capital of £500,000. Upon the mines the amount of money expended was £168,000, and the amount of gold extracted was £86,709. So that all the money which left Mr. Whitaker Wright's gambling den in London to develop the resources of Western Australia, reached the sum of £81,000. The Standard Exploration Company lost £536,722 in gambling differences on the London Stock Exchange and made profits of £38,000. It is now in liquidation. In order to keep the office in Australia open and pay fees, taxes and expenses, Mr. Whitaker Wright out of his private purse recently advanced the sum of £1,000. But, strange to say, the shareholders, far from being grateful for that liberality and personal devotion to their interests, actually threatened to lynch both Mr. Wright and Mr. Macleay, the chief directors of the company.

In the English financial papers published on August 3rd, the following cablegram appears from the British Columbia manager of the Le Roi company: "Northport smelter now independent of strikes; plenty of non-union men to smelt 600 tons per day employed. This, and decision not to yield to demands of Rossland Miners' Union having been published, will be likely to influence early termination of strike here."

We should like to know what good purpose is served by giving the shareholders of the Le Roi company the impression as to the actual state of affairs in Northport and Rossland, unquestionably conveyed by that cablegram? It would not be accepted by anyone with reliable sources of information as giving a trustworthy account of matters at or about the beginning of August. The shareholders of the Le Roi mine have an absolute right to know the whole truth and nothing but the truth about their property. Both in connection with the reports of output to which we referred last month, and now in connection with the progress of the labour dispute in which the company is unfortunately involved,

we cannot forbear the comment that the shareholders have not been permitted to learn accurately the position of the property in which their money is at stake.

A notable occurrence of the month—especially notable in respect to its probable influence on copper mining development on the coast—is the acquisition of a controlling interest in the Britannia group of mines at Howe Sound by a syndicate of Montana capitalists, the majority of whom are closely identified with the copper mining industry in that State. The transfer was effected largely at the instance and upon the advice of Mr. G. H. Robinson, of Butte and Salt Lake City, a consulting mining engineer of very wide experience and of great reputation, who after examining and thoroughly sampling the property, formed a very favourable opinion of its value. Arrangements are meanwhile being effected to promote a joint stock company to take over, equip and place the property upon a productive basis. The preliminary operation contemplates the erection of a six hundred ton concentrator, to be followed later by the installation of a smelting plant when conditions warrant. The operation of the Britannia mine will be watched with the greatest interest, for on the success of the undertaking depends to a great extent the exploitation on a large scale of other promising properties not only in the immediate vicinity of Howe Sound, but in the other copper mining districts on the British Columbia coast. Already of late and possibly in consequence of the recent negotiations, enquiry for copper mining property has been frequent, and the next year or so may witness considerable development of these resources. Should, however, the Britannia by any chance prove disappointing we may rest assured that it will not be due to the too common cause of failure in this country— incompetent, extravagant or unskillful management. It may, in passing, be remarked that the sale of the Britannia and the purchase by a Montreal syndicate of large iron mining areas near Kitchener, East Kootenay, both of which transactions were consummated this last month, without numerous, though perhaps less important transfers of mining property during the same period being taken into account, do not point to the conclusion that British Columbia has ceased to be regarded as a profitable field for investment.

Particulars concerning the first clean-up of the season at the Cariboo Hydraulic mine have at length been received, and as the stock market quotations clearly indicate the returns are looked upon as decidedly disappointing by the public. The impression seems to have been general that the gold recovered from operations at the mine this year would have far exceeded the ag-

gregate production of the 1900 season, but this idea was utterly without foundation. As a matter of fact the 1900 yield was a very fair achievement, as nearly as possible representing what can be done under ordinary circumstances with the present water supply. It is true some delay was occasioned last year by delay in the delivery of machinery due to the impassable state of the roads at a critical time of the year, but such drawbacks must always be reckoned with and allowed for in estimating each season's operations. From what we can gather it is the intention of the management of this property not to add to the water-supply equipment of the mine for some time to come, but to rest content with a distribution of moderate annual profits which the present system renders certain under normal conditions. Unfortunately this year the conditions have not been normally favourable, owing to the lateness of the season which prevented adequate accumulation of water in the reservoirs. This, notwithstanding, the returns from the first clean-up are very nearly, if not quite, sufficient to defray all the expenses of operating the mine for the entire 1901 season, and as work will be carried on for at least another sixty days, the second clean-up which is invariably more considerable than the first, may be regarded as representing practically clear profit.

A circular has been issued to the shareholders of the Le Roi asking for proxies with a view to forcing Mr. Whitaker Wright to relinquish his position as a director of the Le Roi company. It will require a majority of three-fourths of the shares to accomplish this. The circular recites that "The disastrous results of the operations of many of the companies with which Mr. Whitaker Wright has been connected — for instance London and Globe Finance Corporation, Standard Exploration and British America Corporation — will be so fresh in the minds of the shareholders that further reference to this matter is scarcely necessary, but in face of the disclosures which have been made by the official receiver in relation to some of those companies, it is obviously impossible that Mr. Whitaker Wright can any longer retain the confidence of the general body of the shareholders of this company, and is therefore inimical to the company's best interests that he should any longer continue to direct its affairs, or to be identified in any way with its management. Moreover, it appears on inspection of the share register, that shortly after the last annual general meeting and the official return made to the registrar of joint stock companies, Mr. Whitaker Wright parted with the whole of his shares in this company excepting his bare qualification shares as a director, leaving him a holder of only forty shares of the nominal value of £200 in the company."

It is satisfactory to note that out of the dozens of Klondike companies, the great majority of which were

unmitigated "wild cats" — floated at the time of "boom" in 1897, one or two are not only still in existence, but are actually on a profit-earning basis. Both the Klondike Consols, Ltd. and the Klondike and Kootenay Venture Syndicate, have declared dividends this month, the former at the rate of 15 per cent. The Klondike and Kootenay Venture Syndicate's profit, however, was made not in mining, but in consequence of holding shares in the Klondike Consols. The showing of the Klondike Consols is seemingly excellent. The following being a statement of mining operations during the current year submitted by the directors: "Gross output of gold from winter working, £74,227, less expenses, £31,959, £42,268; from summer's working, from 7th to 31st July, £4,539, less expenses, £1,481, £3,058, a total of £45,326. Deducting London management charges, £1,000, the net profit to date for the current year is £44,326, and adding the balance of profit brought forward from last year, £13,767, the total balance at credit of profit and loss account is £58,093."

These figures go to prove that conditions for successful company enterprise in the Yukon are improving and it may yet become a lucrative field for properly directed effort of this character.

Mr. W. Blakemore, formerly manager of the Crow's Nest collieries, who is now representing the Montreal syndicate which lately purchased extensive iron area, between Arrow creek and Goat river in the Goat River Mining Division, entertains very optimistic views on the value and future capabilities of the property. According to reports the assays made on the ore and the work done upon the property, which consists of fifteen claims, have disclosed the existence of a continuous body of high-grade hematite iron. The actual width and depth of the ledge have not been determined, but sufficient work has been done to show that the body of quartzite in which the ore occurs is from 100 to 200 feet in width, and the geological formation favours the conclusion that there can be no doubt of its existence at considerable depth. The purity of the ore is one of its marked features, the best assay showing 66 per cent. of metallic iron, 2 per cent. silica, .03 per cent. sulphur and a trace of phosphorous; and the average of twenty assays taken from different parts of the property gave metallic iron 55 per cent., silica, 10 per cent. sulphur, .05 per cent. and phosphorous .01 per cent. From these figures it will be seen that the iron is at least equal to Lake Superior hematite in metallic iron, and lower both in phosphorous and sulphur.

In an interview published in the Nelson Tribune, Mr. Blakeman is reported as follows: "Whether the property will develop into a proposition large enough to justify the establishment of an iron smelter for the production of pig iron and steel rails for local consumption

remains to be determined. The quality of the ore is admirable for this purpose, and when it is remembered that the best coal and coke on the continent is produced within 100 miles or so, and that there is abundance of limestone for fluxing upon adjoining property, it will be seen that there is nothing to prevent the establishment of steel works if the property should prove to be of sufficient extent to justify this step. In the opinion of good judges such expectations are not thought to be too sanguine, and the effect upon the Province in the event of such being done would be relatively as great as that produced by the opening of the coal mines at Fernie and the introduction of cheap coal and coke. Pig iron is worth \$20 per ton to-day in British Columbia. Standard section steel rails are worth \$40 and light mine section steel rails \$60 per ton. Pig iron can be manufactured at Kitchener for \$10 per ton which would give heavy steel rails at \$20 and lighter sections at \$25, and castings and machinery used in the Province would be similarly affected and a great saving thereby made in the outlay for a mining plant. There is also the further possibility of an export trade, as there are no steel works upon the Pacific coast, and no other deposit of iron ore discovered which, without admixture, would produce similar metal to that of the Kitchener deposit.

If a steadily increasing ore production is any indication, there is a section of the Slocan district at any rate whose progress has not been seriously impeded by the decline in the price of lead and the other unfavourable conditions which have constituted the excuse for the closing down of so many of the silver-lead mines in the vicinity of Sandon, McGuigan and Whitewater. The difference may be explained that a large proportion of the mines round Slocan Lake produce "dry" ores which are in special demand by the local smelters at the present time. In consequence the ore shipments from this locality fall only two or three hundred tons below the total production of 1900, and by the close of the year it is possible that an increase of seventy-five per cent. will be recorded. The gain is largely due to one mine, the Arlington, which is making a wonderfully good showing, and it is now announced that a contract has been let to send a thousand tons of ore a month from this property to the Nelson smelter. Another steady producer is the Hewitt, while the Enterprise is also making a fair showing.

A return of fatal accidents published in the *Engineering and Mining Journal*, shows that the industry of coal mining is carried on in British Columbia with a greater regard for the safety of human life than in any Western State of the Union. There is a great difference in the percentage rate of fatal accidents between the eastern

and western portions of the continent. This may be explained by the rougher conditions prevailing and larger number of mines undergoing more or less experimental development where regulations to preserve human life have not yet acquired the full efficacy which experience gives. Over a period of ten years the average number of lives lost per thousand employed per annum was, in Colorado, 4.90; Indian Territory, 5.02; New Mexico, 7.71; Washington, 8.84, and British Columbia, 3.23. Utah we omit because an appalling disaster last year has raised its average out of all comparative significance. At the same time the British Columbia total was higher per thousand employed during 1900 than in any previous year since 1893. We hope that this does not indicate that the Province is going back in its splendid record in the matter of the regulation of coal mines. British Columbia is the only western territory in which coal mining is carried on, in which the loss of life records compare favourably with those of eastern coal mining districts. We may well be proud of that, and it is a position from which it is to be hoped the Province will never be obliged to recede.

We received the Memorial addressed by the Mining Association to the Governor-General in Council, just too late for comment of last month. It does not, however, call for any extended notice now as the matters with which it deals have been fully and freely discussed in our columns independently of, and prior to the publication of, this Memorial. We are not by any means in agreement with the conclusions of the Memorial, and still less so with the policy of distributing such a document broadcast. It is much easier to give a dog a bad name than to prove that the animal does not deserve it. We regret exceedingly that a representative body like the Mining Association should have weakened its case in reference to questions where criticism was just, by such extravagance of statement and method of publication as have characterised the Memorial.

The census returns for British Columbia show in a most remarkable manner what the industry of lode mining is able to accomplish for a country. The increase of population of nearly 100 per cent. which is disclosed must almost entirely be due to the development of coal and lode mining in the Province. The growth of lode mining has been almost coincident with the period of the census. The census returns in 1891 had just been sent in when the Slocan district had been discovered, an event which caused the first inrush of population. This, however, was an excessively fluctuating population. Really steady and permanent growth of population depends not on a rush to rich discoveries but on the metal output maintained. In this respect British

Columbia has only derived a steady income of people, so to speak, since about 1895. The magnificent development shown in the census returns really dates from not earlier than 1894 at any rate. The mineral-bearing territory now supporting this increase of population has by no means been developed to its full capacity, and new territory is always being added so that during the next ten years the rate of growth need not be expected to diminish even if it does not increase. In fact if, within that time, a new railway system opens up the northern part of the Province we may look for a great increase when its effect is coupled with the growing prosperity of the southern portion.

The two newest mining districts to attract a permanent population, East Kootenay and the Boundary, possess a great advantage over the portion of West Kootenay first opened up. They have by no means despicable agricultural resources. These resources are not sufficiently extensive to lay the foundation of an export trade in cereals, fruit or stock. But they are capable of supporting a considerable population engaged in feeding the adjacent mining towns with the fruits of the soil it produces. In West Kootenay the population is limited to those engaged in the business of mining, or manufacturing, or the distribution of goods. The internal prosperity of that section, great as it is, would have been much greater but for the large drafts upon the wealth produced which were sent outside to purchase the necessaries of life instead of being used to maintain a subsidiary agricultural population in the vicinity. A combination of agricultural and mineral resources builds up the most sustained and remarkable prosperity in particular sections just as the same combination leads to the development of rich and powerful nations; and where this combination is found the growth of population is rapid and the solid prosperity of all classes of the community considerably enhanced.

As we intimated a month or so ago, the certificated assayers of the Province are taking steps to organise an association on lines similar to those followed by other scientific or professional bodies. With this end in view a meeting is to be held in Nelson on Friday, November the 8th, next, when the matter will be thoroughly discussed. The move is a most commendable one and it is to be hoped will receive the support it deserves.

SOME SUGGESTIONS WITH REGARD TO DEVELOPMENT OF MINERAL CLAIMS.

By W. M. BREWER, M. A. I., M. E., ETC.

I MAY be an enthusiast on the subject of "development," but possibly nearly thirty years experience in mining camps may be considered sufficient excuse

for the strange views I hold. Whenever development is talked about in British Columbia one is met by the argument that the poor prospector has no means, and that outside capitalists would reap enormous rewards if they were to come in and develop the prospects which have been staked by the poor impecunious prospector. I realise, as well as anybody, the lack of financial ability of the average prospector to develop his claims, the number of which usually is legion. As a general thing in order to stake and record his mineral claim the prospector has been grub-staked by some local prospective millionaire. Sometimes the grub-staker is a man of means himself, who sees an opportunity to make money and increase the business of the Province by opening up a portion of its mineral resources; sometimes he is the representative of small syndicates who through this policy hope to have a discovery of a mineral-bearing ledge found for merely nominal cost. But usually the grub-staker in British Columbia appears to have been some man whose strongest desire was to have staked and recorded a large acreage of mineral-bearing ground, which he could offer to outside capital on very liberal terms (to himself) provided that outside capital would come in, sign a bond for a purchase price equal to such as is ordinarily paid for developed mines in the United States, or any other mining country, then uses capital to develop the prospect, take all the chances, and at the expiration of the bond hand over to the grub-staker an amount more than equal to the value of the property, after the capitalist has risked his money in proving conditions which the grub-staker did not have the nerve, or confidence, or knowledge of mining, to do himself. It is certainly remarkable that capitalists do not flock to this Province and race with one another to avail themselves of the opportunity extended to them by these grub-stakers. But it is a fact, nevertheless, that they do not do it, and although I may be accused of being a pessimist, my experience has taught me that the average capitalists who invest money in mining propositions has too much sense to rush in and spend his money in order to enrich the local grub-staker and procure for himself a property which, when he has taken all the chances and expended considerable capital, will not possess intrinsic value representing a greater amount than the purchase price demanded by the grub-staker.

Why men should think that foreign capitalists will follow a rule with regard to mining investments entirely at variance with any rule in vogue among ordinary business men with regard to any other line of business, I am unable to conceive. A man would not expect to put \$100 worth of hardware on the shelves and sell his prospective business and stock to a man in London for \$10,000, neither would a banker expect to charter a company without capital and then sell out to some Wall street banker for half a million dollars on the prospect of what might be accomplished in the far distant future.

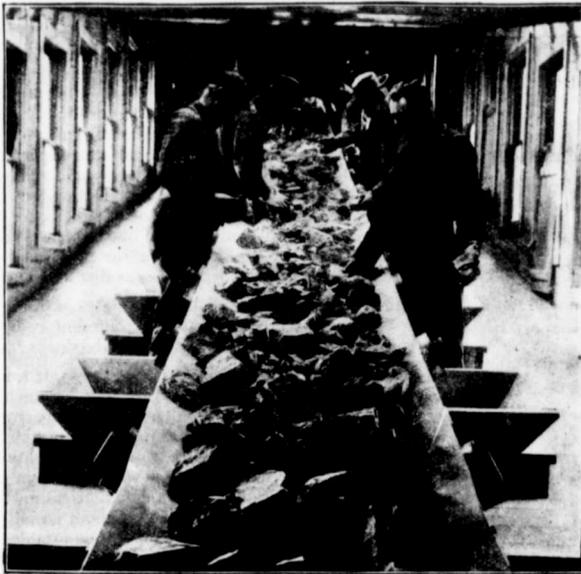
Why then should a capitalist who invests in mining propositions be expected to pursue any different course from that pursued in the ordinary lines of business?

I know comparisons are odious, but at the same time are very necessary at times to illustrate any argument, and in order to show the grub-stakers and prospectors of British Columbia that their present policy is not such a one as will eventually succeed, I would call attention to the Black Hills of South Dakota, which in area is probably the smallest of all the mining districts in the world, embracing as it does an area of about 60 miles long by 30 miles wide. This small district has produced in gold alone the following output from the year 1897: 1897, fine ounces, 256,410, value - - - \$5,300,000

1898, fine ounces, 276,730, value	- - -	5,720,000
1899, " 282,944, value	- - -	5,848,644
1900, " 320,513, value	- - -	6,625,000

Of this amount it is true that during the year ending June, 1900, one company alone, the Homestake, produced \$3,583,726 mill bullion from an ore yielding \$4.02 per ton, and from concentrates and silicious material \$85,398 additional. This property was purchased in 1877 by a California syndicate which paid only \$60,000 for the original Homestake mineral claims. Presuming that this property has produced every year 50 per cent. of the total output from the Black Hill district, then we have in the neighbourhood of \$3,000,000 production, from what? From mines which were actually developed and to a large extent owned to-day by local capitalists. Take the Golden Reward Company which, for several years past, has been the second producer of the Black Hills, it was originally organised by Col. C. W. Carpenter, manager for the Northwestern Stage Company; Seth Bullock, hardware merchant; Harris Franklin, wholesale liquor merchant; J. B. Hiecock, bank manager, and other business men. If space permitted I could give facts of a similar nature relative to nearly every successful mining company in the Black Hills district.

If such results can be obtained in that country there is no earthly reason why similar results cannot be obtained from organisation of business men of British Columbia, provided they will use the same judgment, conservatism, courage and intelligence, as has been used in the past and is being used to-day by the business men of nearly every other mining community in the world.



No. 2.

Whenever our own people show that they have confidence in their own country by investing their own money to develop the mineral resources, or a portion only of the mineral resources of the Province, to that



No. 1.

stage where outside capital can purchase on the basis which is their policy to purchase mining properties by, viz.: ore in sight, then and not until then will outside capital seek investment in the mining industry of this Province.

ROBINS BELT CONVEYORS AT BRITISH COLUMBIA COPPER CO.

THese cuts illustrate the use of Belt Conveyors built by the Robins Conveying Belt Company, of 18-21 Park Row, New York, at the sampling mill of the British Columbia Copper Co., just completed, at the Mother Lode mine, Anaconda, B. C. Cut No. 1 gives a general view of the plant. Cut No. 2 shows the sorting conveyor in operation.

From the hoisting tower seen at the back of the photograph, the ore passes over the grizzly bars, the fines dropping on to a 12-inch belt conveyor carrying them to the bins while the coarse pieces are delivered to the crusher. A 36-inch sorting conveyor, 111 feet centres, receives the ore as it falls from the crusher and carries it to the bins. The waste, which is picked out by the men, as shown in cut No. 2, is dropped into the chutes and falls on to a 12-inch belt conveyor which carries it back and delivers it to the 16-inch waste conveyor, 540-centres, which can be seen in the left-hand portion of the photograph, running up the bank. The sorting at this mill costs 6c. per ton. The Robins Conveying Belt Co. has just issued a largely illustrated book descriptive of important plants recently installed, which will be mailed to anyone applying to it.

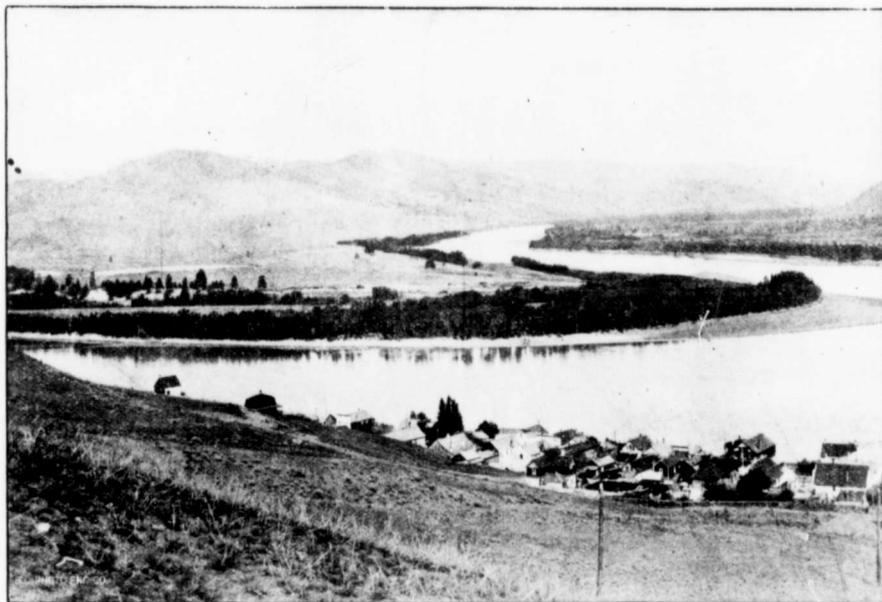
GOLD - DREDGING POSSIBILITIES ON THE NORTH THOMPSON RIVER NEAR KAMLOOPS, B. C.

BY JOHN REDMOND, E. M., KAMLOOPS.

(Queen's Prizeman in Geology.)

THE possibility of profitable gold dredging on the North Thompson river is a question which has been canvassed and advocated for many years. Hitherto dredging operations in British Columbia have been confined to the Fraser river and its tributaries, and the rapidity of current together with the heavy character of the gravel in these streams, have made gold saving, by dredging, an uncertain and rarely profitable process. Although the same amount of coarse gold is not found on the Thompson as on the Fraser river, the less turbulent character of the former stream, together

On the North Thompson river, Jamieson, Edwards and Louis creeks, as well as the Barriere river, are reported to have yielded gold up to \$10 a day per man with the primitive appliances then used, and up to the present day both whites and Chinese find gold washing on these creeks and the river bars profitable, although the wages earned are supposed to be small. The origin and occurrence of this gold is also a question which receives much attention. The speculative dredging expert with a few leases to sell, points with calm assurance to the fact that men with primitive appliances which only handle one cubic yard or so per day can make \$1.50 to \$2.00 per day, and this is only at the surface mind you; why, below the gravel must be so rich that he dares not estimate its value because he is afraid he should place it so absurdly low. Your expert will then ask you to estimate the profit-earning capacity of

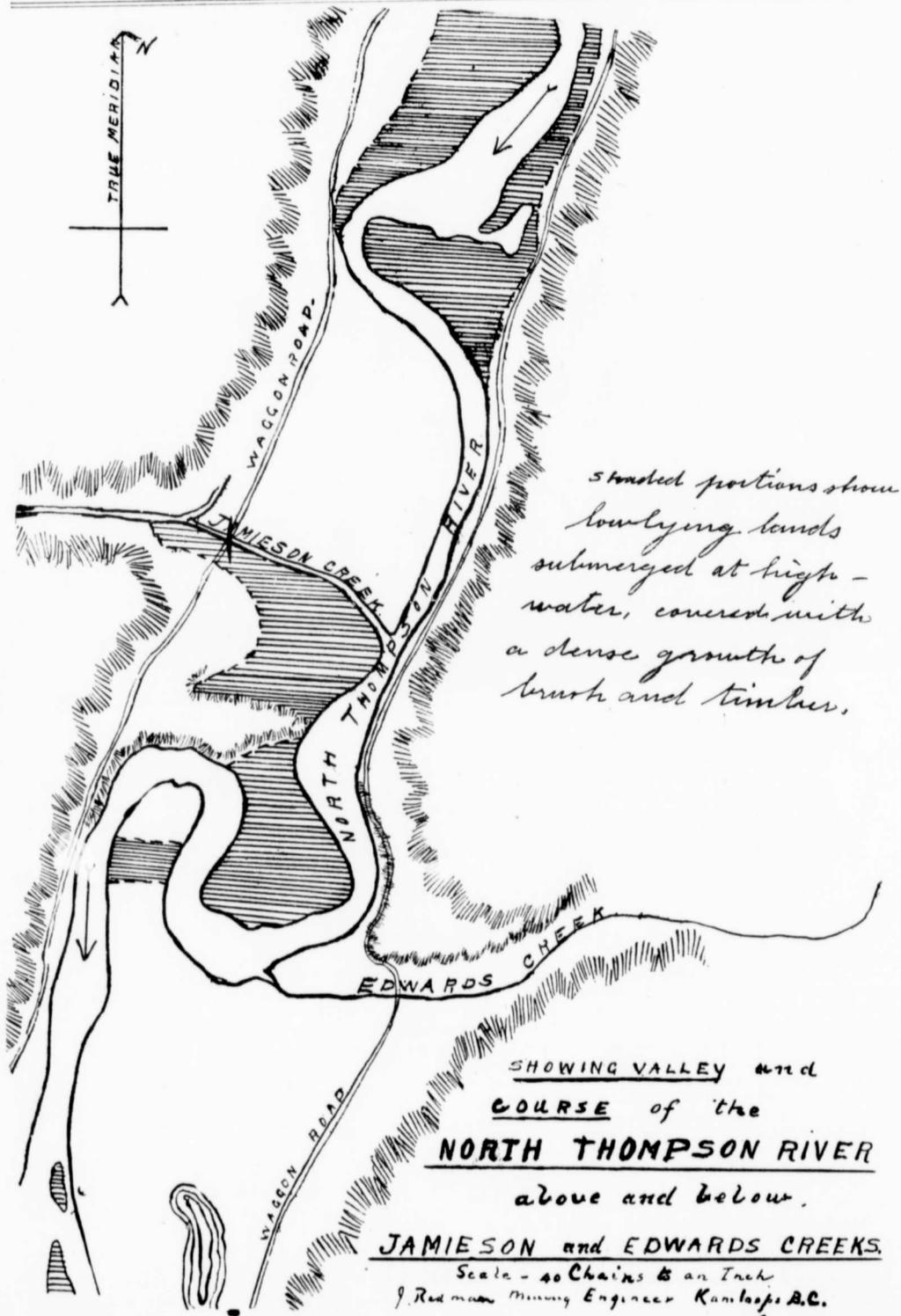


THE VALLEY OF THE NORTH THOMPSON RIVER AS VIEWED FROM KAMLOOPS.

with the indications of gold that can be obtained everywhere, lead to the belief that gold dredging on the Thompson river may be followed with better success than has attended the industry on the Fraser river. The current on the North Thompson rarely exceeds four miles per hour, and the gravel is of a character that makes dredging a simple and easy process. A dredge, built on the latest and most approved New Zealand pattern, is now on the point of starting operations, and as this season's work will be confined to testing the river bed at different points, its results are looked for with much interest. For the past two years dredging experts and speculative lease holders have paid great attention to this river, and as soon as it was known that a dredge was to be erected some eighty miles of the river was staked off for dredging leases. In the early days of placer mining large amounts of gold must have been taken out of the bars of the Thompson river and its tributaries.

a dredge which can handle 2000 cubic yards of gravel per day at a cost of less than five cents per yard. Supposing a man, as he has already shown you, can get \$2 out of one cubic yard. Of course the amount staggers you and you feel that there must be a weak place somewhere, but if you still refuse to put your little pile into such a good thing, the expert looks at you pityingly and thinks you are "no good."

The evidence and experience of the placer miners does not bear out the sanguine expectations of the "expert." The writer, besides being familiar with the North Thompson river and its tributaries, has further examined most of the old placer workings and constantly endeavoured to learn from placer miners who have washed on the bars and creeks of the Thompson for the last twenty years or more, what has been their experience, with a view to finding out all that was already known as a result of former work as to the nature of the origin of this gold. Old placer miners without exception state



*shaded portions show
lowlying lands
submerged at high-
water, covered with
a dense growth of
brush and timber.*

SHOWING VALLEY and
COURSE of the
NORTH THOMPSON RIVER
above and below.

JAMIESON and EDWARDS CREEKS.

Scale - 40 Chains to an Inch.
J. Redman Mining Engineer Kamloops B.C.

that they have seldom found gravel that paid to work below two feet in depth, and that by far the best returns were got by scraping around the larger boulders, or by working the top twelve or eighteen inches, and below that the gravel was too poor for a man with a rocker to make anything at all.

Now, placer miners seldom discover a gold-bearing river bar or creek without sinking on the same in the hope of finding richer ground below or on bedrock, and large sums of money have been spent by Kamloops people in sinking shafts on well-known, gold-bearing creeks, but these operations so far have all been strikingly disappointing, no better values than those at the surface having been found.

These experiences naturally lead to the conclusion that gold is very sparingly distributed in the immense

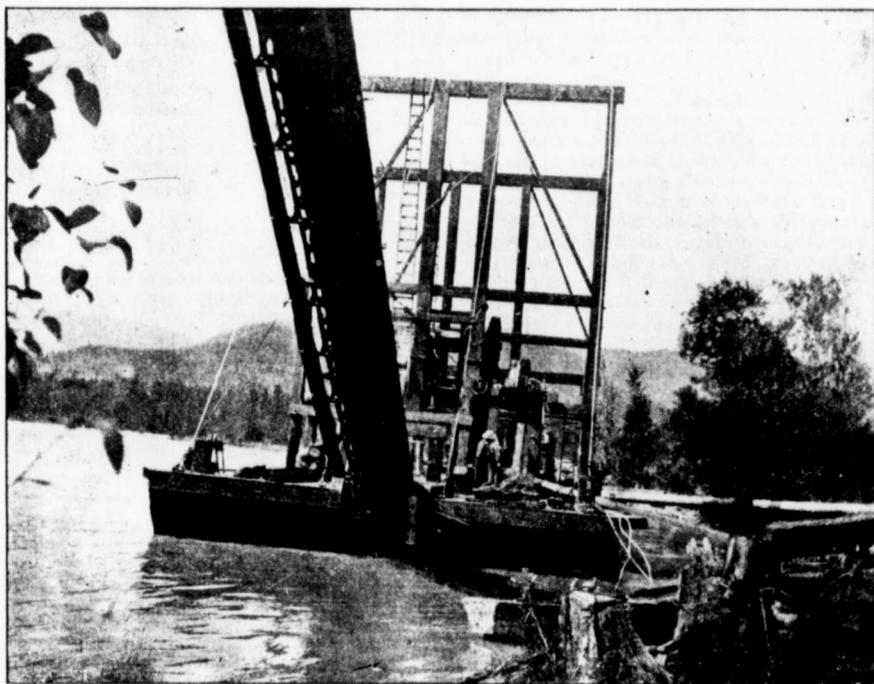
sion of the great trough-like valleys of the Fraser and Thompson, rich gold-bearing deposits must have been formed along these rivers."

"That the rich placers of the Cariboo date from this period."

"That a thick rib of the Cordilleran glacier must have followed the valleys and the pre-glacial river gravels must have been either removed or disturbed, and no pre-glacial placers have been found as yet either on the Fraser or Thompson."

"In the succeeding period when these valleys were refilled while in the flooded state, a certain amount of gold was brought into them in the drift and from further denudation of the rocks, but this gold was naturally very unevenly distributed."

"When the frost-glacial erosion of these valleys be-



THE NEW DREDGE, CONSTRUCTED AFTER THE NEW ZEALAND PATTERN, NEARING COMPLETION.
(The Photograph also shows the river at high water).

mass of gravels which partly fill the valley of the North Thompson, and that the river and creeks in washing away this gravel, concentrate this gold in their gravelly beds. It should be pointed out that over nearly the whole course of the North Thompson, from its junction with the Clearwater river to Kamloops, the river does not run on bedrock but is cutting its way through the drift-filled valley of its fire-glacial representative. The immense amount of gravel washed away by the present river in cutting this new channel will fully account for the great enrichment of the river bed.

As this subject was carefully studied by the late Dr. Dawson, I will briefly quote his opinions and conclusions as set forth in Part B, Annual Report—Geological Survey of Canada, Vol. VII, pages 321B-329B. The learned Doctor's conclusions may be summed up in the following quotations: "That during the original ero-

gan the rivers again concentrated the gold as they cut down through the drift filling, and the lowest and latest river channel will be the richest."

Judging from Dr. Dawson's deductions, and the experience of the old placer miners, the expectations of profitable gold dredging must be built on the basis of the gravel at and near the surface being the richest, and on the probability of the gravel below this being poorer in gold and not richer. The small islands and low-lying flats, shaded in the map, although covered with dense growth, are likely to yield profitable ground as well as the river bed itself. There is great probability that at the low cost at which gravel can be handled by a dredge that the low distribution of gold throughout the benches, may be sufficient to make working very profitable. The highest returns, however, ought to be got from the river and larger creeks between their high-water marks.

Over a year ago several dredging leases on the North Thompson river, and Jamieson creek, were purchased by T. L. Boyd, Esq., represented in B. C. by F. J. L. Tytler, C. E. This property is known as the Jamieson Creek-Thompson River Placer Mine. The dredge which has been erected on this property and is now about to start working, was built at a cost of \$50,000 by the Wm. Hamilton Co. of Peterborough, Ont., to the designs and under the personal superintendence of F. Satchell Clarke, of Vancouver. As will be seen from the photographs it is strongly built, and of the New Zealand endless-chain bucket style. Its minimum capacity is 2,000 cubic yards of gravel per 24 hours, it is equipped with patent appliances for handling large boulders and digging bedrock, the tailings being thrown out well behind and stacked. The power consists of one 100 h. p. surface-condensing engine for raising the gravel and stacking the tailings, and one 25 h. p. engine for working the winches.

The dredge will require a fuel supply of $4\frac{1}{2}$ cords of wood per day and can be worked day and night by a staff of nine men in three shifts. The cost of handling the gravel should not exceed four cents per cubic yard so that gravel carrying six to ten cents per yard will be sufficiently profitable. No thorough exploration of the property has been made beyond surface wash, the object in putting up this dredge is primarily to thoroughly test the ground, which is extensive enough to require several dredgers should the results be satisfactory. From surface examination over the river, benches and creek, results varying from colour indications to \$3.00 per cubic yard have been obtained. These are sufficient to raise very high expectations from the working of the dredge, and should the appliances for saving fine gold be perfect, it is hard to see how a dredge on this or almost any part of the river can fail to be profitable.

Although so much of the river is staked not much has been done towards systematic proving of the leases; most of the leaseholders being content to await the results of other operations. The best effort in this direction has been made by a local company called the Clearwater Placer Mining & Dredging Syndicate, which has leased some twelve miles of the river and one island bench claim, some seventy miles north of Kamloops. Prospecting on this property has shown average values over different areas of from ten to forty cents per yard, one feature being the considerable proportion of platinum present. The average depth of water on this property is ten feet, and the current running at the rate of three miles per hour.

It may well be supposed at first thought that the fact of this river and its tributaries having been worked over by miners for many years that the greater part of the gold will have been taken out. In this connection it must be remembered that miners have never had access to the river bed below low water, and that benches which yielded less than \$1.00 per yard would be left alone. As far as the writer can judge, except on two or three creeks, the amount of gravel washed over by miners will bear but a very insignificant proportion to the amount available for dredging.

CONDITION OF THE MINING INDUSTRY.

OUR article in the June number of the MINING RECORD has elicited a number of very interesting letters. Many of these have been simple endorsements of the attitude of the MINING RECORD, accompanied in most instances by very flattering references to

this periodical. Some contain original criticism of undoubted value. We cannot attempt to publish all the letters received, and have also been obliged from space considerations to abridge some of those we do publish. In several instances we have been requested to withhold our correspondents' names, consequently some of these communications have also been omitted, it is enough to say that we have received communications from all parts of the country, Victoria, Vancouver, Nelson, Rossland, the Slokan, East Kootenay and the Boundary district, and from men whose experience and standing entitle them to speak on any question pertaining to the mining industry in British Columbia. As some of the letters we reproduce refer to our article under the numerals of the paragraphs into which it was divided, we remind our readers that we examined eight hypothetical reasons for the check mining development has received, as follows:—

- I. Inadequate mineral resources.
- II. Exaggerated anticipations on the part of the investors.
- III. Extravagance and incompetence on the part of the representatives of investors.
- IV. Bad mining laws.
- V. Unstable relations between labour and capital.
- VI. Overtaxation and injurious incidence of taxation.
- VII. Extensive swindling on the part of company promoters.
- VIII. Abnormally high cost of production from inefficiency of labour.

It will be remembered that we rejected numbers I, IV, V and VIII, as being in any marked degree responsible, and placed the responsibility as follows:—

"If the foregoing analysis be in any sense reasonable the trouble in British Columbia seems to be mainly traceable to exaggerated anticipations on the part of investors; extravagance and incompetence on the part of the representatives of investors; overtaxation and injurious incidence of taxation, and extensive swindling on the part of company promoters."

With regard to "overtaxation" we must admit that a strong case has been made out in correspondence and statements elicited by the Mining Association's Memorial to the Governor-General in Council (with which we deal elsewhere) that while the gross levy upon the mining industry is large, it is not larger than the natural conditions of the country, and the difficulties of its development have made inevitable. It is also reasonable to suppose that as the mining industry grows, while the revenue will increase, the *per capita* burden of taxation will diminish. As for the incidence of taxation it is admitted on all hands that very grave defects exist and in the near future we hope, and have every confidence in expecting to see purposelike efforts made to remedy them.

It is needless for us to remark that we do not agree in all particulars with all our correspondents. That would be impossible as they differ among themselves. One gentleman appears to intimate that the MINING RECORD does not tell the truth about the mines. Since the MINING RECORD was first published this is the only occasion on which such an accusation has ever been made. To avoid falling into error occasionally is impossible, to deceive ourselves is a common failing, but to deliberately attempt to convey a false impression to others is something of which no man has a right to accuse this paper. If, however, this gentleman thinks we are deceiving ourselves in holding and expressing the utmost confidence in the mineral resources of British Columbia and its future as a mining country it is

his opinion; we shall retain our own. His letter which we quote in full contains a valuable suggestion as to the formation of a Chamber of Mines which would be fully representative of the mining industry:

To the Editor B. C. MINING RECORD.

SIR,—You ask me to express my opinion as to the causes which have led to the present unsatisfactory position of the mining industry in B. C. and particularly in reference to the difficulty in obtaining British and Eastern Canadian capital for development work. This is a very large order and I do not know that I am at all competent to express an opinion on the subject but I may perhaps offer some suggestions which will help the discussion of this question and which, at any rate, can be taken for whatever they are worth.

Do you not touch the core of the whole question in the first page of your article when you say "the promises made . . . to investors who have already supplied capital, have not been kept?"

But to follow your classification.

I. "Inadequate mineral resources."

This, you say, may be dismissed because there is no lack of mineral or mineral territory; but is it not one of the principal factors in this question that the mines themselves have not proved successful? Is it not the fact that a large number of mineral properties on which large sums have been expended in development, have failed to show minerals in paying quantities, whilst others have failed to produce the dividends promised. It is the returns which the investor gets in the shape of dividends which induces further investment, and have not these returns been disappointing?

Is not the list of B. C. mines which have paid a dividend very small?—very small indeed in comparison to the long list of companies floated. Is not the list of B. C. mines which are now paying expenses very small, and cannot the B. C. mines which have declared a dividend this year be counted on the fingers? Is it not better, if you are really trying to get at the bottom of this question, to face the whole situation and tell the truth—the whole truth? Is it not the fact that British Columbia mines have been more boomed, and with less satisfactory results, than perhaps any other mines in the world; and is it not natural that such booming should come home to roost with the inevitable reaction?

Passing over II and III and coming to IV—"Bad mining laws." Is there much to find fault with in the mining laws of B. C. (except where they interfere between capital and labour) other than that they are always being tinkered with? This question of interference between capital and labour, brings us to V. "Unstable relations between capital and labour." Unfortunately the politician has interfered between capital and labour, with the usual result of injuring both. Perhaps it is an inevitable result of our political system where the representative of a mining division is naturally returned by the labour vote, the labour vote in a mining camp being always in the majority; and the agitator controls the union vote. So we see at every session of the Provincial Parliament some vexatious clause against the interest of capital passed in order that the politician may justify his existence to the agitator and earn his re-election when the time comes. The miners are now feeling the results of the disturbances in the difficulty in obtaining work; the prospector feels it in the difficulty in selling his claim; and the merchant feels it in the general depression. No experienced mining engineer or mine manager grudges paying good wages to good miners because he knows that that means real economy. A good miner is a skilled mechanic and earns good wages, but unfortunately a large proportion of the so-called miners are not able to earn good wages because they have no right whatever to be called skilled workmen. We do grudge being forced by a combination between the politician and the Trades' union to pay high wages for short hours to unskilled labour. Miners working in wet places, or in bad air, or any other disadvantageous circumstances, did not work more than eight hours and needed no government eight-hour law; but a law compelling all unskilled labour in a mine to work only eight hours is not beneficial to the miners, and by increasing the cost of production and so limiting the field of profitable mining, is detrimental to the interests of capital and labour.

VI. "Overtaxation and injurious incidence of taxation." Taxation levied upon the gross output does, in some instances, retard the development of the mines, especially where a small property is putting all the money received from the sale of its ore back into the mine in development work or where the margin of profits is so small that the amount of the taxes makes a serious difference in the question of profit or loss.

One thing is lacking in British Columbia which would materially assist the mining industry, and that is a general organisation in which all the miners of the Province should be represented. A Chamber of Mines which would really represent all the companies and individuals actually owning and working mines in B. C. At present, unfortunately, such organisations of mine owners as exist are small local ones which carry little or no weight and which are unable to profitably consider broad questions affecting the general mining industry or to speak with authority as representing that industry. These local organisations are more or less jealous of each other and of their local centres, and the leading members apparently prefer to be officers of small ineffectual so-

cieties rather than simple members of one general and useful organisation.

The prospector will have to learn to make reasonable terms such as will justify capital being spent upon the development of prospects and then there will not be so much difficulty in inducing capital to put money into development. At present the prospector practically says: "I have a prospect with a certain surface showing but I have no confidence in its proving a mine and will take no risks whatever." "I am, however, willing that a capitalist should spend a large sum on developing and proving my prospect, on condition that he pay me at the end of the bond the full value of my prospect when proved to be a mine; and for this privilege he shall pay me 10 per cent. of its ultimate value together with sundry other payments which he shall make from time to time, and before he can determine whether the prospect is of any value or not."

It would assist the development of the mining industry if the newspapers and other publications would tell the simple truth about the mines. Such boom talk as you indulged in in your June issue with regard to the lead industry, and to which I called your attention at the time, damages the mining industry instead of helping it. No doubt, if you told the truth about the mines you would lose some subscribers, but I think you would reap the benefit in the end and I am certain that the mining industries would be benefited.

All these things may hinder and retard the development of a mining country but they will not prevent good mines being worked and that brings us back to the heart of the whole question—show mineral properties which will make dividend-paying mines and let the mines all ready developed pay dividends and there will be no lack of capital either for purchase or development.

Yours faithfully,

LESLIE HILL, C.E.

Vancouver, 24th July, 1901.

In marked contrast to the foregoing letter is one from a well-known official from which we publish merely an extract:—

DEAR SIR,—Accept my humble meed of praise for the able editorial in last RECORD, every line of it true as Gospel. Seldom one concurs entirely with everything written in an editorial, especially the insufferable twaddle served out to us by the general press of this Province. You should in future adopt as the motto for the RECORD, that saying by my deceased countryman, John Knox, the Scotch reformer. "I am in the place where I am demanded to speak the truth, the truth therefore I speak, impugn it whoso list." Chances are you will get any amount of abuse from certain quarters for that article, but I suppose that is the fate of everyone that fills the editorial chair. Anyway, you keep straight on in the track you are in now.

There is no note of hesitation about the following:—

II. MORTIMER LAMB, ESQ.,
Managing Editor B. C. RECORD.

DEAR SIR,—Yours of the 8th to hand to-night, I read your article carefully in the RECORD. The reasons for the apparent depression in the mining industry in this Province are:—1. Incompetence in the management of mines. 2. Swindling on the part of company promoters. 3. Overcapitalization. 4. Barren streaks and faults in many of our high-grade silver-lead mines.

Incompetent mine managers and swindling promoters, in order to overcome their shortcomings, have raised false cries regarding the inefficiency of labour, the unfairness of our system of taxing mines, and bad mining laws.

I have lived in the Province since 1888, and I know that no mine has been closed down in Kootenay or the Boundary because of any other reason than one or the other of the four mentioned above. Go through Eastern Canada, where apparently every other man met has been bitten by investing in the shares of companies like the War Eagle and the Payne, and you do not hear a word about bad laws and overtaxation. It is notorious that the War Eagle has been, and is now, the worst-managed company in British Columbia, besides it is a well-known fact that its lower levels are barren. The Payne has no ore in sight, hence the fall in the price of its shares. Our mining laws are liberal—too liberal, in my opinion; for I believe that mineral ground should be worked, and not held for someone else to prove its worth by working adjacent ground.

Our tax of 2 per cent. is practically the same as 3 per cent. in Montana. The Ymir mine and the Payne mine, taking their own reports, pay less than \$200 a year more under our rate than they would if the rate was the same as in Montana.

There are thousands of dollars of capital coming into the country now, but it is not coming in for investment in shares of mismanaged companies or overcapitalised ones, nor for purchasing undeveloped wild cats at mine prices.

Your paper can do a world of good, but don't harp on the mining laws and overtaxation. Dividends are what will bring capital. One or two lucky strikes will bring more of it. Throw the soup into the

"scab" managers who cannot see that a miner is a man and entitled to fair wages and fair treatment, and the harpoon into the politicians that by chance, have become managers of several of our newspapers.
Nelson, B. C., July 10th, 1901.

The next letter we reproduce takes the view expressed in the Mining Association's Memorial very strongly. It illustrates how doctors differ. One correspondent says the trouble has nothing to do with politics, the other that politics have everything to do with it:

H. MORTIMER LAMB, ESQ.,
Managing Editor B. C. RECORD,
Victoria.

DEAR SIR,—Re Mining Industry. Owing to absence in Toronto I have only recently received your letter of July 5th, in reference to the editorial in the B. C. RECORD on the subject of the mining industry and its burdens.

Perhaps the strongest support I could send you in reference to these burdens is the memorial now laid before the Governor-General in Council, a copy of which I enclose. It is simply amazing that the facts therein stated, which are well known to mining men and which have from time to time been brought to the notice of our Provincial Government, have not yet induced the Government to take the matter up vigorously, by repealing injurious legislation, and by otherwise attempting to foster the greatest industry of British Columbia.

To say that our Government and our Legislature have been apathetic is to put the case against them far to mildly. They have shown energy enough, but always in the direction of hampering the industry instead of assisting it. They have apparently allowed themselves to be dominated by the so-called Labour party, and have wholly neglected their obligation to protect the interests of those who were willing to invest their money in our Province. They are ready enough to pass Alien laws and to prevent mine owners and others from supplying themselves with labourers from the other Provinces of the Dominion; but they are not at all averse to permitting our miners to remain in slavery, under the dictation of an alien organisation known as the Western Federation of Miners. Such a state of affairs has brought the city of Rossland face to face with ruin — a fact which entails no loss whatever on the Western Federation of Miners, but which may result in the wiping out of one of the best business centres in British Columbia. The question is, not whether such a state of affairs is right but, how long are we going to stand it?

Rossland, July 26, 1901.

The remaining letters which we give are emphatic endorsements of the position taken up by the MINING RECORD:—

DEAR SIR,—I have just received your favour of the 5th July — forwarded—re the "Conditions of the B. C. Mining Industry." I have not the paper at hand, but read the article before leaving Spokane.

I believe you have the situation "sized up" about right. I think, however, that the small investors in B. C. stocks ("wild cat" and properties which may be good, but in which dividends were promised before they could have any earthly show to pay them) are doing more at present to injure the mining industry in this Province than any other cause or combination of causes. These investors have been inveigled by unscrupulous promoters, (who know how to mine the public only) through false promises of all kinds, and these promises all having failed to materialize, they naturally, knowing practically nothing of mining, run down and condemn the country in most bitter terms. All of which has a most disastrous result amongst people who would care to invest in really good propositions. In this section, legitimate mining is in a healthy condition. When the general public learn to distinguish between mining and manipulating stock a number of idle properties of real merit will be again worked.

DEAR SIR,—With regard to the matter of the marked sections under which you describe the present state of mining in this Province. I believe you have pretty well covered the ground. These adverse conditions exist and it will take some time and a good deal of merit to modify them.

The causes of depression and reaction given under sections 2, 3 and 7, seem to be common in all new districts. There is a foolish over-estimation combined with unsetled conditions and want of proportion, which are used by unscrupulous persons to encourage gambling. It is a thankless undertaking to point out disaster during booming times. Hence these periods of false prosperity come to their natural end about the time investors begin to look seriously for dividends.

War Eagle shares selling at 20 cents to-day are a more hopeful sign for the future, than War Eagle at \$3.60 were two years ago. We are on a firmer foundation now than we were then. The mining future is more in the hands of conservative men who will gradually work out the salvation of the different districts on their merits as producers. It is a

healthy and hopeful sign, that the present field is an unprofitable one to the host of incompetents, fools and rascals who overran the Province during the so-called good times.

As some high authorities have stated, a certain amount of booming is a good thing and induces speculation and money to make mines where conservative judgment would be found unwilling to invest.

Sections 4, 5, 6 and 8, appear to be somewhat dependent upon one another. In looking after the interests of the proprietor, miner and labour element, our representatives have not very well guarded the service from which all these draw their living. Even if we escape from the evils of sections 2, 3 and 7, and reach the stage of production at a profit to the investor, it is still a very uncertain interest on the investor's money, liable to be wiped out by tax on production, stoppage of production, and high costs of mining which cannot be lessened to meet a lower price for the products such as silver, copper and lead, which will vary sufficiently to make a margin of profit disappear without any recourse in the matter of reduced costs of mining.

Concerning sections 1, 3 and 7, about all we can do is live down our bad reputation, the legacy of those who exploited B. C. mineral resources to our great loss. The evil is not rampant at present, and about the best education the public can get is less wild cats and more dividends. It is one thing to believe we have the resources and quite another to believe these will be worked to the best advantage. There is a loss of faith built upon too much knowledge which has been wrongly applied.

In the matter of sections 4, 5 and 8, there are present and future troubles. If these evils were to remain as they are they would be bad enough, but might be provided for, but we are not sure that they may not become worse. We cannot trust our representatives or the representations of those in the community who are not qualified to see that the only source of prosperity lies in the assured investment of capital with a reasonable expectation of receiving interest upon it.

The following letters contributed by Mr. E. Philip Gilman, A.R.S.M., F.G.S., and W. M. Brewer, M.E., special correspondent of the *Engineering and Mining Journal* for British Columbia are, with the permission of these gentlemen, published over their signatures. Their contributions to the discussion are interesting and exhaustive and both letters contain suggestions of value.

To the Editor B. C. MINING RECORD.

DEAR SIR,—Having asked me my opinion and requested me to express my views on the leading article appearing in the July number of your publication and entitled "Unsatisfactory conditions of the mining industry and its causes."

I now have pleasure in carrying out your request. It is my conviction that the sole reasons why B.C. is in dis-favour with the British public, as a field for mining investment, and consequently why both promoters and capitalists hold aloof, are:

Firstly, that the *investing public* have had little or no return for the money, which in the past they have already put into this country, and

Secondly, that the *speculative public* have found B. C. shares to be exceedingly bad counters on the gambling cloth of the Stock Exchange. The causes and explanation as to why investors have not made money are not far to seek.

In the first place a large number of B. C. companies have failed and for the following reasons:

I. Overcapitalisation. The public has been misled for the benefit of the promoters and vendors. Large sums of money having been absorbed by the latter, which undoubtedly should have gone into the mines, whither the confiding public naturally expected them to go.

Insufficient money, in proportion to the capital subscribed has been reserved for working capital.

Nearly all companies brought out on the other side have been absurdly overcapitalised, and where many mines would have paid good returns on a \$50,000 or \$250,000 capitalisation, those same mines have been rank failures, from the investors point of view, when called upon to carry a million or more.

II. Bringing out big companies on mere prospects. Syndicates should first open up and develop these and then when the character and nature of the deposits have been fully determined, you can go to the public for all the money you want, in order to work the mine on a large scale and install the necessary plant and machinery.

III. Smelters, mills, treatment, plants, etc., have been erected before the quantity and quality of the ore reserves have been sufficiently proved.

There is no excuse for this sort of thing, but very many cases will occur to the reader where this has been done.

For example: A ledge which was free-milling on the surface may, after sinking a hundred feet, become base. And then, if on the strength of the mere indications, an expensive stamp mill was rushed up, the latter naturally becomes useless.

Don't, for goodness sake, put up your treatment plant until you have, at the very least, one full year's supply of that particular class of ore ahead, for which the contemplated plant is intended.

This applies equally to stamp mills, cyanide works, smelters and concentrators.

IV. Attempting to run a mine from London and putting in charge inexperienced or injudicious management, and employing perhaps a large, expensive and totally unnecessary staff of officials."

To run any ordinary mine and until that time when it becomes a producer, you merely require: (a) A good practical manager on the spot, who will attend to the business end of affairs and direct all operations. (b) A first-class mine foreman, who will carry these out. (c) You may also possibly want a third man to serve in the capacity of assayer, surveyor or bookkeeper, as may be required. These three officials, outside of the actual miners, are positively all that are at first necessary.

V. The lead market. I do not lay much stress on this phase of the question. B. C. is not the only sufferer, as the present low prices for this metal, practically affect every other lead-producing country. The tax levied by the United States government on lead imported from B. C. is merely, to my mind, an inducement for the establishment of a refining industry of our own, which should now be rendered possible by the \$5 bounty on refined lead, recently granted by the Dominion government.

In connection with this matter I eagerly look forward to seeing established, in the near future, a silver refinery and to hear of some live corporation getting down to business, for the purpose of exporting this metal direct to the Orient.

VI. I do not think much fault can be found with the Mining laws of this Province. Excepting, however, some of the methods of taxation which, no doubt, would bear a good deal of adjustment.

VII. This brings me to a very important question, namely, what may be called the "dog-in-the-manger" system of holding down large mineralized areas by means of the present method of Crown grants. By this system a very large number of exceedingly promising properties are absolutely tied up for one or other of the following three reasons:

(a) The owners of Crown grants either lack the funds to develop their properties,

(b) Or, possessing the necessary funds, they will not put up the money themselves, preferring to hang on until the particular district in which their property is located, becomes opened up and proved at somebody else's expense. Now unfortunately, it is a peculiar phenomenon that the "somebody else" is usually afflicted with precisely the same ideas, and consequently whole districts may be lying idle and unproductive for long periods.

(c) Or else the owners have such extravagant ideas of the possible values of their as yet usually totally unproved properties, that they absolutely refuse to entertain all reasonable propositions by third parties who are willing to risk their money.

No mining laws are perfect and it is very easy to find fault and to criticize. I feel, therefore, that anyone doing this should at least attempt to supply a remedy.

The following suggestions thrown out by the writer may consequently serve as an attempt to do so and should be looked upon merely as hints which I sincerely trust may be the means of at least promoting a profitable discussion.

1. Every recorded mining claim should be subject to an annual assessment of \$100 or its equivalent in work, as at present. But this levy should go on indefinitely. Of course if a man in any one year does work to the extent of say \$500 or any given claim, his title would be secure for the ensuing five years.

2. No company or individual should be allowed to hold more than ten full claims in this manner, but should be taxed say \$25 a month for every additional claim over and above ten.

3. A claim once located, described and recorded, should retain the name ever afterwards, no matter how often it may change hands or be again taken up.

This would prevent the present vicious system of "midnight re-locations" which, furnishing as it does the same piece of ground with a brand new name and description, robs the government of its legitimate annual assessment tax in the shuffle.

4. The \$100 assessment on each recorded claim should be paid by a fixed date, say the 1st Nov., or its equivalent in work recorded before this date. But claims staked, recorded or taken up from the government within the two months preceding that date, would have till the 1st of Nov. of the following year.

5. Abandoned claims, or those upon which the assessment has not been paid, or work done by the date specified should at once, *ipso facto*, revert to the government. The latter thereupon holding quarterly or half-yearly, public auctions at which any such claims should be sold to the highest bidder with a reserve price of say \$25 per claim.

6. Directly steady *bona fide* work is being done on any claim or group of claims, all taxes of whatsoever nature should at once be remitted, until such time as that mine becomes a shipper, when a tax, which remains to be agreed upon, should be levied on the gross returns.

This tax would probably be enforced on a sliding scale; discriminating between high and low-grade ores. This would directly encourage

the exploitation of our big deposits of this character. The reverse being at present the case.

Before concluding I would like briefly to refer to the catalogued eight hypothetical reasons advanced in your July number in an attempt to lay bare the reasons of the unpopularity of B. C. mines.

I. Inadequate mineral resources.

I have no hesitation whatever in saying that the mineral resources of this country are enormous. Speaking broadly, these resources are quite unknown. The extent of their potential and future development being realised by comparatively few. It is, however, unfair and most unreasonable to expect that in a country affording such a lavish display of mineralized outcrops, every promising showing should produce the traditional "pay ore from grass roots."

How many really first-class prospects which have been intelligently opened up to a reasonable depth have failed to show good ore?

II. Exaggerated anticipations on the part of investors.

The *bona fide* investor has certainly not received fair treatment. While the "exaggerated anticipations" of the speculative investor have almost invariably failed of realisation.

III. Extravagance and incompetence on the part of the representatives of investors.

This has already been alluded to by be.

IV. Bad mining laws.

The same applies to this clause.

V. Unstable relations between labour and capital.

The existing conditions prevailing between these two classes has to my mind a purely incidental and quite unimportant bearing on the real issue at stake.

VI. Overtaxation and injurious incidence of taxation.

Already referred to.

VII. Extensive swindling on the part of company promoters.

This sort of thing goes on all the world over and though, no doubt, British Columbia has been a great sufferer at the hands of these freebooters, depredations of this nature are being more and more restricted.

VIII. Abnormally high cost of production from inefficiency of labour.

This question calls for the criticism of mine managers and I will not attempt to deal with it here. In conclusion, I would like to take this opportunity of saying that you deserve every credit for the impartial manner in which your publication attacks questions of this nature.

Your most conservative statements regarding this country's wonderful resources, being singularly free from injudicious boom statements and colouring instigated by the enthusiasm with which you, no doubt, together with the writer, regard the future of British Columbia.

I am, yours truly,

E. PHILIP GILMAN, A.R.S.M., F.G.S.

Victoria, B. C., August 1, 1901.

H. MORTIMER LAMB, Esq.,
Victoria, B. C.

DEAR MR. LAMB,—In accordance with your request to discuss your article on "The unsatisfactory condition of the mining industry and the causes," published in the July number of the MINING RECORD, I take this my first opportunity to reply.

Personally I think that at the present time the less discussion in the public press on this question the better, because I do not believe that such a discussion will tend to make conditions, with regard to interesting capital into British Columbia, any better than they are at present. If the conditions are as bad as you state them to be, then I should be in favour of the Minister of Mines calling a convention of all mine owners, and those directly interested in the mineral industry in this Province, to meet at some convenient and central point and thresh the matter out to a finish, accepting the opinion of the majority of those interested and acting thereon. I believe that any dirty linen that we have to wash in this territory is better washed within our own boundaries, and kept to ourselves, rather than sending it out to the world at large.

You have given eight heads as reasons for the so called bad odor in which British Columbia stands. These I will take up briefly in rotation.

1st. Inadequate mineral resources may be dismissed without any discussion, because of my own knowledge, I know there is no foundation to such a reason.

2nd. Exaggerated anticipations on the part of the investors. This I should also dismiss without any discussion, because from time immemorial some investors have shown poor judgment as well as exaggerated anticipations. There is no remedy that I have ever heard of, or ever expect to hear of, for these conditions.

3rd. Extravagance and incompetence on the part of the representatives of investors. This reason I should also dismiss with very little dis-

cussion, because if an investor is such a fool as to employ incompetent representatives I do not know how you can prevent him. Some men will only learn experience after purchasing it and I have always felt inclined to let them make a purchase, because I have always found that such men will never listen to arguments or be willing to take advantage of experience they could gain from precedents.

4th. Bad mining laws. Since I first came to the Province, in February, '98, I have maintained at all times, that the Mineral Act then in force was, in many respects, a better law for a miner to live under than the laws in vogue in other mining districts in which I have resided, but at the same time I have always advocated one amendment and that was that no re-staking should be allowed, in other words, that the laws should be such that if the owner of a mineral claim did not perform the statutory amount of assessment work, that claim should be considered abandoned and open to re-location by any other than the original owner or his agent, either directly or indirectly. I would suggest as an easy way of providing for the administration of such a law, that one certain day, say the first of May or the first of June, should be set aside as Representative Day, throughout the Province for all lode mines, and that if the locator, or his agent, was not on the ground on that day and did not stay there a sufficient length of time to perform the assessment work that the claim should then become the property of the Crown, and all stakes placed on it previous to that date become null and void. Such an amendment to the Act as this would compel men who own a number of claims to have them represented and have the work performed, if they desire to continue to hold them. Such a law as this is, I believe, to-day in many of the western mining camps of the United States and is found to work satisfactorily.

5th. Unstable relations between labour and capital. This is a question which, in my opinion, will become settled without public discussion or any action by the government. It is a condition which has existed to a greater or less degree in every country in the world, and always will exist as long as labour unions continue to employ walking delegates to receive salaries for promoting agitation, instead of being compelled to work at their trades the same as the ordinary members of the union.

6th. Overtaxation and injurious incidence of taxation. With regard to taxation in this Province, I believe that the only equitable method of taxation, is by placing the assessable value on the surface and improvements of all mining ground. I am strongly against taxation on the output of any industry. I believe taxation should fall equitably on all owners of property regardless of output. If a man owns property and does not like to work it, then he should be compelled to pay taxes, his property being assessed at a fair valuation in accordance with its actual value. By such a system of taxation the non-producer would be compelled to provide his share of the revenue necessary to carry on the government equally with the producer. In fact, if such were possible, I would prefer to tax the non-producer rather than the producer.

7th. Extensive swindling on the part of company promoters. This reason I am entirely unable to discuss, because personally I am not cognizant of any such acts. I may have heard rumours of such a condition existing, but I cannot accept these as facts.

8th. Abnormally high cost of production from inefficiency of labour. This condition, if such exists, is one which will not be cured by discussion. The only cure for it lies in the hands of the employer. If he is willing to pay for inefficient labour, then I do not know of any law that could be passed to prevent him. I do know that there are a large number of miners in British Columbia who are not entitled to be considered as thoroughly experienced hard-rock miners, but I take it that when any of these obtain employment, if the foreman or superintendent does not adopt the method within his power to get rid of such by prompt dismissal, such foreman or superintendent can blame nobody but himself.

My own idea with regard to present conditions in British Columbia and the chief reason that more capital does not seek investment within our Province is merely due to lack of development, and that whenever the claim owners in this Province appreciate the fact that the developed mine can be sold while the prospect cannot, and, appreciating such fact, buckle right down to work and develop the properties they have acquired that then, and not until then, will outside capital seek this Province as a field for investment.

Yours faithfully,

WM. M. BREWER.

COAL MINING IN THE NINETEENTH CENTURY.*

By W. BLAKEMORE, M. E.

THE greatest minds have characterized the spirit of the 19th century as "the apotheosis of materialism," a conclusion with which all careful students of history will be disposed to agree. This bald statement takes no account of the concurrent advances which

have been made in the intellectual and ethical world, but it none the less strikes the dominant note of the greatest of the centuries.

Among the many contributing causes to an era of material prosperity, unparalleled and undreamed of in the history of the world, there has been no more potent factor than coal. We have been wont to indulge in scientific reverie, and with the help of the masters of geology, to conjure before our mental vision the primeval forests, with their gigantic fauna and their luxuriant flora, brought before us in all their original beauty, by the imprint of the rocks. Then we have thought of the desolation which spreads over the face of the earth, the result of mighty convulsions, the shutting out of sunlight, the envelopment of water and vapour, and the compression of plant and tree into the black band of carbonized material, which we call coal, and after lying imprisoned and protected between the ribbed strata of the earth for countless ages, it is not too much to say that in the nineteenth century only has this priceless treasure been unearthed and chained to the car of the material progress of the race.

STATISTICS OF COAL PRODUCTION.

At the beginning of the century the total output of coal throughout the world was computed at 18,000,000 of tons, of which 10,000,000 were produced in Great Britain; the remainder, derived almost entirely from surface workings, was the product of Germany, France, Belgium and the United States. In the last year of the century the total production is estimated at 780,000,000 tons, to which the following countries were the principal contributors, at the latest date at which definite statistics are available;

	1800.	1899.
Great Britain	10,000,000	220,085,000
United States	200,000	226,553,564
Germany	300,000	135,824,000
France	800,000	32,933,000
Austria	400,000	37,786,000
Russia		12,862,000
Japan		7,000,000
Canada		4,565,000
Australia		5,091,000
India		4,933,000

But those figures will not convey a correct impression of the ratio of progress during different periods of the century, unless it is pointed out that in 1875 the annual production was only 260,000,000 tons, so that the development of the last quarter of a century has been so marvellous as to completely outstrip any previous epoch in our history.

DEVELOPMENT IN UNITED STATES.

Whilst dealing with tonnages we must not overlook a fact which is scarcely less striking than the one just mentioned, and that is that since 1875 the development of the coal industry in other countries than Great Britain, and more particularly in the United States, has progressed at a rate which, by the end of the century, has left the Mother Country in the rear. In 1875 the output of coal in the United Kingdom was 125,000,000 tons and in the United States 48,000,000 tons. Last year's estimates give in the former 225,000,000, and in the latter 275,000,000. Without drawing any extravagant conclusions from these figures, or entering into a discussion of the question of fiscal policy which is assuredly forcing itself upon the attention of the British Empire, it is at least permissible to suggest as a matter

*A paper read before the Applied Science Society of McGill University.

for serious consideration, whether the supremacy which Great Britain has enjoyed in the commercial and industrial world, throughout and until the close of the nineteenth century, is not seriously threatened by countries which in many respects are at present more favourably situated for competition.

RISE OF THE STEEL TRADE.

And alongside the figures already quoted must be taken the statistics of a development which is almost entirely confined to the last thirty or thirty-five years, the manufacture of steel which has so largely replaced iron in the markets of the world, and of which the United States produced last year no less than 10,890,000 tons, Germany 6,780,000, and Great Britain only 5,100,000. It may be interesting to record that the world's production of pig iron in 1900 was 41,750,000 tons, and of steel 27,500,000. In this connection it should be noted that last year Canada produced about 95,000 tons of pig iron, and 30,000 tons of steel, a very modest total, but still a nucleus of the millions that we may reasonably hope to produce in the near future.

To show what an important part coal plays in the development of the iron and steel industries, and particularly of what paramount importance it is that there should be an adequate supply of cheap fuel I would direct your attention first of all to the policy of our American competitors who have recognised that this is the key to industrial success, and by their method of handling transportation have ensured at all times low-priced coal. In spite of the boom prevailing throughout last year in all manufacturing countries, and the enormous price at which coal was sold in England reaching as high as \$6 at the mine, and probably averaging throughout the year not less than \$4, it is a fact that the average selling price throughout the United States was only \$1.02, and in the leading State of Pennsylvania, with its output of 87,000,000 tons, only 94 cents.

ECONOMIC CONSIDERATIONS.

Whilst treating briefly upon trade conditions I cannot render you a greater service than to direct your attention to the important bearing which these facts have upon the coal market and the industrial prosperity of Canada. We are only at the beginning of our industrial career, and all our important works are in their infancy. The principal iron and steel-making firms have arranged to produce their own coal, which means that it will cost them no more than American manufacturers with whom they will have to compete; but apart from the giant industries there will be thousands of smaller concerns throughout the country, for which cheap fuel will be a necessity, and whose successful competition with other manufacturers, especially in export trade, will wholly depend upon this.

Statistics recently published by the *Colliery Guardian* show that the average profit realised on coal mining in England for the last fifty years does not exceed sixpence a ton. It is doubtful whether the profit in the United States has been any higher, and the desideratum in Canada will be as close an approximation to this figure as can possibly be realised. Cheap coal is the prime factor in industrial prosperity, dear coal is a handicap which yields disaster.

OPENING AND CLOSE OF CENTURY CONTRASTED.

Let us briefly sketch some of the features of the century which have been developed through the agency of coal, without which they could not have existed. We have referred to its association with the industries, and it is an easy process to think of its application to the

arts and manufactures of the world. It has practically originated our canal and railway systems, at the same time as it has furnished them with their principal freight. It has built up vast communities to whom it has been the only cohesive force. It has made Great Britain the richest and in many respects the most powerful nation in the world, or in the world's history. It has started the United States upon a career of prosperity which has been little short of sensational, and the end of which no man can tell. It has given to our population the means of living in comfort and with a degree of luxury to which their fathers were strangers. It has enabled us to travel, both by land and sea, at speeds which were never dreamt of 100 years ago.

"At the beginning of the century the steam engine was only employed to a very limited extent. There were practically no shafts, the coal being won by drifts or adits. The few shafts in existence in the Old Country were 'fearfully and wonderfully made,' and were more like wells, and often like corkscrews. The motive power was usually a horse 'whim' or 'gin,' there were no ventilating appliances, no safety lamps, no horse traction under ground, no recognised method of timbering, no railway communication, no Government inspection of mines, no rope haulage, no adequate pumping plant, no compressed air, no coal-cutting machinery, and no electrical power." To those who are starting on the twentieth century it seems almost impossible to understand how under those conditions, coal mining could be carried on at all.

It is hardly necessary to remind you that at the beginning of the century there was no market for coal, except a very limited one for home consumption. There were no railways, no gas works of any account, no steamships, no export trade worth mentioning, and hardly any iron industry. The estimation in which coal was held may be gathered from a remark made by a director of the London and Birmingham railway, little more than seventy years ago, when it was first suggested that his railway should carry coal as a commodity. He was so disgusted that he remarked, "Why, they will be asking us to carry dung next."

When coal was first carried in open cars on the railways, it was covered with sheets, so that no one might suspect the contents, and at Weedon, where it was transferred to the railway from the barges of the Grand Junction canal, they erected a high screen to conceal the ignominious transaction from the gaze of the passer-by. Since then the railways have practically been made by coal, which has been their sole producer of motive power, and their chief article of freight, and although this century, even in its earliest years, is likely to see on a large scale the replacing of raw fuel by electricity, as evidenced not only by the many successful experiments which have been made in the United States; but especially by the splendid achievements of the Germans, who have succeeded in applying electricity on a larger scale than the Americans, it can never be forgotten that this is only a development, and that the originating factor in all great transportation and manufacturing enterprises, has been coal.

INFLUENCE ON THE EMPIRE.

Whilst on this branch of the subject we must not lose sight of the fact that it is not merely Great Britain, but the British Empire which has been benefited from this unparalleled development. Whilst manufactures of every kind have been established within the borders of the little island in the North sea, the mercantile fleet of Great Britain has carried its products to every corner of the globe, and before other nations had been aroused

to industrial activity furnished the necessary supplies, not only to her own colonies but to foreign lands. The argosies which have sailed over the trackless deep from our Motherland to the islands of the sea, have been freighted with richer cargoes than the "golden fleece," and whatever the future may have in store, it can never be forgotten that in all material prosperity, as well as in the higher realm of ethics and of thought, she was indeed the mother of nations.

EFFECT ON TRANSPORTATION.

It is not so obvious, but at the same time equally true, that it is not to coal we owe the development of shipping and steamship appliances throughout the world; and when we think of the magnificent facilities now afforded in Great Britain, Canada, the United States, France, Germany, Belgium and the colonies, it almost staggers one to be informed that at the beginning of the century the total exportation of coal from Great Britain was only 133,562 tons. At that time even, the docks at Liverpool, London and Hull had only just been started, and they were constructed for ships of 100 to 400 tons, and would have been of no use for the requirements of the present day, which calls for ships of 6,000, 8,000 and even 10,000 tons. The shipments of coal at the end of the century from Great Britain alone represent nearly twenty times the volume of the total shipping trade of the country at its beginning, and the shipping trade of the United Kingdom last year was over 80,000,000 tons. This has not been achieved without the expenditure of enormous sums of money in building docks and in dredging rivers. To take one illustration, even as recently as 1850, the depth of water on the bar of the Tyne was only six feet; to-day it is 23 at low water. In 1850 a ship of 400 to 500 tons could hardly enter the river; to-day the largest vessels anchor at Newcastle docks.

From 1850 to 1868 the Tyne commissioners dredged from the bed of the river no less than 29,724,221 tons; the largest quantity dredged in any one year being 5,273,585 tons in 1866. This naturally suggests a comparison with the great waterway of Canada, the St. Lawrence, and in considering the indomitable perseverance which was shown by the pioneers of trade in Great Britain, we must be convinced that the application of the same energy to one of the greatest rivers in the world, will some day make Montreal what it should be in fact as well as in name, the shipping emporium of North America.

RISE OF THE COKE INDUSTRY.

We must pass for a few moments from coal to coke, because of its intimate association with the iron and steel industries. This is entirely a nineteenth century product, called into existence by the exigencies of the iron trade. Until the commencement of the century, pig iron was mainly made with charcoal by the "cold blast" process. This was probably due to the fact that the reducing power of charcoal in a blast furnace is greater than that of coke. A single ton of 2,240 lbs. of wood charcoal is equal to the production of 2,072 lbs. of pig iron, whereas in those days a similar weight of the best coke would only produce 1,040 lbs. of pig iron. The great steel authority, Mushet, estimated in 1840 that twenty acres of land would require to be cleared, or of an eighteen years growth 1,400 acres would be necessary to furnish a constant source of supply for a single furnace, and at the rate of £4 per ton the fuel would cost £4,800. Comparing this with coke fuel, Mushet calculated that there would be in favour of the latter a saving of £1,140 per annum, putting coke at

11s. per ton, and thus it came about coke was gradually introduced.

An interesting point to note here is, that as anthracite had not then been discovered, coke was made use of for malting purposes. Indeed this was the case as far back as 1686 "in order that the malt should not acquire an ill odor from the rise of raw coal, whilst being dried."

Like almost every other process, that of manufacturing coke from raw coals has advanced from very primitive, crude and wasteful stages to its present high degree of perfection. At the beginning of the century, and indeed in some instances as late as 1875, coke was burnt in open heaps, and by this process the residue was not more than 40 per cent., while it was often much less, in addition to the drawback of not securing a high quality. Coke is now made entirely in ovens, with the result that not only is a higher quality obtained, but the percentage with a good coking coal will run as high as 70 per cent. Here again we must note in passing that Canada has made a good start in this industry. The coals of Nova Scotia when washed yield a high-class coke, especially adapted for iron and steel making; and we are impressed with the wonderful provision of nature in furnishing suitable coal deposits in the Maritime provinces, in close proximity to the large iron ore beds and limestone rocks, which are the essentials of the iron industry. On the other hand, in British Columbia where there are enormous areas of gold-bearing rock, mostly base metal and requiring smelting, we have in the cretaceous formation of the Crow's Nest Pass, probably the finest smelting fuel in the world, and of such limitless extent that it is impossible to conceive of a period when there will be a scarcity. It may be as well to put it on record that the Crow's Nest coal and coke yield an analysis which is not surpassed by any other known. An average of the coal gives: Fixed carbon, 74; ash, 3.50, and sulphur, 0.60. Whilst the coke gives, fixed carbon, 94; ash, 4.50 and sulphur, 0.75.

USE OF CANADA'S COAL RESOURCES.

It would be beside this question to enter into a consideration of the importance of this deposit, to British Columbia and the west. It is only necessary to point out that prior to this production of Crow's Nest coke, British Columbia smelters were importing from Pennsylvania by rail, 3,000 miles, and some of them by water from South Wales, round the Horn, 15,000 miles; the latter then having to be carried 350 miles overland, and costing from \$15 to \$20 per ton laid down at the Trail smelter.

SMELTING.

We are not surprised that under such conditions the cost of smelting was from \$11 to \$13 per ton, and that the effect was to prevent the development of the mining industry in British Columbia, in fact it was impossible to ship any but very high-grade ores where treatment was so costly. To-day smelting costs from \$3.50 to \$4.75 per ton, and coke from \$6 to \$7 delivered at the smelting works. This will bring into the market an untold tonnage of low-grade ore, which could otherwise never have been worked, and under economic management will furnish a profitable outlet for Canadian mining investments during the present century. It only remains to point out in this connection the importance of securing, if possible, a supply of Canadian coal for consumption in Ontario. This is the most populous, and so far has been the chief industrial centre of Canada. It has boundless deposits of iron ore, and has been energetic in establishing giant industries, among which the

Nickel Steel Company of Hamilton and the Cramp Ship-building Co. are the latest comers.

OUR WATER TRANSPORTATION.

Hitherto the whole of the coal supply of this province has been imported from the States, and the only alternative is so to improve the waterways, and cheapen the cost of transportation between Montreal and the Great Lakes, as to make it possible for Nova Scotia coal to be taken to Ontario, and iron ore or western grain to be brought as return cargo. There is no problem before Canadians to-day of equal importance to this, and nothing which would have such an important and permanent effect upon the industrial progress of the country. Tentative movements have already been made, as in the case of the four cargoes of steel, which were shipped from Conneault last October, brought through the Welland canal and taken across the Atlantic on the same bottoms to Bristol. Small parcels of the ore have also been brought by the same route, but at present the Welland canal has a nominal depth of only 14 feet, and an actual gauge of 12 feet. It would be well if some of the enormous bonuses and subsidies, which in the past have been granted unnecessarily could be diverted to the truly patriotic project of improving our natural waterways, and enabling us to meet a condition which must prevail in the near future, that of entering the open markets of the world with an export trade. The future of Canada lies upon the shores of the Great Lakes, near to our limitless resources of iron ore. Recent improvements in steel making have reduced the quantity of coke required to make a ton of pig to 2,000 lbs., whilst the quantity of ore required is say 3,200 lbs. Manifestly, therefore, the steel of the future will be made where the ore is extracted, assuming that it is possible to assemble the other raw material required — coke and limestone — at a favourable cost, and this is possible at the lakes. It will cost less, proportionately to assemble coke and limestone there than to transport the ore to the Atlantic coast, and this is the only alternative, as it is admitted that Newfoundland ore requires Lake Superior or other similar ore as a "mixer." I believe that instead of spending \$100,000,000 in cutting a canal from Lake Erie to the Hudson, the Americans will shortly commence an exodus from the present chief centre of the steel industry to the lakes, similar to that which commenced in England twenty years ago, and in this connection it is significant that the only English firms doing an export trade in steel rails to-day are located on the coast. The St. Lawrence as between Georgian Bay and Montreal could be made available for the transportation of all the steel, both American and Canadian, manufactured at the lakes at a probable cost of \$50,000,000; and this expenditure, though large, would be fully justified for a work of such national importance.

PRACTICAL COAL MINING.

I would now direct your attention to one or two of the more practical aspects of coal mining as contrasted with the commercial and economic aspect of the question. Let me remind you that in most countries the days of "adit" and "level" are over, and we have entered upon the more complicated and scientific processes of deep mining. Nothing could be simpler than the early method when half a dozen men walked to the mountain side, with can in hand, and pick on shoulder. Five would wait at the entrance while one went inside with a candle. If he suspected gas, or smelt it, or felt a queer smarting sensation about his eyes, he would leave his candle outside, take off his coat and proceed

to "brush" or flag out the gas. When this was done he would call the other men in and they would proceed to their work. Commencing at 5 or 6 o'clock in the morning, with a break of half an hour for breakfast at 9, and another half hour at 12, they would continue working till 6 in the evening. In these early days the coal would be put into small boxes on runners, and dragged out by a boy, wearing a belt or rope around his waist, and having a tail-chain behind him. In thicker seams the box would be larger, and a man would push it out, and in this way it is striking to note that the average production per man would be 280 tons a year.

As a comment upon the effect of shorter hours upon production it may be remarked that in the present day when miners work not more than eight hours, and in cases where they still use picks, and practically work under the same conditions as a hundred years ago, as far as production is concerned, the output is from 300 to 350 tons per man per annum. Beyond the use of similar tools, however, every other condition is altered,

DEEP MINING.

and to-day there are deep mines so extensive, so costly and so replete with scientific and mechanical contrivances that they are like busy cities underground. The pioneer of deep mining was the old North Country district of England where, in May, 1826, the Messrs. Pemberton of Sunderland, commenced the sinking of the celebrated Monkwearmouth Colliery. In the process thirty-one seams of coal were passed through. The sinking penetrated 330 feet of the lower magnesium limestone strata, at the bottom of which the enormous volume of 3,000 tons of water per minute had to be dealt with. Owing to the difficulties occasioned by this it was not until 1831 that the first bed of coal was reached at 344 feet from the surface. During this anxious period of working and watching, the Messrs. Pemberton were advised to discontinue further explorations; and one friend told them that they would never find coal there if they persevered till doomsday. The answer was characteristic of the man who made it. He said: 'If we cannot find coal we will sink to — and find cinders.' With an energy and courage which has never been surpassed in the industrial world, and which form a fitting type for the study of all mining engineers, these men continued to sink for twenty years, when they were rewarded by finding at a depth of nearly 3,000 feet the Hutton seam, which has been in operation ever since. The sinkings at this colliery cost the proprietors £100,000, but that they were animated as much by professional pride and determination to win as by any mercenary motive was demonstrated by the fact that shortly after they had solved the problem of the existence of this seam, they sold the colliery for £90,000, and it is still one of the most notable in the North of England. Until forty years ago it was not approached in depth by any other coal mine in the world, and owing to this the temperature of the pit is the highest on record, rising in some of the workings to 89 degrees.

IMPROVED METHODS IN THE NEW WORLD.

It is not, however, in England alone that at the close of the century that we can point to these deep winnings and splendidly equipped mines. Indeed in the matter of output there are mines both in the States and Canada which compare favourably. It is only fair to say that in none of these are the natural difficulties so great nor the recovery as deep, but in respect to tonnage, equipment and cost we can challenge comparison.

The Dominion Coal Co. in Cape Breton have three mines with a capacity of 3,000 tons a day of ten hours,

they will add two others within a year, and a sixth, which is designed to yield 5,000 tons. Here for the first time they are going to a greater depth, and contending with some of the difficulties which have been incident to English mining for more than half a century, especially so far as large feeders of water are concerned. Cape Breton mining, however, is the easiest I have known, due principally to the exceptionally favorable character of the strata, and the easy angle of deposition.

Nearly all shafts sunk in England have to be walled at great expense. An illustration of this may be taken from the recent report of the Kent Coal Co., a concern which for several years has been sinking for coal near the Dover Straits. The chairman said that the cost of a circular shaft, 20 feet in diameter, when finished was £65 per foot; this is roughly \$315. The cost of a rectangular shaft of similar area in Cape Breton is less than \$20. In the judgment of all competent mining men the fact that under such expensive conditions, in a country where large sums have to be paid in royalty, and heavy compensation is given to land and property owners when damage results from mining operations, the average selling price of coal at the pit's mouth during the last twenty-five years has not exceeded 6s. a ton, and oftentimes for several years in succession has been as low as 5s., is an achievement to be proud of. If we compare this with \$1.75 in Cape Breton, and \$2.50 to \$3 on the Pacific coast, we shall see that Canadian coal will yet have to be sold at a lower figure before we equal the record of the Old World miner.

MECHANICAL APPLIANCES.

The one feature of mining development in our day is the widespread application of mechanical appliances, either to supersede or supplement manual labour. The most important of these has been in respect of haulage; for although it might have been possible, at any rate where labour is abundant, to produce by hand the large tonnage now required, it would have been quite impossible to haul it out of the mine; and the first important duty of the mining engineer after he has ascertained the physical condition of his property is to lay out his haulage system with due regard both to the conditions of the mine and the requirements of the trade. In doing this the first consideration is to have the main entrance upon the most favourable grade for handling large tonnages quickly and economically. In the case of mining adits the main entrance should be driven with a slight rise of about 0.70 per cent.; and other conditions being favourable, the most economic system of haulage—where you cannot run the surface railway into the mine—is by means of an electric locomotive of the Jeffrey type. This has been successfully demonstrated at some of the largest mines in the States as well as in British Columbia. The New Vancouver Coal Company have such a locomotive handling 96 loaded cars at a time with success.

The secondary haulage is the next important consideration. In steep measures it is well to take advantage to the fullest extent of gravitation; and as self-acting inclines and jigs can be extensively used in all sloping seams there must be, whether from the side of an entry level or the bottom of a pit shaft, a main deep, driven as nearly as possible on the true "dip" of the seam with branch levels running almost at right angles, but with a slight rise so as to favour the load at intervals of not more than 1,000 feet. Probably the most efficient system of haulage for such a depth is the endless rope, as there is practically no limit to its capacity. On the side levels, if there are no exceptional difficulties, I believe the electric locomotive can again be used to the

best advantage; failing that, either a subsidiary endless rope, or main and tail rope. As the booms will be at right angles to the cross levels, and on the fall "rise" of the coal it will of course depend on the angle of inclination as to what system of haulage can be adopted at this point, but if moderately flat as opposed to the steep measures above referred to, say not exceeding two per cent. the electric locomotive, working on the level can be run within a short distance of the face, otherwise horse haulage is the best on such a grade. It will be seen that by this method, which is now generally admitted to be the best practice, horse haulage is reduced to a minimum, and in mines which pitch more than ten per cent. is altogether unnecessary, as the coal can be jigged from the working faces to the nearest main haulage, and in mines exceeding 25 per cent. pitch can be sent down in chutes.

MINE VENTILATION.

Perhaps I should have referred briefly to the subject of ventilation before dealing with haulage, for it is really of greater importance because it involves not merely the question of capital outlay, but primarily that of safety, which after all is the first consideration. Roughly speaking it may be said that the furnace is a thing of the past. Fan ventilation is the universal practice, and it is only a question of which fan should be used. I do not propose to enter into a discussion either as to the relative merits of different fans, or whether the high or low speed is best. I will content myself with saying that there are probably half a dozen fans in the market of equal merit. The most efficient, if cost be disregarded, is the "Walker indestructible," but being the highest class instrument made it becomes an expensive luxury, except in cases where the absolutely highest results are necessary. I do not refer to economic but to actual production of air. I think the best fan at the price is the "Chandler." I put one down at the Reserve mine of the Dominion Coal Co., in 1896. It is 15 feet diameter, and is driven direct by a 12-inch by 18-inch horizontal engine. Running at 200 revolutions a minute it gives 200,000 feet of air with a water gauge of one inch. The total cost of this installation complete when in operation was \$6,000, of which \$2,000 went to concrete foundations.

A feature in connection with ventilation is that the old idea of giving as little air as was compatible with sustaining life in consequence of supposed danger of spontaneous combustion has long ago been exploded, and to-day it is not a matter of furnishing the least that the law demands, but the most that practice can ensure. The subject of ventilation has been complicated by the practical demonstration of what was not even a theory at the beginning of the century, and only began to attract serious attention thirty years ago—the "coal dust" theory, on which it is sufficient to say that the presence of coal dust in a mine is a source of the greatest danger, and has been a prime, though often unsuspected, factor in the great explosions of the century. It has now been shown that coal-dust explosions may take place where there is no gas.

With the increased use of machinery, especially for coal cutting, and underground, and consequently a largely increased production of dust, it is more important than ever to make adequate provision for ventilation. This necessity, like all others, has constantly stimulated the inventive faculty of our mining men, and the latest development is the three-entry method of opening a mine, which provides for a main central haulage way, and two independent return air ways; a system which I tried in Cape Breton, on a limited scale, six

years ago, with perfect success, and which bids fair to become the established rule of the future.

COAL-CUTTING MACHINERY.

The last subject upon which I will touch in connection with practical mining, is that of coal cutting. This is one of the most important topics which can engage the attention of a mining engineer. I have studied the subject for nearly thirty years, from the early days of the "Firth" and "Winstanley" machines, and have seen the introduction of more than twenty different machines. The most striking comment to be made on this subject is, that with all her enterprise, skill and capital, Great Britain has barely entered the race with mining machinery. Up to the present, although there are nearly 3,000 collieries in the United Kingdom, only 100 are actually using coal-cutting machinery. This is due largely to the hostile attitude of the workmen, to inefficient appliances, and to the partial ignorance of the manufacturing firms who, instead of adapting themselves to the conditions which actually exist in the mines, have built their machines for conditions which ought to exist. The result is that the tonnage of coal cut by machinery in Great Britain is at present too insignificant to tabulate, whilst in the United States it will exceed 25 per cent. of the total output, and probably the same percentage in Canada. Of the importance of this branch I will only say that as a factor in the cost of production it far transcends any other; the saving, as against hand labour being from 12 cents to 15 cents per ton, after allowing interest on capital outlay. This is, in the United States and in Cape Breton, equal to a saving of nearly 20 per cent. in the total cost.

MINING MACHINERY.

As to the classes of mining machinery best worthy of attention, we may confine ourselves to two, the percussion and chain. The former is cheaper to instal and easier to handle, and is therefore better adapted in its present form to pillar and room workings, as two men can easily handle and move it from room to room. One machine man with a helper can produce day after day 60 tons of coal, which is about equal to the work of six men by hand. The chain machine is better adapted for long wall work, although a smaller chain machine for room work is now on the market. The objection to the latter is its weight, and the difficulty and delay of moving it around. This will yet be overcome to a considerable extent, and in flat seams it may supersede the percussion machine, but on grades it is out of the question. When, however, we come to long wall work, or the cutting of sections of coal along the sides of roads, the long wall chain machine is a splendid instrument. I have known one machine in charge of three men produce 500 tons of coal in a single shift, at a cost of two cents a ton for undercutting; the rate of pay for hand work being 25 cents. Without going further into details I have no hesitation in saying that, except in the case of very steep mines, every new mine opened in future must be adapted from the start to the use of coal-cutting machinery. As to the motive power we have the choice of compressed air and electricity. So far, the former is most favourably viewed because of its safety. It becomes a serious question in any mine subject to the presence of gas to introduce the electric current; everything depends upon the absolute accuracy and carefulness of the installation, and the slightest oversight may result in a terrible disaster. This has made mining engineers conservative, and whilst electricity has been used to a limited extent, as for instance in main roads for hauling, and in out-of-the-way places for

pumping, it has not been generally adopted near the working faces. Owing to its efficiency and portability it only remains to overcome the element of danger to ensure its universal adoption as the operating power in coal mines, but at present compressed air holds its own, and the largest corporations are moving slowly in the other direction.

CANADIAN TRADE PROSPECTS.

I have now glanced at all the branches of my subject which it is possible to touch upon, even briefly, in this review. I have tried to point out the enormous differences which prevail in the conditions at the end and the beginning of the 19th century. There are other matters which could be treated in a longer lecture, especially the amelioration in the condition of the miner, and its important effect on everything connected with his arduous, and oftentimes dangerous toil, but I want now to emphasise two features, which I have tried to bring before you.

The first is the vast field which coal mining offers for the exercise of all those faculties of mind and elements of character which go to the making of successful men. There is no calling which offers greater opportunities for the exercise of inventive skill, nor which demands closer application to the study of practical and scientific subjects. In mining one has to contend with the most formidable forces of Nature, and she does not permit us easily to wrest from her keeping the treasures of her mineral storehouse. You have seen that in the early days this profession demanded not only skill but fortitude and courage, and I am convinced that the mining men of the twentieth century will not be behind their confreres of the nineteenth in the display of these mental and moral qualities.

The other matter upon which I am anxious that you should meditate is the potentiality of your own country in the future struggle for the commercial supremacy of the world. I am not here to predict that the close of the twentieth century will see the latest claimant for commercial honours—the United States—outstripped by the Dominion of Canada. It may be that the physical conditions and climatic rigors of the country will, by restricting the growth of population, also place a limit upon its possibilities in this direction; but with a knowledge of the extent and quality of its coal areas, which in this early stage of prospecting exceed 100,000 square miles, being nearly ten times as much as the coal area of Great Britain, and already nearly half as much as that of the United States, it is not too much to anticipate that the close of the century will witness a development which, at its dawn, would seem incredible.

IRON ORE DEPOSITS.

We have iron ore also of the best quality in practically unlimited extent, and so favourably situated that on the highest authority it is stated that steel, the dominating factor of trade, can be produced on the northern shores of Lake Superior at \$2 a ton less than in the Pittsburgh district, and in Cape Breton at \$6 less. We have natural waterways which with a moderate expenditure will enable ocean liners to penetrate to the centre of the Dominion. We have water-powers surpassing those in any other country, and it only remains to protect, to nurture and carefully promote the development of these resources by a wise and honourable fiscal policy, and by the strenuous application of the highest and noblest qualities of heart and brain to attain that success which would seem to be the natural result of our splendid advantages, and which, at any rate, it is our prerogative to deserve even if we cannot command.

CANADA AT THE GLASGOW EXHIBITION.

WE are indebted to one of our readers, Mr. John L. Penney, for the four views of the Canadian section of the Glasgow Exhibition here reproduced. Mr. Penney writes: "The exhibits from the Dominion are to be found in a special pavillion in the grounds, and in the northwest corner of the Industrial Hall. As a whole the exhibits are well displayed and numerous, including *inter alia*: forestry, fishery, carriages, agricultural instruments, furniture, stoves, food products, cold storage, boats and canoes, pianos and organs, printing machines, leather, boots and shoes, rubber goods, furs, etc. The most valuable and attractive of all, however, is the mineral section which will specially

practical mining man. Only one fault can be found, and that is, that it is too large for the space assigned to it, and has in consequence a somewhat cramped appearance; but certainly the best use has been made of the space available and all things considered the result is very satisfactory."

COMPANY MEETINGS AND REPORTS.

LONDON AND BRITISH COLUMBIA GOLD FIELDS, LIMITED.

THE annual general meeting of shareholders in the London and British Columbia Gold Fields (Limited) was held on Wednesday, at Cannon Street Hotel, E. C., Mr. Oliver Wethered in the chair.



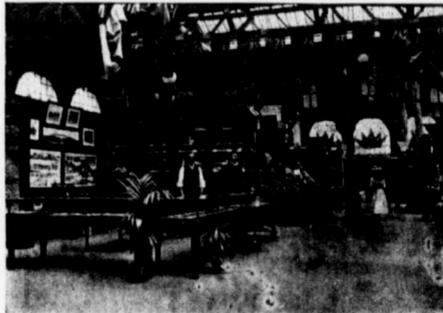
VIEW OF INDUSTRIAL HALL, GLASGOW EXHIBITION.



ENQUIRY OFFICE B. C. MINERAL DEPARTMENT, INDUSTRIAL HALL.



SECTION OF MINERAL DEPARTMENT SHOWING SAMPLES OF PLACER GOLD, INDUSTRIAL HALL.



GENERAL VIEW OF B. C. MINERAL EXHIBIT, INDUSTRIAL HALL.

interest British Columbians, as about one half of the collection comes from west of the Rockies. The exhibit which is well displayed and arranged, was set up by Mr. Angus K. Stewart, of Greenwood, B. C., and is the same collection as shown at Paris last year with a few additions, containing some 1500 samples. In brief, it is most representative of our mineral resources, and specimens of every important mineral find made in Canada are here displayed. It may interest your readers to learn that the British Columbia exhibits are attracting much attention, and that the B. C. representatives are kept busy answering questions and explaining all manner of things to those to whom British Columbia is merely a name and nothing more. The main features of the B. C. exhibit are the samples of placer gold, the gold-milling ores, gold, copper, silver, lead and coal. Every effort has been made to make the display attractive to the passing crowd as well as interesting to the

The Secretary (Mr. E. R. Tasman) having read the notice convening the meeting and also the auditors' certificate,

The chairman said: As at the last meeting, your directors still consider their best asset is their large interest in the Ymir mine, and they have got but one regret connected with it—viz., that they have not a still larger interest. The developments of this property continue to be of a most satisfactory character. Although stopping has only been carried down to the 3rd level, the shaft has, nevertheless, been continued down to a depth of over 600 feet, and I am glad to tell you that the values are fully equal to, if not better, than in the higher levels of the mine. At the 400-foot level we have commenced to drive. The work of development will be continued with the utmost vigour, so that the shaft may be sunk to a depth of 1000 feet, and at that point meet the long adit, which we have been driving now for one

year and a-half, and which we hope to complete towards the end of the present year. The rate of operating profit to-day is between £50,000 and £60,000 a year, and we think that this will be increased by some 50 per cent. upon the instalment of the full cyanide plant, which has already been ordered. If, therefore, our estimate is not too sanguine, and to the present operating profits we can add some £25,000 a year, the dividends from our Ymir shares alone will be more than sufficient to pay 10 per cent. on the issued capital of the London and British Columbia. If, as there is no reason to doubt, the vein continues equally wide and good at the 1000-foot level, then we may look to a very large appreciation in the value of the shares. We shall be in possession of this information, I hope, by the end of the present year. We attach no small importance to the adjoining property, known as the Alma group, which belongs to this company. There is between the present Ymir workings and the Alma property a large amount of unexplored ground belonging to the Ymir company, and in conjunction with the Ymir board we are taking steps to have this intervening ground explored, as this is the best way of tracing the Ymir vein into our property. At the present time contracts are all but entered into for the sale of the ore, some 800 tons of which are ready for delivery, and for the purchase of the Whit. water future production; so that I think now that we can consider that in a few days time work at this mine will be resumed, and that it will soon be placed upon the same footing as was the case before the smelter question arose. The company had then commenced to pay dividends, and we hope these distributions will be resumed. The Enterprise and Ruth mines were fortunate in having a contract with the local smelter, which enabled it to continue small shipments pending the erection of the concentrator. Two valuable finds of high-grade ore have been made, the appearance of which has put a far better aspect upon the value of the property than it has had for several years past. With regard to the Kettle River Power Company, Limited, the bonds have been placed with thoroughly good and responsible institutions, a considerable number of them being held in the United States. All the reports from the district which has to be served by the Kettle River Power Company, are of a most satisfactory nature. The works should be in operation early next year. When this is so we shall seriously consider the question of increasing our plant up to 6000 horse-power. Within the last two years three smelters have been erected in this one district, and to one of these considerable enlargements are now being made. So much for the business we have in hand. I now turn to our new undertaking, to which reference is made in the report—viz., the group of claims in the Lardeau district. We are led to believe from all appearances that this property is capable of being developed into a mine equal to, if not greater than, the Ymir, and your directors regard this as probably the most important piece of business that the company has taken in hand during its history. The property is a very large one, consisting of 361 acres, and the ore bodies are of very great size, and in places of great richness; but, so far the information to hand leads us to believe that it is a property which, like the Ymir, should be treated on a large scale. We hope that when we erect a mill it will be one capable of treating 200 or 300 tons a day, and as the ore is free milling, there is ample water for power and timber for mining purposes close at hand, the working costs should be even lower than the Ymir. Our decision as to whether we will give cash, or cash and shares, has to be made forthwith, and the matter is considered of so much importance to this company that, at a very great inconvenience to myself, I have made

arrangements to leave as quickly as possible, so that I may visit the property and consult with our engineer as to the best course to pursue. With this new business, added to the business already referred to, I think you will agree that the London and British Columbia Gold Fields has a better future to-day than ever before. We have been, and are, hampered by the fact that we have never had more than £100,000 of working capital. Notwithstanding this and the number and extent of the company's interests, we have been able to return some 45 per cent. in dividends. Of these dividends 20 per cent. was paid in cash, 10 per cent. in Ymir shares, and 15 per cent. in Enterprise shares. Our present issue is 140,000 shares. We have decided to offer the balance of our capital *pro rata* to the shareholders in the proportion of one new share to each three shares held. In order to make the calls as light as possible, we shall only ask 1s. on application, and 1s. 6d. on allotment, and the balance will be called up in amounts not exceeding 2s. 6d., and at intervals of not less than two months. The result will be we shall have some £60,000 of additional capital, and with this to help us develop the interests we have in hand and are about to take up, I think I may confidently predict that when we meet you again next year we shall be able to give you something considerably better than 1s. per share which will be paid to you to-morrow. When these new shares are issued our capital will only be £200,000, and in order that you may see how very amply this will be represented by our assets, I give you the following figures:—Our Ymir shares alone at to-day's market price practically represent £140,000. We hold about 40,000 Whitaker, 35,000 Enterprise, and 40,000 Ruth shares, nearly 100,000 Kettle River Power Company's shares, in addition to 23,666 bonds, for which we have already paid. We hold the Alma group of mines and also the Cymric claims, Norfolk No. 9, and New York claims, and we have our freehold offices in Nelson. If to these assets we add the £60,000 which the new issue will produce, I think everybody must see that we shall have assets far in excess of the total amount of our issued capital, and the £60,000 to be derived from these shares will put us in a position of strength we have never yet occupied. I now beg to move: "That the report and statement of accounts, as presented, be received and adopted," and I will ask Mr. Popkiss to second the resolution.

Mr. R. Popkiss seconded the resolution, which was agreed to unanimously.

The retiring directors (Messrs. H. W. Forster, M.P., and A. Fell) were then re-elected, and the proceedings terminated with a vote of thanks to the chairman and directors.

ATHABASCA GOLD MINE, LTD.—PROPOSAL FOR VOLUNTARY LIQUIDATION.

An extraordinary general meeting of this company was held in London, on the 14th day of August, at which the following resolution was proposed:—

"That this company be wound up voluntarily, it having been proved to the shareholders' satisfaction that the company cannot by reason of its liabilities continue its business, and that it is advisable to wind up the same and Mr. John A. R. Clark be and is hereby appointed liquidator for the purpose of such winding up, at a fee of fifty guineas."

Detailed reports of the action taken by the shareholders are not yet to hand, but the Secretary of the company, in his circular to the shareholders, remarks that

the shareholders are probably aware that lack of water in the early part of the year, and the consequent inability to work the air-compressor plant and rock drills, caused the development of the mine to fall greatly into arrears to such an extent that it was necessary from lack of ore to close down the mill and simply keep a small force of men on development work and the cyanide process. The cyanide plant works with great success and, as the mill was closed, the \$5,872 yield of gold for June was obtained entirely from the cyanide. Unfortunately the amount of tailings on hand cannot keep the cyanide plant supplied for more than a few weeks.

Under the circumstances it was deemed best by the directors to confer with the manager. He came to England in May and explained the position of affairs, and that a considerable overdraft had been necessary from our bankers at Nelson to meet the losses on working during the past five months. The directors then decided that before proposing anything to the English shareholders it would be well to get the opinion of the Canadian shareholders, who hold more than half the shares in the company. The manager has now been in Toronto for some days discussing a plan whereby the company may be greatly strengthened by amalgamating with an adjacent property which is in a highly developed state, with large bodies of ore ready for stoping, and practically ready to commence shipping to the Athabasca mill. The Canadian shareholders have entire confidence in the mine.

The following letter from a Canadian firm in Toronto, representing the Canadian shareholders, dated July 12, gives the latest information in the possession of the board: "We had been waiting to answer your letter of the 14th of June until we had seen Nelson Fell, who arrived here last Monday, the 8th July, and since then we have been in close communication with him and other parties interested in the Athabasca and the Venus as to some way of getting out of the present difficulty, and we are very hopeful that in the course of next week or ten days we will be able to forward you a scheme of reconstruction that will meet with your approval and that will be of great advantage to the property. Just as soon as we can get things in shape and can make some definite proposal we will at once communicate with you either by cable or letter."

In the last paragraph of his circular the Secretary of the Athabasca company says the directors hope to lay the scheme referred to before their shareholders very shortly; but in the meantime consider it best for the interests of all concerned, to put the company into voluntary liquidation.

RAMBLER-CARIBOO MINES, LTD.

At the annual general meeting of the Rambler-Cariboo Mines, Limited, held in Kaslo, a dividend of one per cent. was declared. The dividend is payable on August 30th, and will be the first of a series of bi-monthly dividends which are to be distributed until further notice.

The election of officers resulted in the return of last year's officers and board as follows: A. F. McClaine, Tacoma, president; J. J. Humphrey, Colfax, vice-president; William Hastie Adams, secretary-treasurer and general manager; directors, Jas. D. Chaplin, St. Catharines, Ont.; A. F. McClaine, Tacoma; Alfred Coolidge, Colfax, Wash.; Chas. J. Kapps, Kaslo, B. C.; J. J. Humphrey, Spokane, Wash.; Bernard MacDonald; Wm. Hastie Adams, Kaslo.

The following circular has been sent out to the stockholders with the notice of dividend No. 5:

"Your directors concluded this day a thorough examination of the properties of the company, and feel amply assured in congratulating the stockholders upon the present conditions of 'Mines and Treasury.'

"The improvements in the ore shoots both in quantity and grade, have been marked from levels No. 1 to Nos. 2, 3, and 4, respectively, and in the case of the lowest level, No. 5, the gain has been nothing short of phenomenal.

"The monthly products and profits permit us to enclose notice of dividend No. 5, and we anticipate similar distributions to shareholders every 60 days, notwithstanding that at this time we are installing additional mine equipment to the extent of \$35,000 to \$40,000, consisting of 2500 feet flume and pipe line, 400-light electric plant, 60-ton concentrating mill, belt-driven air compressor and 4-ton hoist.

"These improvements should be in operation Nov. 15th, and will double the earnings of the property.

"The policy of generous mine development and equipment will be diligently followed the coming year."

A. F. McCLAINE,
Chairman Board of Directors.

KASLO, B.C.—DIVIDEND NO. 5.

Notice is hereby given that the directors of the Rambler-Cariboo Mines, Ltd., non-personal liability, have declared a dividend of one per cent. on the paid-up capital stock of the company for the month of August, payable on the 30th day of August, 1901, to such shareholders as appear on register on the 25th day of August, 1901, for which day the transfer books will be closed.

WM. HASTIE ADAMS,
Secretary.

RECENT PUBLICATIONS.

How to Become a Good Mechanic: A practical guide to self-taught men; (second edition): by John Phin, author of "The Workshop Companion," etc.; New York, Industrial Publication Company, 1901. Price 25 cents.

In this little work the author indicates the course of study which should be pursued by "young men desiring to become expert and successful mechanics." The suggestions here made do not appear to us to be strikingly original, as for instance we can hardly imagine a mechanic studying ancient history or moral philosophy with the object in view of "rising from the bench to something higher." Mr. Phin avers very clearly the futility of these studies, and recommends in their stead an application to the elementary mathematics. But interspersed with the too obvious commonplace, are some very sensible hints which might advantageously be accepted and turned to practical account.

Annual Report of the Board of Regents of the Smithsonian Institution, showing the operations, expenditures, and condition of the Institution for the year ending June 30th, 1899; Washington; Government Printing Office: 1901.

The Appendix to this report contains many valuable scientific papers, including a discussion by Prof. T. C. Chamberlain, on Lord Kelvin's address on the age of the earth as an abode fitted for life. A paper entitled "An estimate of the Geological Age of the Earth," by J. Joly, M. A., D. Sc., F. R. S., and a contribution by

William H. Holmes reviewing "The Evidence relating to Auriferous Gravel Man in California."

Nineteenth Annual Coal Report of the Illinois Bureau of Labour Statistics, 1900; also *The Second Annual Report of the Illinois Free Employment Offices* for the year ending October 1, 1900; David Ross; Springfield, Ill. Phillips Bros., State Printers, 1901.

The official report of the coal mining industry in the State of Illinois, for the year 1900, makes eminently pleasant reading. During the year thirty-one new mines were opened up, the total product shows an increase of 1,719,484 tons, while the aggregate value increased \$4,121,195. This satisfactory state of affairs heretofore unprecedented is attributed to the harmonising of conflicting interests by mutual co-operation between employers and employees. In an introduction to the report it is pointed out that the success and very significant results of the joint organisation of miners and operators "presents an object lesson that other interests will have to learn and adopt if the country is to escape the privations incidental to industrial warfare." Much of the trouble in the past was caused by a feeling on the part of employers that workingmen should not make demands as an organised body, and the refusal to recognise or treat with committees appointed by the union, not only intensified the bitterness, but encouraged a spirit of defiance that found expression in unreasonable demands. To quote again from the report: "Since the federation was effected, with but few exceptions, the trade has succeeded in avoiding the disagreements that lead to strikes. The plan responsible for these results does not presume to remove causes of discussion, or even to discourage legitimate agitation, but to apply where differences arise — and they are numerous — the rare elements of common sense. In short, it is the long-delayed acceptance of the invitation extended by the ancient prophet of Israel, "Come, let us reason together." Out of it has come many substantial benefits to the miners. Wages have been materially increased; the working day reduced to eight hours; semi-monthly payments; the general adoption in this State of the mine-run system; the recognition, not only of the organisation, but its practical admission by the employers as a joint partner in the business. Many of these concessions have been made possible, not because of the union alone, but on account of improved conditions. Organisation of itself, however strong, may control, but it cannot create. It is no disparagement of the present method to say that, back of the friendly alliance of these interests are the fruitful causes that have recently contributed to our great industrial revival, and it is the wish of all that they might continue." It is too much to expect that the example set by the coal mining interests in the State of Illinois will, notwithstanding the manifestly beneficial effects produced, be immediately accepted as the solution of the industrial problem in America, but it is plain that the futility of existing methods as evidenced in strikes and lock-outs, are beginning to be recognised and that a crisis is at hand. If, indeed, the situation is not faced intelligently, in the United States at least, the end must inevitably be a revolution which will shake the very foundation of society and order. In British Columbia we have two clear instances in which a proper understanding exists between capital and labour. We refer to the case of the New Vancouver Coal Co., and to that of the Iron Mask Mining Co. at Rossland. So far as the latter is concerned, although a general strike has been declared in the district in which the company's property is situated, operations have in no way been interfered with, while at the New Vancouver Coal Co.'s collieries strikes are never resorted to as a means of settling such disputes as may

arise. While it may be true that corporations have no souls, it may yet be prudent and remunerative for them not to emphasise the circumstances too obviously in dealing with organised labour. The insistence of this principle in the past is largely responsible for the industrial disturbances now so much in evidence.

The Year Book of British Columbia: Compendium 1897-1901, by R. E. Gosnell, Provincial Statistician; Victoria, B. C., 1901.

In this compendium the information contained in the *Year Book* is brought up to date. The data respecting the mines and mining districts are particularly interesting and reliable, and the work will be found very useful both for reference purposes and as an addition to immigration literature.

The Mineral Industry: Its Statistics, Technology and Trade in the United States and other countries, to the end of 1900. Founded and edited by Rich P. Rothwell and compiled by Joseph Struthers, Ph. D. vol. ix. Supplementary volumes i to viii; New York and London; The Scientific Publishing Company, 1901. Price \$5.

It is as usual a pleasure to welcome the publication of the annual volume of *The Mineral Industry*—a work unique in character and remarkable for the mass of information presented in concise and readable form. The nine volumes indeed, comprise by themselves a comprehensive library on the subject of mining and metallurgy and their encyclopedic characteristics render them absolutely invaluable for reference purposes. The present volume quite comes up to its predecessors as regards technical value and the completeness of the statistical data. We regret to note, however, a few somewhat glaring inaccuracies in reference to British Columbia. Thus, for instance, the Hall mines are described as producing lead ores, while the St. Eugene is mentioned as being a copper mine. There are other similar mistakes, which doubtless would not have occurred but for the lamented and sudden death of Mr. Rothwell, which necessitated a change in the editorship, at probably too short a notice. In Dr. Struthers, however, Mr. Rothwell is well and ably succeeded, and it is quite safe to predict that under his care *The Mineral Industry* will be certainly not less highly esteemed by the mining communities of the world. Included among the many valuable special contributions to the volume the following are to be found: Progress in the Aluminum Industry in 1900, by J. B. C. Kershaw; Production of Bromine in Michigan, by A. C. Lane; Calcium Carbide and Acetylene, by L. K. Bohm; Clay and its manufacture into brick and tile, by H. Kies; Manufacture of water gas, with special reference to European conditions, by George Lunge; Utilisation of Blast-Furnace Gases for the direct production of motive power, by G. Lunge; Progress in the Metallurgy of Copper in 1900 (review); Progress in the electrolytic refining of argentiferous copper, by T. Ulke; Notes on the leaching of copper sulphide ores, by S. R. Adcock; Elimination of impurities of copper mattes, by E. Keller; Raritan Copper Works—general description of operating plant, by L. Addicks; Manufacture of blue vitriol from argentiferous copper, by J. G. Clemmer; Recent progress in the Henderson process for extracting copper from pyrites cinders, by J. G. Clemmer; Fluorspar mines of Western Kentucky and Southern Illinois, by W. E. Burk; Diamondiferous deposits in the United States, by W. H. Hobbs; Progress in the cyanide process in 1900, by L. Janin, jr.; Present development of the barrel chlorination process, by J. E. Rothwell; Progress in gold milling in 1900, by R. H. Richards; Filter-press treatment of slime in Western Australia, by J. K. Wilson; Assay of graphite by blast and by fusion, by F. S. Hyde; Report on iron and steel metallurgy at the Paris

exposition, 1900, by H. M. Howe; Alloys of iron by H. Souther; Recent improvements in lead smelting, by H. O. Hoffman; Production of Manganese ores in foreign countries, by F. Drake; Electrolysing nickel-copper matte, by T. Ulke; World's production of petroleum, by Dvorkovitz; Origin and occurrence of petroleum in California, by A. S. Cooper; Statistics of the potassium salts industry in Germany, by C. Hornung and E. C. Mackey-Heriot; Geology and technology of the potassium salts industry in Germany, by F. Klockmann; Manufacture of potassium chlorate by the Liebig process, by J. B. C. Kershaw; Potassium and sodium chlorates and hypochlorites in 1900, by J. B. C. Kershaw; Progress in the sulphuric acid industry in 1900, by F. J. Falding; Fibrous talc industry of St. Lawrence Co., F. Y., by C. H. Smyth, jr.; Review of the tin industry of the Malay peninsula to the end of 1898, by F. Owen; Review of progress in the metallurgy of zinc in 1900, by W. R. Ingalls; Pyritic smelting, by F. R. Carpenter; Progress of metallography in 1900, by A. Sauveur; Manufacture of titanium and its alloys, by A. J. Rossi; Progress in ore dressing in 1900, by R. H. Richards; Concentration of the Broken Hill (N. S. W.) sulphide ores, by T. J. Greenway; Recent contributions to the science of ore deposits, by R. W. Raymond, and Notes on electro-chemistry, by C. F. Chandler.

B. A. C. DISCLOSURES.

THE following is the official statement of the liquidator of the British America Corporation appointed by the courts. In view of the appalling nature of the disclosures contained in it we think it advisable to print as much of it as we are able to afford space to. It proves to anyone reading it that the mines of British Columbia have had nothing to do with the downfall of that company:

"This is a meeting called under the statute to enable you to choose your liquidator. You have the right to nominate a liquidator and the court appoints him. You have also the right to nominate a committee of inspection to act with the liquidator. I have just attended a meeting of creditors for the same purpose, and they have resolved that it is undesirable to have a committee of inspection, but in the event of the shareholders nominating such a committee they feel that they ought to be represented on that committee, and consequently they have nominated four gentlemen to act in that capacity, in the event of your wishing to nominate a committee. You know that it is the duty of the directors to submit a statement of affairs showing the assets and liabilities of the company at the date of liquidation. They have done that, and the statement as submitted by them shows unsecured creditors to the amount of 274,000 pds. and assets to the estimated amount of 1,244,000 pds. Those are the estimates of the directors, and I wish to impress upon you as strongly as I possibly can that those are not my estimates at all. The directors return the liabilities at 274,000 pds. Proofs have been lodged by creditors with me to the amount of something over 800,000 pds. With the regard to the assets, the principal items consist of investments in shares amounting to 824,000 pds., which consist to the extent of about 500,000 pds. in companies formed by the London and Globe Corporation and by the British America Corporation, but which have never been put upon the market, and the shares of which are held either entirely by the London and Globe and British America Corporations or jointly by them and the Standard Exploration Company. I think the only other item to which I need direct your attention is that of book debts, which are estimated to realise 214,000

pds. That includes a debt due from the Standard Exploration Company of 202,982 pds., which is taken at its par value. In course of time you will receive from me a printed summary of the statement of affairs of the company, also a printed list of assets and a full statement concerning the whole history of the company. I hope you will get that within about a week. This company has not been long in my hands, and I am sure you will understand that it has been no light task, considering the short time I have had to unravel the tangled skein of this company's affairs. The threads of the transactions of the three allied companies — that is to say, the London and Globe Corporation, the British America Corporation and the Standard Exploration Co. — perpetually cross and recross. I stand here to-day fully conscious of the extreme difficulty of making clear to you in words the whole story of this company in which such a number of difficulties are necessarily involved.

HISTORY OF THE COMPANY.

The company was registered in October, 1897, and was promoted by the London and Globe Corporation. Its first directors were Lord Dufferin, who resigned in December, 1900; Lord Loch, who died in June, 1900; the Hon. C. H. Macintosh, who resigned in May, 1899; Mr. E. A. Hoare, who resigned in March, 1898, and Mr. Whitaker Wright. Lord William Beresford was appointed a director in January, 1898, and he died in April, 1899. Mr. R. E. Leman was appointed a director in January, 1900, and resigned in December, 1900. Mr. Sinclair Macleay was appointed a director in February, 1900, and is still a director. Thus Mr. Whitaker Wright and Mr. Sinclair Macleay are the only two directors at present remaining. I think that all the directors who are bound to be present are here to-day, but I should like to tell you of one thing I have done. Lord Dufferin came over to see me some time ago, and gave all the information he had. I believe he placed every memorandum in his possession at my disposal. I am not entitled to require Lord Dufferin to come to this meeting, but he said he was quite willing to come over from Ireland on purpose, in spite of his health not being good. I told him that really I did not think it necessary; I did not feel that I was justified in asking him to come, and I hope you will approve of my action in that matter. (Applause.) In December, 1897, the prospectus was issued by the London and Globe Corporation. One million pounds sterling was offered for subscription, and the whole of it was subscribed. 800,000 pds. was then subscribed by the public, 200,000 pds. being kept in reserve for the Standard Exploration Company, and that 200,000 pds. was subsequently subscribed by the Standard Exploration Company. Prior to the issue of the prospectus a provisional contract had been entered into by the British America Corporation with the London and Globe to purchase certain options for 500,000 pds. Those options were in the Yukon and in British Columbia, and had cost the London and Globe 100,000 pds. Mr. Macintosh being the vendor. Now, to take the options in British Columbia, the first step that the board of the British America Corporation took was to appoint Mr. Macintosh resident director in British Columbia, and he thereupon started from England for British Columbia. Among the options purchased from the London and Globe was an option over the shares of a Canadian company which then owned Le Roi mine. That option was to buy \$5 shares of the Canadian company at \$12 a share, making a total of \$6,000,000 for the whole mine. When the directors came to inquire into it they found that the price was too high, consequently they

abandoned this option which they purchased from the London and Globe. There were 500,000 shares of this Canadian company, and eventually the board of the British America Corporation bought 270,676 shares at \$6 each—half the option price—and they ultimately bought the rest of the shares at \$7.25.

AN ACTION AGAINST THE CORPORATION.

Well, the people who sold at \$6 have since been extremely dissatisfied, owing to the fact that other dealers got \$7.25, and the result is that the owners of the shares sold at \$6 began an action against the British America Corporation in British Columbia to recover the difference between \$6 and \$7.25. On the hearing before the Court of First Instance there the British America Corporation won, but the holders of the shares sold at \$6 have appealed, and that appeal is still pending. Now, at a very early date, in view of the magnitude of the various Canadian undertakings and properties of the British America Corporation, the Board had already invited the London and Globe, and that company had agreed to co-operate and to take a one-half interest in their undertakings. In these circumstances half the cost of the shares of the Canadian Le Roi Company was charged to the London and Globe. Then the British America Corporation proceeded to form a company to take over the mine, all the shares of which they had bought, and in conjunction with the London and Globe they registered Le Roi Mining Company on the 7th June, 1898, with a capital of 1,000,000 pds. The purchase price of the property was fixed at 950,000 pds. The total cost to the British America Corporation and the London and Globe of Le Roi mine was 785,634 pds.; therefore, the profit on the sale to the new company was 164,315 pds., and that profit was equally divided between the British America Corporation and the London and Globe. Mr. Macintosh, you will remember, was the resident director in British Columbia. He took up some of the options purchased from the London and Globe, and he purchased other options. Eventually the options taken up by him were divided into three groups—East Le Roi, West Le Roi and Columbia Kootenay. They are all close together, and the directors of the British Corporation registered three companies, one called East Le Roi Mining Company, Ltd., another called the West Le Roi Mining Company, Ltd., and a third called the Columbia Kootenay Mining Company, Ltd., to take over these three groups. On the East Le Roi group the directors, at the time the company was formed, had expended 77,000 pds.; on the West Le Roi group they had expended 155,000 pds., and on the Columbia Kootenay group they had expended 62,000 pds., making a total of 294,665 pds. The nominal capital of each of the three companies formed was 500,000 pds., and the purchase price paid was 400,000 pds., in shares of each of the companies. No part of the capital of any one of these three companies was issued to the public, and none of them possessed any working capital. All the shares remained in the coffers of the London and Globe and the British America Corporations, and the working capital was from time to time provided by the British America Corporation.

The immediate effect of the sale was to convert the amount expended—namely, 294,665 pds.—into shares bearing a face value of 1,200,000 pds., showing a paper profit of 905,334 pds., half of which was handed to the London and Globe. By this means the London and Globe and the British America Corporations were each enabled to include in their balance sheets a paper profit of 452,667 pds. Between June, 1898, and Nov., 1899, various other sums were expended by the British Am-

erica Corporation upon these properties. On the East Le Roi group they expended 33,000 pds. odd, on the West Le Roi group 37,000 pds. odd, and on the Columbia Kootenay group 32,000 pds. odd, making 102,000 pds. odd in all. This amount was eventually satisfied by 33,000 shares in the East Le Roi Mining Co., 37,000 shares in the West Le Roi Mining Co., and 32,000 shares in the Columbia Kootenay Mining Company. The London and Globe made no contributions to this expenditure of 102,000 pds., and received no part of the 102,000 shares issued against it. Now, some day a question must arise as to how far there was a partnership between the London and Globe and the British America Corporation. The London and Globe, throughout the history of the British America Corporation seems to have shared all the gains, but it has been extremely irregular in sharing expenses, and on no single occasion has the London and Globe shared in actual losses. (A laugh). Now, I will leave British Columbia for the present, and pass on to the options in the Yukon district. The most important option mentioned in the prospectus related to the acquisition of the business of the Alaska Commercial Company. When the agents of the British America Corporation came to deal with the Alaska Commercial Company, the agents of that company made such impossible conditions that the option entirely fell through. The British America Corporation thereupon engaged a Mr. Bowker, who had a special knowledge of the Yukon, to proceed to Klondike with very large powers. He had instructions to take over a store in Dawson, and to purchase stores and a suitable vessel for river navigation, the total of such purchases being limited to 300,000 pds. Mr. Bowker left England on Feb. 5, 1898. On the 3rd of the following month the board decided to reduce the limit of Mr. Bowker's expenditure from 300,000 to 200,000 pds., and on May 5, 1898, his power of trading in the Yukon was again limited to the capital then at his command—namely 32,000 pds. It is fair to Mr. Bowker to say that these altered instructions do not appear to have arisen from any want of faith in Mr. Bowker but from a change in the policy of the board at home.

LOSSES IN THE YUKON.

Mr. Bowker proceeded, with his wings clipped, to acquire stores, transport and buildings necessary for the conduct of trading operations, and so far as I know he lost 79,474 pds. Since then there has been a larger loss in the Yukon. Now, to return home. The general financial policy of the corporation has been throughout under the direction and control of its managing director, Mr. Whitaker Wright, and it is important to bear in mind that Mr. Whitaker Wright was also the managing director of the London and Globe and of the Standard Exploration Company. In the early stages of this company's history a considerable part of the cash at its disposal was lent out at interest to bankers, but on 17th February, 1898, the managing director was authorised to call in all these loans and to place the same when received with the London and Globe on deposit at 4 per cent. interest. At this time the London and Globe owed the British America Corporation on loan account 150,000 pds., but in pursuance of the authority referred to this indebtedness was immediately increased to 450,000 pds. Mr. E. A. Hoare, who was then one of the directors, objected strongly to this, and eventually resigned in consequence of his objection. From September, 1898, to February, 1899, large sums were advanced by the British America Corporation to the London and Globe, and were repaid on account. After hearing from me that the British America Corporation had such large debts due to it from the Lon-

don and Globe you must be wondering where the necessity of co-operating with the London and Globe came in. At the time when the British America Corporation resolved to invite the London and Globe to co-operate the London and Globe owed the British America Corporation 400,000 pds. I do not know how many here were shareholders in the year 1899, but in that year the British America Corporation made up its first balance sheet, and for the first and only time at that period the transactions between the London and Globe and the British America Corporation were in favour of the British America Corporation. The balance sheet showed a net profit of 225,944 pds. and a cash balance of 266,807 pds. In October, 1899, the board resolved to close the books as on the 30th November, and I find these two minutes on the books of the corporation:—"Resolved that the purchase of 264,110 International Nickel Corporation, Ltd., shares from the London and Globe Finance Corporation, Ltd., on the 29th September, 1899, at 18s. per share be and is hereby confirmed. Resolved, that the sale of 264,110 shares in the International Nickel Corporation, Ltd., to the London and Globe Finance Corporation, Ltd., on the 24th November, 1899, at 20s. per share, be and is hereby confirmed." This domestic sale and purchase—(laughter)—was apparently effected by Mr. Whitaker Wright alone in his capacity of managing director of both the London and Globe and British America Corporations, and the result was a gift to the British America Corporation of 264,110 shares. At the first date (29th September, 1899) the account between the two corporations showed a balance due from the London and Globe. No payment was, therefore, made by the British America Corporation, but on 28th November—the date on which the accounts of the corporation were made up—the London and Globe paid 263,110 pds. to the British America Corporation in respect of the shares re-purchased. The object of this transaction appears to have been a double one (1) to increase the British America Corporation's profits by the sum of 26,110 pds., and (2) to increase the British America Corporation's balance at their bankers by the sum of 264,110 pds. The balance, cash in hand, shown in the balance sheet is 266,807 pds.

The British America Corporation, apart from this purchase, had a balance of only 2,697 pds., and by this friendly cheque from the London and Globe the balance was increased from that figure to 266,807 pds. You will remember I asked you to keep in mind the paper profit created by the formation of the East Le Roi, the West Le Roi and the Columbia Kootenay Co's. That paper profit, amounting to 452,667 pds., was included in the profits of the British America Corporation, and they wrote off 250,000 pds. of the 500,000 pds. originally paid to the London and Globe for options. There is no sum of 500,000 pds. paid for options mentioned in the report or balance sheet at all; the only sum mentioned is 250,000 pds. Of course all moneys paid for options were gone; either the options had been exercised, in which case they were represented by properties and included in the balance sheet under the head of properties, or they had not been exercised, in which case the options lapsed and were valueless. The directors seem to have recognised this, and they wrote off 250,000 pds. Then they had to deal with the balance of 250,000 pds., and the directors of the British America Corporation represented to the London and Globe that the sum originally paid for options had been too heavy, and they also represented the partnership which existed between them. In consequence of that the London and Globe Corporation agreed to return 250,000 pds. to the British America Corporation. They could not return the shares

to the British America Corporation, because that company could not hold its own shares, but they did return shares in other companies—namely 195,000 shares in the East Le Roi Mining Company and 55,000 shares in the Columbia Kootenay Mining Company, making together a nominal amount of 250,000 pds. As I said those are the only two occasions on which the London and Globe did anything kindly to the British America Corporation. Well, supposing these shares had not been handed over, according to my view there would have been a loss of 24,000 pds. instead of a profit of 225,000 pds. odd. Eventually, however, this surrender of 250,000 pds. worth of shares by the London and Globe to the British America Corporation proved to be only temporary, for when the London and Globe were making up their accounts in December last they took the advice of their solicitors on the 4th—the London and Globe accounts being made up to the 5th—and their solicitors, who had not been asked about the previous transaction, advised that this transaction was *ultra vires*—beyond the powers of the London and Globe. Thereupon the British America Corporation handed back to the London and Globe the 250,000 pds. which they received. (Laughter). Of course, the question must arise whether the ten per cent. dividend which was paid in Nov. 1899, was paid out of capital or not. I do not want here to argue any question of accountancy; the only point I want to push now is this, that the 250,000 pds. was included in the British America balance sheet in November, 1899, that that 250,000 pds. does not now form part of the assets of the British America Corporation, but does form part of the assets of the London and Globe. I believe that the first surrender of shares by the London and Globe to the British America Corporation was thoroughly *bona fide*. I believe it was done after a great deal of consultation and at the urgent request of several of the directors. They believed the London and Globe had not treated the British America Corporation fairly up to that point. But with regard to the second transaction, I am bound to express my opinion that it seems to form a series of efforts to reduce the liabilities and to increase the assets of the London and Globe at the time of its last balance sheet on the 5th December.

THE COLUMBIAN PROPRIETARY, LTD.

On the 6th Nov. 1900, the Columbian Proprietary, Ltd., was registered by the British America Corporation to take over some mining properties in British Columbia which had not been included in the three companies I have already named. The nominal capital of the Columbian Proprietary Company was 500,000 pds. in 5 pd. shares, and the purchase price payable to the British America Corporation was fixed at 300,000 pds. in fully-paid shares. The amount expended by the British America Corporation on the properties handed over to this company was 24,530 pds., and the operation resulted therefore in a paper profit of 275,470 pds. On the 5th December, 1900, one-half the purchase price, namely, 150,000 pds. in shares, was handed to the London and Globe, but at the date of the winding-up order the London and Globe had not been charged with any part of the expenses. In the months of June and July, 1900, three new companies were formed, namely, Le Roi No. 2, Rossland Great Western Mines, and the Kootenay Mining Company. Le Roi No. 2 was for the purpose of purchasing nearly the whole of the property of the West Le Roi Company; the Rossland Great Western Mines was for the purpose of purchasing nearly the whole of the property of the East Le Roi Company; and the Kootenay Mining Company, in its turn, purchased nearly all the property of the Columbia

Kootenay Mining Company, Ltd. The capital of Le Roi No. 2 was 600,000 pds.; the purchase price was 550,000 pds., the whole of which was paid to the British America Corporation in cash. The capital of the Rossland Great Western Mines was 500,000 pds., and 450,000 pds. of purchase money was paid to the British America Corporation in cash. The Kootenay Mining Company had a capital of 400,000 pounds, and 350,000 pds. being the purchase price, was again paid to the British America Corporation in cash. In each case the parent company retained a small amount of property. The West Le Roi Company retained five claims, the original price of which had been \$38,000, so that the West Le Roi Company had not much to represent its issued capital of some 437,000 pds. The East Le Roi Company retained nothing but one claim, the original cost of which was \$16,000. The issued capital of the East Le Roi Company at that date was \$443,000 pds. The Columbia Kootenay retained nothing but a small claim called the Black Eagle, the original cost of which was \$10,000. The secretary states that these were not included in the properties sold to the new companies, because very little, if any, development work had been done on the claims; only the developed claims were sold to the new companies.

A REMARKABLE TRANSACTION.

Now, to return to the transactions which took place in November and December last. At the beginning of November, 1900, the balance remaining due from the London and Globe to the British America Corporation was 941,013 pds. This was changed by sales of shares in November and December, 1900, by the London and Globe to the British America Corporation to an indebtedness by the British America Corporation to the London and Globe of 10,173 pds. Thus on the date of the London and Globe balance sheet (5th December, 1900) the British America Corporation instead of being a creditor for 941,000 pds., was a debtor to the London and Globe of something over 10,000 pds. That might have been a perfectly fair transaction, but let me tell you how this indebtedness was repaid. I take two instances of shares handed over by the London and Globe to the British America Corporation. First, there are 200,000 shares of the West Le Roi Company at par ex div. Now, if that means anything, it must mean ex the purchase money of the new company, for what had the West Le Roi Company at that date? As I have just told you, it had five undeveloped claims which originally cost \$38,000, to represent its issued capital of 437,000 pds.; consequently the London and Globe paid a debt to the British America Corporation of 200,000 pds. by giving the British America Corporation something less than a one-half interest in five claims which had cost \$38,000. ("Shame.") Next, the London and Globe paid a further sum of 145,000 pds. to the British America Corporation by handing over shares to that amount in the Columbia Kootenay Company ex div. Now, the Columbia Kootenay Company was like the West Le Roi at that date; it had parted with practically all its properties; it had its issued capital of 432,000 pds., but it had no property whatever left, except the one small claim which had cost \$10,000; consequently the London and Globe paid a debt of 145,000 pds. by giving the British America Corporation something between a third and a half interest in an undeveloped claim which had cost \$10,000. Among the shares said to have been purchased by the British America Corporation on 30th November last were 69,578 Standard Exploration Company's shares at 10s. a share. Now, that purchase of shares stands on a perfectly different basis to the other purchases I have spoken of.

the London and Globe did not own those Standard Exploration Company's shares. What it had done was this—it had purchased in the market for a rise 69,578 Standard Exploration Company's shares, and that purchase was transferred from the London and Globe to the British America Corporation on the 30th November. It was, in fact, the temporary transfer of a speculative commitment of the London and Globe to the British America Corporation. The London and Globe had contracts with brokers outstanding at that date. The brokers do not seem to have been communicated with at all, and it meant a great deal to them; it meant the change of their debtor. The debtor was in the first case the London and Globe, and by this transfer their debtor became the British America Corporation. In January last that transaction was written back again into the London and Globe books, and the shares were retransferred." (Laughter).

DEVELOPMENT OF WATER POWER AT CASCADE FALLS.

THIS company's plant is situated on the main Kettle river, at Cascade City, Boundary district. The river at this point rushes through a rocky gorge in a series of rapids and falls, for a distance of about half a mile, and has a natural fall in that distance of one hundred and twenty-one feet.

For the development of the power a dam has been constructed at the head of the gorge which raises the water to a height of thirty-six feet above the natural level, thus giving a working head of one hundred and fifty-six feet at low water. The dam is constructed of timber cribwork filled with rock, and is forty feet thick at the base and slopes back to a width of twenty-four feet on the top. The total length of the dam is four hundred feet and the total height from the base to the top is fifty feet in the deepest part of the channel, tapering off to a height of twenty-five feet at the sides. About 10,000 cubic yards of rock were required to fill the cribwork.

The site is on a solid rock bed throughout, and the foundation timbers are firmly bolted to the rock. The permanent water level will be ten feet below the top of the dam, and provision has been made to control the water level during periods of high water by a series of sluice ways, twelve in number, which can be opened down to a depth of twelve feet below the normal level. This will give an area of about two thousand square feet of waterway through which to pass the flood water. The sluiceways are closed by means of stop logs, twelve inches square, dropped one on top of the other in a groove provided for their reception. A steel rail track will be placed on top of the dam on which a travelling winch will be run over the sluiceways for the purpose of drawing up the stop logs as the water rises during floods. This winch will be operated by hand or electrical motor.

The site of the present dam was chosen with the view that at some future time a concrete masonry dam can be constructed below the present structure, and can be built without any stoppage of the plant whatever.

During the high water last June a large boom of logs, held a few hundred yards above the dam, gave way and about 1,000,000 feet of logs were thrown against the dam in a mass at a time when the water was at extreme flood, without inflicting the slightest damage on the structure. This unexpected test of the dam fully demonstrated its stability.

The water will be conveyed from the dam to the pow-

er-house, first by an open rock cut two hundred and twenty-five feet long, thence through a tunnel, twelve by fifteen feet, driven for a distance of four hundred and ten feet through solid rock, thence by another open channel for a distance of five hundred feet, to a point where a concrete bulkhead will be placed and the water conveyed in a circular flume of twelve feet diameter to the power-house. About 35,000 yards of rock have been excavated from the open cuts alone. The areas of the open cuts and tunnel are so large that no appreciable loss of head will occur, and the water will enter the flume with a head equal to the level of the water in the dam.

The power-house will be placed on a natural bay at the foot of the falls, where an extensive site has been excavated out of solid rock. About 7,000 yards of rock have been removed for this purpose.

The turbines will be of the horizontal type, two wheels in each case, and the generators of the three-phase alternating type. Stop-up transformers will be used to raise the current for transmission. The electrical machinery is to be of the latest and most modern construction of the Westinghouse Electric Company. The power-house will be a substantial fire-proof structure of brick and stone, according to the engineer's plans, 200 feet long by 45 feet wide. The main distributing station will also be a fire-proof structure of brick and stone.

A right of way has been cleared from Cascade to Phoenix, in Greenwood camp, a distance of twenty-one miles. The clearing is one hundred and thirty-two feet wide and all brush and timber has been removed. Two separate duplicate lines are being constructed, of the most substantial and up-to-date description. The heaviest wire will be used and every possible means will be adopted to ensure a continuous current being maintained.

Poles are now being distributed along the right of way between Phoenix and Cascade, and all of the outside work, buildings, etc., is being completed for the early installation of the machinery at the power-house at Cascade.

The Columbia and Western R. R. Co. is putting in a side track at Cascade, for the unloading of the machinery and other material, which will probably amount to more than fifty car loads before the end of the year.

THE MONTH'S MINING.

KAMLOOPS.

(From Our Own Correspondent.)

DEVELOPMENT work on the Iron Mask is being carried on at the 200 and 300-foot levels, with a force of 27 men. Three car loads of ore have been shipped to the Granby smelter during the month. The Copper King started operations again and will ship a car load of ore before the end of August.

The official starting of the dredge on the North Thompson took place on the 14th of August. A number of the leading men of the town attended at the invitation of Mr. F. J. L. Tyler the representative of the dredging company. The machinery was started by Miss Una Macintosh of this city. The dredge has proved an efficient gold saver and been floated down the river to commence operations at the lowest part of the lease.

Messrs. Husband and Fennell, who for two summers have been prospecting near Clearwater river, recently brought down some very fine samples of galena. On the Isis mineral claim they have veins of solid galena up to nine inches wide carrying good values in silver. The Isis group is within three miles of the navigable waters of the North Thompson. The Glen iron mine closed down during the month owing to the uncertainty created in the mining industry in the Kootenays by the Rossland strike. The Hall Mines Co. have completed their plans for opening up this property on a large scale, but until the wage question in Rossland is settled they will remain in abeyance.

FAIRVIEW.

(From Our Own Correspondent.)

A couple of months ago the Fairview Corporation shareholders decided to reconstruct their company on an assessable basis, giving to the old shareholders shares paid up to the extent of 22 cents and assessable for 3 cents. There are 3,000,000 shares issued, so that if all paid the company would receive over \$90,000, which would be more than ample to place the company in a solid financial position. The assessment was divided into two calls of 1½ cents each, and the first call has been responded to by about two-thirds of the whole issued capital. With this money all outside liabilities have been met and \$14,000 has been paid to George Gooderham on his mortgage of \$40,000. In addition all the plant of the Fairview Mining Company, including a ten-stamp mill, has been purchased at a low figure and is being added to the 76-stamp mill. A large staff has been engaged for the past month and the stamp mill, which will have a capacity of about 80 tons per day, will be erected and running within two months. This work is in charge of Mr. C. Ostenberg, who has a long record of successful work in the line. Mr. E. Rammelmeier, M. E., who has been superintendent of the Emily Edith mines at Silverton for the past four years, has been engaged as superintendent, and will take charge as soon as the mill is ready for ore.

A second notice has been sent to the shareholders, who have not responded, and by resolution the time of payment of first call has been extended to September 10th, after which all unpaid stock will be forfeited. Many have, no doubt, waited to see if the call would be responded to, and now that success is assured will pay up and save their stock.

BOUNDARY DISTRICT.

(From Our Own Correspondent.)

Mining matters in the Boundary district are without much change from the position stated in last month's letter to the MINING RECORD. The three mines that from time to time have had mention in these monthly letters are steadily maintaining an output of ore aggregating rather more than 1,000 tons daily, and the respective smelters of the Granby and British Columbia Copper Companies are continuing to treat a similar quantity. The output from the Granby company's mines, in Greenwood camp, has latterly been somewhat larger, the apparent intention having been to provide a reserve of ore at the smelter. The necessity for such provision was demonstrated recently when the burning of a part of a railway trestle prevented, for several days, the shipment of ore from the mines to the smelter. In order that any such occurrence, accompanied by a longer interruption in shipments, may not result in the smelter running out of ore an occasional extra train load of ore is now sent down. Several times recently the Old Ironsides and Knob Hill group has shipped about 1,000 tons in one day, and the intention is to shortly regularly exceed that comparatively large tonnage so as to meet the enlarged requirements of the smelter when its treatment capacity shall have been doubled.

The companies continuing to do active mining work in Greenwood camp are the Granby, Dominion Copper and Snowshoe. The Granby company is steadily enlarging its operations and increasing the producing capacity of its group of mines, the Old Ironsides, Victoria and Knob Hill. As the development work on the Old Ironsides and Victoria is below the surface the progress made is not apparent to visitors who do not go down the mines. On the Knob Hill the position is a different one, for whilst much work has been done underground, here, too, the enormous surface openings in ore are within sight of all who visit these unique mine workings. A much more extensive plan of working is now being followed and this will aid very considerably to the producing capacity of the mine. A big open cut has been started from the level of the railway line running to the mine ore bins. It is intended to run the ore cars into this cut and to use a steam shovel in loading them with the ore, which will have first been broken down. This will involve shipping to the smelter practically all the rock quarried out as the big cut shall be advanced into the hill. Should this cut be continued, as it will be should conditions remain as favourable to profitable working as they are at present, and in the course of two or three years reach back to the farthest face of rock yet opened in this large quarry, it will give a cut, all in ore, from 200 to 300 yards in length and a face of ore from 200 to 250 feet in vertical depth. The width of this enormous mass of ore is not yet apparent to the visitor, since the quarry has not yet been opened for more than about 100 feet in width, but that it is much wider is evident, surface shipping showing it to be so. Looking at this big body of ore the statement made that it will be quite practicable to ere long ship from the quarry alone 1,000 to 1,200 tons of ore a day, loses all appearance of exaggeration. This, it must be remembered, leaves altogether out of consideration the additional output that can be maintained from the underground workings of all three mines named above, which workings have in them large reserves of ore blocked out and available should the treatment capacity of the company's smelter be eventually increased to 2,000 tons a day, as has been stated it will be.

THE PRODUCING MINES.

The work of sinking a five-compartment main working shaft, to

serve for all three of the Granby Company's developed mines, has been commenced. The site chosen is near the southern boundary line of the Victoria and centrally situated so as to be in a convenient location for other claims the company owns, and which have yet to be developed. A 5x5 Bacon hoist has just been placed near the mouth of the shaft to facilitate the hoisting of rock and the lowering of timbers until such progress shall have been made as shall require a bigger hoist. The company has recently put in a timber-framing machine, the first of its kind yet installed on a mine in the district. It is a single-end framer, complete with wedge-sawing machine and having a swinging cut-off saw. The motive power is furnished by a 45 horse power Meyers cut-off engine made by the Jenckes Machine Company, which company supplied this plant, engine, shafting, pulleys, etc., having been manufactured at its own works and the framer and carriage procured from the Denver Engineering Works.

The Dominion Copper Company has stopped work for the time on its Idaho claim, but is continuing operations on the Brooklyn and, to a much smaller extent, on the Rawhide. Half of a 20-drill air compressor is being installed at the Brooklyn, and other preparations are being made for working on a larger scale. Nothing definite as to the location and time of erection of the smelter, it is stated this company intends putting up, has yet been made public. The Snowshoe Company is still at work, but the managing director, Mr. Anthony J. McMillan, who lately returned from England, has not yet given out the company's intentions as to the future working of the mine.

Reports have been circulated during the past few weeks to the effect that an important strike of ore had been made at the 400-foot level of the Winnipeg mine, but as the foreman in charge of the mine is not permitted to give out any information, a recent visit to the mine by the writer was barren of results so far as the confirmation of this report is concerned. This may be stated though, that systematic and economical work has been done for months past in this mine, and the plan of working was known all along to have for its ultimate object the cutting of an ore body believed to exist ahead, so that if the reports referred to are correct the results achieved recently are only what were aimed at when the work was mapped out. The neighbouring property, the Golden Crown, has not yet resumed work, but an assessment has been levied and a circular has been sent to the shareholders in the old Brandon and Golden Crown Company, stating the position and prospects of the property and urging the payment of the assessments the new company is making for the purpose of placing the mine upon a permanent working basis.

The only mine at present at work in Summit camp is the B. C., which is now shipping its ore to the British Columbia Copper Company's smelter at Greenwood, instead of to Trail as heretofore. A report has been published in some of the Kootenay newspapers to the effect that a body of ore has been met with at the 400-foot level of this mine, but as yet this lacks confirmation, although its occurrence is only what has been looked for and what it was anticipated the diamond drill would prove when it was put in two or three months since. The B. C. has done good work and has been a steady shipper of ore since the beginning of last year, so its farther success would be a source of satisfaction throughout the district. Work has been suspended at the K. Bell mine, also in Summit camp, after about 500 tons of ore of good grade had been sent to the Granby smelter. It is understood that the cause of suspension after more than a year of continuous work is in connection with the payment for certain interests in the property.

The Jewel, in Long Lake camp, is working between 30 and 40 men. A shaft is being sunk on what is known as the northeast vein and a long crosscut from the old Jewel workings is being continued at the 230-foot level with the object of trying to cut that vein at depth. The difference in depth is so great that what is 230 feet on the incline in the old workings would give a vertical depth of about 500 feet under the vein which outcrops in the northeastern part of the property. A 5x5 Bacon hoist has been installed lately and the sinking of the new shaft is being facilitated by its use. The water has been pumped out of the adjoining Enterprise shaft for the purpose, it is stated, of permitting an expert examination of the property with a view to its purchase.

In Deadwood camp the British Columbia Copper Company's Mother Lode mine has been sending down to the company's smelter at Greenwood from 300 to 350 tons of ore daily right along. Two or three months ago it was decided to work the mine on the pillar and slope system, and this is now being carried out. The main passage ways of the mine have lately been timbered with heavy timbers and the work of filling the large spaces left by the stopping out of ore is now in progress. The main workings have all been wired for electric lighting and there has been on the 200 and 300-foot levels a general straightening up for permanent work. Tenders have been invited for deepening the main shaft to the 500 level, the intention being to run levels at both 400 and 500 feet depth. The surface openings are also yielding a comparatively large tonnage of ore and these, together with big stopes at the 200 and 300 levels, supply ore in both quantity and variety to suit the requirements of the smelter for economical and productive treatment. The second furnace, which will increase the treatment capacity of the

smelter to about 750 tons a day, should arrive at the works early in October and be ready for blowing in some time in November.

Both the Sunset and Morrison, also in Deadwood camp, are at work, but notice of them must be deferred until next month. It is claimed for the former especially that the outlook is bright, but much more work will have to be done before shipments can be maintained in sufficient quantity to keep its own smelter going, so that the talk of a smelter for this mine seems to be rather premature at present. Work is also being done on the King Solomon, in Copper camp, and preparations are being made to send to the smelter some of the high grade copper ore occurring there and of which it is stated there is about 1,000 tons in sight.

Ymir.

(From Our Own Correspondent.)

The Ymir mine has now a total force of 250 men employed at the mine and mill, and on the construction work for the big cyanide plant. The latter is now progressing rapidly, the site having been prepared and some of the foundations laid. The returns for this month may be expected to be considerably larger than usual, as shipments of crude galena ore have been resumed. This very rich ore is encountered in pockets in the vein from time to time, although none has been sent out for nearly two years when a shipment of about 550 tons netted the company about \$120 per ton. The Fern mine, which was one of the first properties in the district to pay dividends, is again to be worked. It

has lain idle for about eighteen months now, the supposition being that the vein had been lost. A lease has now been taken on the property by R. Nicholls, a practical miner of long experience, who is confident that he can again make the mine profitable. The property is equipped with a ten-stamp mill and small compressor plant and is developed by three adit levels totaling some 1200 feet of work. The Silver Crown Consolidated Mining Co. is now working three shifts of miners on its Shiloh property near town. The crosscut tunnel has now reached a distance of 160 feet. A contract has been let for a 100-foot shaft on the Big Four group owned by the British Lion Syndicate, of Ontario. An important deal has just been consummated whereby the National Development Co., of Chicago, has acquired a valuable group of claims adjoining the Ymir mine and traversed by the same vein.

The claims in question are the Carthage, owned by H. Kearns, and the Pat and Fraction, owned by J. Philbert and W. Blair. The two last named were two of the original locators of the Ymir mine, and the claims now transferred were staked by them on the supposition of containing another ore shoot similar to that now being worked on the Ymir. From the appearance of some of the ore lately obtained from this group it is possible that such a bonanza may really be found. The Golden Monarch Co., of Spokane, has a force of men at work on its Fog Horn property. No. 1 crosscut tunnel is now in nearly 400 feet and has about 200 feet farther to go, whilst No. 2 tunnel is in about 100 feet on the vein, the last 70 feet being all in good ore. There is now a large amount of development work proceeding on the lesser prospects scattered round the town, and on more than one remarkable showings are being obtained which are causing quite an influx of experts. Several important deals are now in course of recognition and the camp seems to be more than ever attracting the attention of capital.

SLOCAN LAKE.

(From Our Own Correspondent.)

The past month has been trying to make amends to us in this district for previous misbehaviour. The record has been perfectly dry, sunny weather, with general warm winds, which has stripped the snow in quick time from the upper reaches of the mountains. The month has been satisfactory in the dry-ore belt of the Slocan. It would seem that we are outgrowing the effects of early booming and amateur mining, complicated perhaps by interested or unfair criticism. Now that careful, intelligent work is showing such results as the Arlington and Hewitt mines, the status of the camp is changing very satisfactorily. Ten-mile creek has nothing of special interest to note this month, except increased development on the Enterprise and the discovery of very rich ore, east of the Enterprise group, and on the divide between Ten-mile and Twelve-mile creeks.

Twelve-mile Creek.—On this creek, the V. & M. have surveyed this group and are planning for a compressor plant. The Champion group on the V. & M. ledge is under short option to a Detroit syndicate. The contract on Mr. Fishburn's bond has been completed. Work on the big ledge of the Myrtle group has been very satisfactory to the owners.

Springer Creek.—Everything is busy, and with the exception of an incipient strike on the Arlington, over a dispute between some of the miners and the cooks, highly pleasing. The Arlington has been shipping steadily from 10 to 15 tons per diem, and they have just made an arrangement with the Hall Mine smelter at Nelson to ship them their low-grade ore dump at the rate of 1,000 tons per month. This means a rate of from \$7.00 to \$8.00 per ton freight and treatment. They are fairly underway with extensive outside improvements, in-

PHENIX
CAMP.

THE
WINNIPEG.

SUMMIT
CAMP.

LONG LAKE
CAMP.

DEADWOOD
CAMP.

WORK AT
THE FERN.

AN
IMPORTANT
DEAL.

IMPROVED
CONDITIONS.

THE
ARLINGTON.

cluding superintendent's quarters, bunk houses and cottages for the men. The Ricowitabi Co. on the same vein, north, on the 20th paid the bond on the Speculator, \$50,000. The same day the Phoenix Co. paid up the bond in full on the Phoenix-Viking properties on Republic mountain, about 2½ miles from Slocan. The big Arlington vein would seem to have been traced across the basin south to the properties on the opposite slope. The Black Prince has shipped two more car loads of ore, and the Two Friends people are working on the Black Prince lead.

Lemon Creek.—There is much activity at the head of the First North Fork, where lessees are taking rich ore out of the vein Jim Long and Fourth of July, also on the Hoodoo and Free Gold claims. The owners are working on the Alberta, the Tailhold and others. Steady development is under way on the Rose. Near the head of the creek good ore is reported from the big iron cap ledges in the neighbourhood of the Lone Dutchman. The new trail will enable the prospectors to do much more development work than has been the case in the past.

SANDON.

(From Our Own Correspondent.)

The manager of the Noble Five Mining Co. reports that during the month of July the following work has been done on the Noble Five property, Slocan: In tunnel a crosscut has been driven to crosscut the Last Chance ledge for a distance of 133¾ feet, making a total to date 200 feet. Last Chance tunnel No. 3 has been drifted on the ledge 35 feet, making a total from the Last Chance and line 151 feet. In this distance three shoots have been encountered. Assays taken from third shoot gave 174 ozs, to 186 ozs. silver, 11 to 17 per cent. lead. Twenty-four tons shipped to the Nelson smelter, after paying freight and treatment charges returned \$1,922.33 a little better than \$80 per ton.

The big tunnel at the Last Chance, Slocan division, is nearly 1,700 feet, and may tap the galena ledge in the next 50 feet.

There are about twenty-five men working at the Ivanhoe mine, Sandon, and as soon as some slight repairs to the tramway are completed the payroll will be increased to 30 or 35 men, and the mill will run steadily on ore from the dumps. There are 500 tons of rock in the feed bins at the mill.

Operations have been resumed at the Whitewater mine. There are now fifty men on the payroll at the mine and mill. Six hundred tons of ore were shipped to the Trail smelter during July.

A car load of ore is being shipped from the Wonderful that will average \$100 to the ton.

The Tamarack group, Slocan district, is being developed by a Spokane syndicate, who have eight men at work. It is reported that this group has a pay shoot of 16 inches of dry ore. Twenty tons of ore shipped by the owners of some time netted \$1,200.

A 10,000-foot aerial tram is to be built to connect the Silver Hill and other properties with a shipping point on Crawford Bay, Ainsworth division. The tram will have a capacity of 225 tons per day.

During the month of July, ore shipped from Sandon amounted to over 1,000 tons. Slocan Star shipped 519 tons; American Boy, 143; Noble Five, 25; Payne, 25; Last Chance, 20; Trade Dollar, 20, and Queen Bess, 257.

FISH CREEK CAMP.

(From Our Own Correspondent.)

On the Camborne group of nine claims, Lardeau district, bonded by the Rosenberger Prospecting Syndicate, the development consists of surface work and tunneling. Twenty men are now employed on the property. There are six veins on this group averaging in width from 8 to 45 feet; the ore averaging from \$6.00 to \$60.00 per ton. It is estimated that there are fully half a million dollars worth of ore in sight. On the Oyster group of five claims, Lexington mountain, Lardeau district, also bonded by the Rosenberger Syndicate, ten men are at work. Two veins have been discovered on this group. The Oyster vein is from 10 to 15 feet wide. On the Criterion claim the vein has a width from 2 to 15 feet and the ore shoot has been opened up for a distance of 500 feet, the values running from \$25.00 to \$85.00.

THE LARDEAU.

(From Our Own Correspondent.)

Notwithstanding a very hot August, there is still a great deal of snow on the hills, which interferes considerably with the convenience of working some of the higher located properties, and

RICH ORE it is only the very best of these that can afford to
FROM THE ship at present. Usually, the ore is extracted in the
TRIUNE fall and winter months and rawhided over the snow

later on, but it seems, owing to the precipitous nature of the ground, one property of great promise, the Triune, can only make use of a pack train to ship the ore, and may probably be compelled to close down during the winter. Two car loads from this claim (which is being developed with all possible speed while the weather remains fine) are said to have been valued at \$5,000 per car, or about \$250 per ton. Whether this is true or not the writer cannot say, though from his own knowledge such a value is quite possible, but the certain thing is that when the smelters have got through

with their fine work, and freight and treatment has also been paid, the owners will do well to make any profit at all. Such are the sad conditions which face the (unfortunate?) mine owners to-day. The Nettie L. has shipped all but a very few tons, not over 10, to the smelter, and is satisfied with the returns made, having learned from experience that it is not of the slightest use to kick, and also that the smelter takes every possible pains to sample fairly and give full value, less, of course, their system of fining the owner for what he has in the ore. It is expected that the force of men, now very small, on this mine will be greatly increased after the sense of the shareholders is ascertained at the annual meeting to be held on August 22nd. The end of the long lower tunnel is now almost under the shaft in the upper workings, and ore is coming in quite freely and of very good value. One of the most recent properties that is now being industriously worked at, although

in the snow, is the Ophir Lode group, recently bonded for \$100,000. This is a gold proposition giving wonderfully high gold values. The ore appears to be a telluride of bismuth, but there is so

much free gold in it that it will easily bear either stamps and cyanide or some other similar process before sending the residue to the smelter. The veins are reported small, but plenty of them, and an inch vein of \$1,000 ore is well worth watching. Another quite new property is the Ruffled Grouse, a silver-lead proposition, quite close to Trout Lake. This is said to have changed hands already at a very low figure (the ore was very good), but it is merely a prospect as yet and the report lacks confirmation. For the Camborne and Fish River district I must refer you to your correspondent in that section. It will be a busy camp this winter, as so many properties are being developed by companies with ample capital behind them. The well-known Eva and Oyster groups are in this section, as are also the Moscow, Trilby and other groups owned by the Double Eagle Co., which will be worked during the coming winter as far as possible. Altogether the entire Lardeau district looks in a very healthy way, there are no serious labour troubles, as the men are well housed, fed, paid and not over-worked, while the almost innumerable claims, all showing good ore and some extraordinary value, only await cheaper transportation to become a "great factor in our country's wealth."

I am very glad to say that galena was struck in the lower tunnel of the Nettie L. on the 21st of August. Samples have been brought down, too late for assay, but show unmistakably the same character of ore as exists in the upper workings, these proving beyond doubt that the ore bodies already known extend downwards and do not pinch out with depth. This strike is about 350 feet below the surface.

EAST KOOTENAY.

(From Our Own Correspondent.)

Development work on the Big Chief group of four claims, Fort Steele division, consists of several tunnels and drifts. There are two distinct veins on the property. A small one, three feet in width, can plainly be seen over 600 feet. This vein has a ledge matter which carries iron, lead and copper, values said to average \$70 per ton. The large vein upon which the work has been done is 28 feet wide free-milling gold quartz.

The Great Dane group of mines, Fort Steele division, has been purchased by J. C. Drewry for \$40,000. There are two strong ledges on the property, one from 9 to 12 feet wide and carries 4½ to 5 feet of solid galena. The second ledge carries about 2½ feet galena ore. Sawyer Bros. have taken a contract to run a 200-foot tunnel on this group.

Mr. Frank Robbins, manager of the North Star mine in East Kootenay, says that about 1,000 tons of ore are being extracted per month. The mine has paid five dividends of \$39,000 each, or a total of \$195,000, and has enough ore in sight to pay a good many more.

One of the most important deals perfected in Kootenay for several years is that made on a group of fifteen claims at Kitchener, East Kootenay, purchased by a Montreal syndicate for the sum of \$100,000 cash. As a result of it there will be built up in the district a very important iron and steel industry, giving employment to a large number of men, and which will do much for the future development of the Province. The claims contain a continuous body of high grade hematite iron ore, varying from 50 to 200 feet in width. Best assays showing 66 per cent. metallic iron, 2 per cent. silica, .03 sulphur and a trace of phosphorus, and the average of 20 assays taken from different parts of the property give metallic iron 55 per cent., silica 10 per cent., sulphur .05 per cent. and phosphorus .01 per cent. It will soon be determined whether the property will develop into a proposition large enough to justify the establishment of an iron smelter for the production of pig iron and steel rails for local consumption. If the property should prove to be of sufficient extent to justify this step the syndicate will form itself into a large company to erect a plant and proceed with the manufacturing of iron and steel.

ROSSLAND.

(From Our Own Correspondent.)

The strike situation remains unchanged. The reported resignation of Mr. Whitaker Wright from the board of directors may bring about a

change. If, as is claimed by many, the primary cause of the strike was to be found in London, a change of management there may have the way for settlement

THE STRIKE SITUATION. The extent to which the Le Roi company is suffering by the strike at the Northport smelter is shown by the affidavit of Mr. Bernard Macdonald in the recent injunction proceedings before the federal court of the United States, in which he stated that since the strike began the smelter had occasioned the Le Roi company a loss of \$50,000 a month in operating expenses.

Mr. Henry Bratusher, a well-known expert closely associated with Hamilton Smith, and one of the advisers of the Exploration Company of London, in their Montana dealings, spent some time in Rossland in the beginning of the month and made an exhaustive report on the general situation at the Le Roi mine and smelter. He made no secret of the fact that he represented the Le Roi shareholders who are dissatisfied with Mr. Whitaker Wright's management of the company. A more hopeful feeling prevails that there will be an early adjustment of the strike but how far this is justified it is hard to say as yet.

MINES IN OPERATION. Practically mining has been at a standstill all the month of August. The ore output for the whole month has been merely nominal, some 150 tons a week from the second-class ore dump of the Le Roi has been sent to Trail. The Iron Mask, I. X. L. and Spitzie, have sent out a few car loads to the Canadian Pacific smelter but that has been all. No ore of any kind has reached the Le Roi smelter at Northport from here.

The Spitzie appears to be doing very well, the mine is situated in the heart of the town. The shaft is only down to the 100-foot level, yet some thirteen car loads of ore have been sent out this season so far, for the last of which the owners received a cheque from the smelter company for \$452.00. A car load runs from 23 to 25 tons so that the return is a very good one and keeps the owners in funds with which to continue working.

The camp is very dull and quiet, over 1,200 men have gone off to other camps pending a settlement of the strike. Several of the smaller properties keep a force of men working right along and the Abe Lincoln, a south-belt proposition which has been idle for the past two years, recommenced work about the middle of August. Until a satisfactory settlement is arrived at by which all work can be recommenced again and continued for some years without any fear of interruption, Rossland is likely to remain dull and comparatively uninteresting.

CATALOGUES, CIRCULARS AND TRADE NOTICES.

THE ALLIS-CHALMERS CO. AT SALT LAKE.

WE are requested to state that Mr. H. N. Croll, who has been manager of the Spokane, Wash., branch office of the Edward P. Allis Co., has been appointed manager of the branch office to be established at 414 Dooly Block, Salt Lake City, for the Allis-Chalmers Co., with the territory of Utah, Nevada, Montana and Southern Idaho, under the direction of this office.

A DISSOLUTION OF PARTNERSHIP.

The firm of Trethewey & Brittain, patent attorneys, Vancouver, has been dissolved, Mr. Trethewey retiring. Mr. Brittain, a trained mechanical engineer and registered at Washington as an attorney competent to practice before the United States office, continues the business.

ECONOMIC RESULTS FROM USE OF JACKSON DRILLS.

The proprietors of the Jackson Hand Power Drills have recently received a number of testimonials from mine managers in various mining centres in America referring in high terms to the efficiency of these machines. The manufacturers have forwarded us copies of these letters, of which we publish two representative specimens:

HECLA, WYOMING, Feb. 4th, 1901.

H. D. CRIPPEN, ESQ., NEW YORK CITY:

DEAR SIR: I have been using one of your new steel Jackson Hand Power Rock Drills continually since December 24th, 1900, running same one hundred and fifty feet underground in one of the hardest of granites, in which men (double-handed) do well to make five to six inches per hour. One man with the Jackson Drill is now doing from eighteen to twenty inches per hour.

The drill runs like clock-work and is easy to handle. Many here are interested in the drill, and I have agreed to send the drill and a man over to our neighbour mining company, who, I am satisfied, will send you an order for a Jackson Drill as soon as they see the same work.

You may use my name for reference at any time.

Yours, very truly,
(Signed) J. D. KAZAR.

RAWLINS, WYOMING, June 19th, 1901.

H. D. CRIPPEN, ESQ., DENVER, COL.:

DEAR SIR: In regard to the Jackson Hand Power Rock Drill which I am using, I wish to say that I consider it a perfect success. We are driving a tunnel through the hardest kind of crystallized lime stone, and when we got your drill were about at a stand still.

One of the greatest difficulties we had in using hard steel with hammers was to temper the steel hard enough to cut the rock without breaking the bit, consequently we used twice the amount of steel that is required by using the drill. We now temper our steel very hard and seldom break a bit, and I can safely say that the advantage the Jackson Drill has been to us the month we have used it amounts to more than the cost of the drill.

Yours respectfully,
(Signed) W. S. HILANDS.

PELTON WATER WHEELS.

The eighth edition, (1901), of the Pelton Water Wheel Co's catalogue has reached us. This publication contains in addition to price lists and descriptive matter much valuable information of a general character, while the illustrations of large plants recently installed in which the Pelton Water Wheel is utilised, are exceptionally good.

IMPROVED ROCK-DRILLING MACHINES.

In Bulletin No. 3, the Abner Doole Company, of San Francisco, specially call attention to their make of improved rock drills which are manufactured in three sizes. A few of the chief features of these drills are: the valve, which does not move until the blow has been delivered—an obvious advantage; the backward stroke of the piston is nearly equal in power to the forward stroke; the machine is solid throughout; an air cushion for the backward stroke of the piston obviates the use of steel springs or rubber bumpers; and the time-saving method of securing the drill steel in the piston rod, etc., etc.

THE TWENTIETH-CENTURY ENGINE.

The Lane & Bodley Co., of Cincinnati, Ohio, make the pleasing announcement that they complete this year "half a century of successful existence, and a new catalogue shows a wood cut of an engine built by them in 1851, in striking contrast with the latest up-to-date type. The company are now manufacturing a special heavy-duty Corliss engine, which they designate as "The Twentieth Century Engine." All parts have been made heavier, and are calculated for a boiler pressure of 150 lbs. per square inch, a piston speed of 750 feet per minute, and if required, 126 revolutions per minute.

HERCULES HOISTING ENGINES.

We are in receipt of a very handsome catalogue from the Hercules Gas Engine Works. The efficiency of this class of engine is well known. The hoists are made with engines either vertical or horizontal, provided with single or double cylinders and either band or post brakes.

WOOD ROCK DRILLS.

In a catalogue entitled "General Description of the Wood Rock Drills," the manufacturers of these machines claim that they are able, after nearly ten years' experience to "produce a drill that for lightness, strength, durability and workmanship is not exceeded by any other make." The catalogue is well illustrated and the information clear and concise.

PRESSED STEEL CARS.

An exceptionally fine catalogue has been issued by the Pressed Steel Car Company, of Pittsburg, Pennsylvania, the illustrations being well executed on plate paper. It is shown that great economy has been effected in haulage capacity by the employment on railways of the Schoen pressed steel cars in the transportation of heavy materials such as coal and ore. An example is afforded in the case of the Pittsburg, Bessemer & Lake Erie Railway. From the moment pressed steel cars of 100,000 tons capacity were put into use 73½ per cent. paying load to train weight was shown, and placed the train-mile earnings at \$5.38 per mile, as against earnings of from \$1.38 to \$2.73 of other roads.

A NEW STYLE OF GATE WORK.

The Wisconsin Traction, Light, Heat & Power Co., of Appleton, Wisconsin, recently placed quite an extensive order for turbine water wheels with the Stilwell-Bierce & Smith-Vaile Co., of Dayton, Ohio. The plant consists of two units of wheels for driving the main plant, each unit containing three pairs of 4,211 Victor turbines mounted on horizontal shafts, the total h. p. to be developed by these wheels to be 3,200 h. p. Two single 24-inch horizontal wheels will also be furnished for driving the exciters. The gate work will be of the draw rod type, which places all gears on the outside of the flume where they can have attention, and where they can work in oil, doing away with the old style of gate work where the gears run in water and where they were continually causing trouble. This is a feature fully covered by patents.

COAL EXPORTATIONS.

THE foreign coal shipments from the Vancouver Island collieries for the seven months ending August 1st aggregate 578,274 tons. The shipments in July were divided as follows:

New Vancouver Coal Co.	37,357
Ladysmith	28,581
Union	3,738

Total 56,676

For the three weeks ending August 20th the New Vancouver Coal Co. exported 23,639 tons to California, Puget Sound and Alaska.

MINING STATISTICS AND RETURNS.

		ROSSLAND.		
		1901.	1900.	Increase.
		Tons.	Tons.	Tons.
Shipments for January (revised)	.....	30,894	24,933	5,961
" February "	.....	26,778	6,960	19,818
" March "	.....	34,172	279	33,893
" April "	.....	40,160	6,834	33,326
" May (estimated)	.....	47,000	25,704	31,296
" June "	.....	32,000	17,161	14,839
" July "	.....	6,000	17,396	*11,399
" August "	.....	1,000	19,417	*17,416

*Decrease.

The total production from this district for the eight months ending August 31st, approximates 217,000 tons.

EAST KOOTENAY.

The ore shipments from East Kootenay for the half year are approximately as under :

	Tons.
St. Eugene	9,600
North Star	7,200
Sullivan	1,200
Society Girl	120
Total	18,120

BOUNDARY DISTRICT.

The tonnage of ore shipped by Boundary district mines during Aug.,

up to 21st, inclusive, so far as has been ascertained from the mines is as under.

Old Ironsides and Knob Hill group	16,169
Mother Lode	6,432
B. C.	1,690
No. 7	210
R. Bell	120

24,621

Total shipments for current year is 234,391 tons, bringing aggregate to date up to 332,172 tons.

		LARDEAU DISTRICT.	
		Tons.	Value.
Silver Cup	.....	1020	\$150,960
Nettie L.	.....	470	58,750
Trinne	.....	92	23,751
Cromwell	.....	7	793
St. Elmo	.....	6	510
Ethel	.....	17	1,599
Broadview	.....	26	1,664
Great Northern	.....	28	1,344
Lade Group	.....	6	1,320

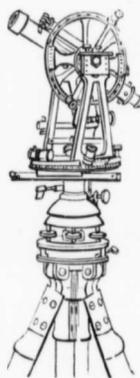
Total 1672 \$225,689

THE SLOCAN.

The production from the Slocan and Slocan City Mining Divisions to date aggregate 15,500 tons.

THE COAST—MT. SICKER DISTRICT.

The Lenora mine shipped 1,790 tons in July.



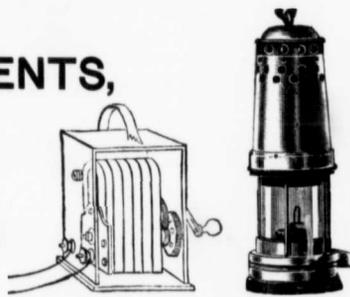
Transit Theodolite.

John Davis & Son, (Derby) Ltd.

DERBY, ENGLAND.

MINING INSTRUMENTS, Surveying Instruments Electric Blasting App.

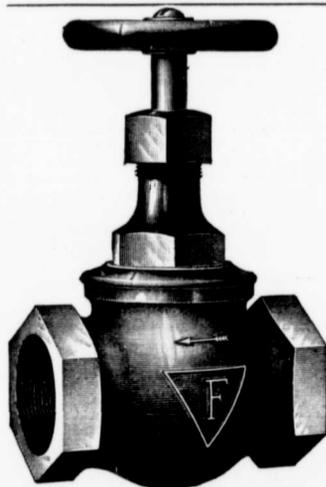
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