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MINING RECORD

ESTABLISHED 1895

VOL. XI.

OCTOBER, 1904.

No. 10

BRITISH COLUMBIA MINING RECORD

Devoted to the Mining Interests of the Pacific Northwest.

PUBLISHED BY

THE BRITISH COLUMBIA RECORD, LIMITED

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Victoria, B. C., Office, Province Building.
Vancouver, P. W. Charleson, Hastings St.
London Office: 24 Coleman Street, E. C.
Denver, Col.: National Advertising Co.
San Francisco: Dako's Agency.

SUBSCRIPTION TERMS:

Canada and the United States, one year - - \$2.00
Great Britain and Foreign, one year - - - \$2.50

Advertising Rates on Application.

THE MONTH.

The continued success attending the operation of the Providence and other high grade silver-gold properties in the Greenwood "granite belt" has had the very satisfactory effect of inducing the further investment of capital in promising prospects and claims in the neighborhood. During the month a number of transactions are reported to have taken place, by which Boundary properties of this class have been acquired under bond by syndicates proposing to proceed at once with development operations. To the individual investor and to syndicates consisting of men of small means, mining properties of this character are, of course, especially attractive, as they may often be made to yield handsome returns on a minimum expenditure of capital and labour.

The Nelson *Tribune* goes to a great deal of pains to publish periodically full and accurate monthly returns of Kootenay mine production, and the editor's enterprise in this respect is worthy of every commendation. In no captious spirit, however, we venture to point out that the practical utility and value of the compilation might be greatly enhanced at the expenditure of very slight additional pains in the direction of arrangement and classification. Thus in the

table recently published by our contemporary giving the returns for the month of August, fifty-one mines are shown to have made consignments to different smelting points, the presumption being that all these properties shipped ore in the crude form. This is misleading in that a very considerable tonnage from the Slocan, East Kootenay and even Ymir was made up of concentrates, which, if not so considered, affects the totals considerably, and at the same time makes it appear that certain mines, the Ymir for example, are making relatively small outputs. To the outside reader, too, seeking information the *Tribune's* table would be the better appreciated, we imagine, if in each case the class of ore produced by individual mines were given as well as tonnage therefrom.

Now that there is a Supreme Court judgeship vacant representations are being made to the Hon. the Minister of Justice, Ottawa, with the object of inducing the Federal Government to require that whoever shall be appointed to the vacancy shall reside permanently in the Kootenay. On behalf of the Provincial Mining Association of British Columbia the president, Mr. John Keen, has submitted reasons in support of such a course being adopted. If the Government accedes to the requests made by the bar of Nelson and Rossland, the Provincial Mining Association, the Press and the public, and makes the stipulation as to residence in the district, it is to be hoped that its choice of a successor to Mr. Justice Drake will be a lawyer especially fitted to deal with mining cases. Some very important matters relating to mines and mining companies have been before the courts held in Nelson and Rossland during the last year or two, and since with the growing importance of the mining districts others may be expected to require careful attention from time to time, it is desirable that this be kept in view in filling the judicial vacancy.

Two Alberta coal mines are about to ship their products to British Columbia. Elsewhere we have mentioned that the International Coal & Coke Company will shortly commence to supply the Granby Company with coke for the smelter at Grand Forks. The other company is the C. P. R., which has opened

up two seams of coal near Banff, and is now seeking markets for its anthracite east as far as Winnipeg and west to the cities of the Pacific Coast. For some time similar coal was obtained at Anthracite, situated five miles east of Banff, and at Canmore, ten miles farther east, something like \$1,000,000 having been invested in developing and equipping the anthracite mines at those places. But Bankhead, as the new colliery has been named, promises to be far more important than either of the other places, for at it a dozen seams of coal have been located and much money has been spent in development and equipment of the mines there. Between anthracite from Bankhead and that from Comox there should not be any lack of excellent hard coal for the use of consumers in our coast cities and districts.

It has been officially reported that the joint committee of Canadian and United States geologists, appointed for the purpose of endeavouring to arrange for a common classification and nomenclature of rock formations, so as to secure as far as practicable, uniformity in this connection in information given in publications issued by the Geological Surveys of Canada and the United States, respectively, has reached an agreement on many points on which the official geologists of the two countries were not previously in accord. The party, consisting of seven eminent geologists, made a tour through parts of Ontario and Minnesota along the International Boundary line and during their travels the main purpose of their coming together was carried to a successful issue. If the result of this joint work and mutual agreement be that the Geological Surveys of the two countries in future adopt similar methods and terms in classifying and naming rocks, chances of confusion will be lessened and geological reports will be more intelligible, at any rate to laymen, who are easily misled by variations in descriptions and names, even though geologists may recognise that the language and terms used are really synonymous.

The mica mines of Ontario which until quite recently were worked in the most desultory and haphazard fashion, are now by improved methods of operation beginning to make relatively large annual yields, in fact the mines of Ontario and Quebec are now regarded as perhaps the chief sources of mica supply on the continent. The demand for mica is steadily increasing, its utilization in the manufacture of electrical apparatus being alone very considerable. In Ontario the mica is merely "rough cobbled" as it is taken from the pits, then shipped to trimming works, where it is graded, split and cut for the market. By the increasing manufacture of "micanite" however, by which small and irregular pieces of mica are converted by means of a shellac cement into boards of any requisite dimension and thickness, the disproportion between the value of the larger sheets of mica and smaller sizes is no longer a factor and consequently deposits can now be worked to greater advantage and with less waste. With the proposed

transportation facilities provided there is no reason why the mica deposits in the Big Bend and Tete Jaune Cache districts of British Columbia should not ere long be worked with results equally as satisfactory as those which have attended operations in Ontario, and we trust next year to be able to record the circumstance that a start in this direction has been made.

A correspondent writing to the *Engineering and Mining Journal*, of Aug. 18, states that in mining for gold he encountered a deposit of black magnetic sand, which contained a grayish mineral, locally pronounced to be platinum, and asks for information as to methods to be adopted for concentrating the material, to which enquiry our contemporary replies that: Unless the mineral is present in minute grains, it can be determined with approximate certainty as to whether or not it is platinum. The lighter material or silicates, if present, can be removed from the sand by the usual methods of washing, and then the black magnetic mineral can be separated by a magnet. In the concentrate there should remain gold, platinum and other heavy metals of the platinum group. If the gray metal is malleable, but insoluble in ordinary acids—hydrochloric, nitric or sulphuric—it is almost certain to be one of the platinum metals. For concentrating the sand, some form of the magnetic separator of which there are several types of these machines on the market, should be used.

In a more recent issue of the *Journal* Mr. A. Stanley Elmore writing on the subject remarks that trials have been carried out by means of the Elmore process of oil concentration on magnetic sands carrying gold and platinum values, "which are very difficult to recover by any other process, and which get amenable to treatment by the oil concentration method." In view of the occurrences of black sands in the Similkameen, Cariboo and Cassiar districts, which have been found to contain values in platinum and osmiridium, this information should prove of interest to many of our readers.

A determined effort is being made in certain directions to influence shareholders in the Le Roi Mining Company to bring pressure to bear upon the management to abandon its present custom of having the Le Roi ore treated at the company's own smelting works at Northport, Washington, and to secure the erection of concentrating works for the Le Roi at the mine instead of having them placed, as it is stated is contemplated, on a site near the International Boundary line and distant about a dozen miles from Rossland and the mine. The ostensible reasons for this agitation are that Le Roi ore can be treated at less cost in the province, and that if the concentrator be built at the mine there will not only be no freight to pay on the considerable bulk of the ore that will be discharged by the concentrator direct to the waste dump, but the company will have the advantage of competitive railway rates on its concentrates when dealing with the question of whence to ship them for

further reduction. Whether the end they have in view will be gained by those behind this agitation remains to be seen, but apart altogether from considerations of benefit that may be derived by any particular town or smelter there is the question of cost of treatment of the ore. If it be true as repeatedly alleged, that the company can get its ore smelted in the province for \$1.00 or \$1.25 per ton less than it can smelt it at its own works, then shareholders will not be content to go on missing the opportunity of making that much more profit out of the ore. No such question of sentiment as the one that, being a British organisation, the Le Roi company should not assist in building up an important industry in a foreign country, to the detriment of British Columbia, is likely to have much weight with shareholders, but if they be convinced that more money can be made by having the ore smelted in this province it is probable they will eventually insist that the smelting shall be done in British Columbia, but not otherwise.

On August 5 last the *Victoria Colonist* published some estimates of the mineral production of the chief mining districts of the province for the first six months of the current year, which estimates had been prepared by some one employed by that journal for the purpose. A head-line writer, incorrectly assuming that the figures were prepared in the office of the Department of Mines, included in the heading the words "Departmental Statistics show an Important Increase over last Year." Outside of a few newspapers to which a correspondent in the *Colonist* office sent a summary of the estimated mineral production, and two or three others that were honest enough to acknowledge the source of their information, the mistake of the head-line writer in the *Colonist* office proved a veritable trap for newspapers and mining journals given to "cribbing." A dozen or more Provincial newspapers varied their head-lines and introductory comments, but all made the same mistake of regarding the statistics as departmental, while neither the Provincial Mineralogist nor any one else in the Department of Mines had anything to do with the preparation of the figures, which were the result only of the enterprise of the *Colonist*. The infection spread to Eastern Canada, the United States, and even Great Britain, the Provincial Mineralogist or the Department of Mines having been credited far and wide with figures that the *Colonist* alone was responsible and deserved credit for. The incident is not of much importance, but it shows how little value can properly be attached to statements published in numbers of publications purporting to be reliable, but which appropriate the results of the work of others without hesitation or acknowledgment.

We publish this month a description of the ore roasting yards and accompanying appliances at the Tyee Copper Company's smelter, at Ladysmith, Vancouver Island, together with an account of the brick-making methods in use at those works preliminary to burning the fine ore in the roast heaps.

The distinctive features of the roast yards, viz., permanent trestles, travelling bridges to facilitate the building of the roast piles and at the same time to economise labour, and the practice of burning or roasting the ore in much smaller piles than is customary at other smelters, are of particular interest, for they demonstrate that so long as there is room for the introduction of improvements in plant and methods, the manager of these works is not content to plod along in the old groove. Not only are the plant and methods at the Tyee roast yards distinctive, but they are simple, thoroughly practical, and economical, as, too, are those in connection with the making into bricks and roasting of the fine ore. Mr. Thos. Kiddie, the manager, is of an inventive turn. His efforts in the direction above indicated having proved successful, it may be expected that he will find other means of effecting savings in operating costs. Since every reduction in the cost of treatment enlarges the tonnage available for smelting, by making it practicable to mine and smelt ores of a lower grade at a profit, each economic success achieved is welcomed, not only as tending to increase revenue to the owners of reduction works, but as making it possible to utilise more and more of the mineral resources of the Province. For this reason, as well as from a desire to keep readers of the *MINING RECORD* informed of improvements made, we are gratified that our request to have the information contained in the descriptive article alluded to placed at our disposal for publication has been courteously acceded to.

The statement that the first blister copper ever produced in Canada was turned out by a Boundary smelter may have been made in good faith, albeit in ignorance, but it was on a par with other extravagant and erroneous claims made in newspapers relative to mining and smelting in that district, which may well rest content with the assertion that its mining and smelting costs are very low, even though they cannot be shown to be the lowest in the world. A similar mistake appears to have been made by the Montreal Copper Company, an Eastern organization, which the *Canadian Manufacturer* lately credited with having claimed to have turned out the first refined ingot copper ever produced in Canada. Now, since the Orford Copper Company produced much refined ingot copper in the Province of Quebec as long ago as 1880, as, too, did a Scottish company operating in the same province, even earlier, it is evident that the claim of the Montreal Copper Company, if made as stated, can not be sustained. Similarly there is little difficulty in showing that much of the boasting done in this province is only "hot air" and it simply results in distracting attention from the fact that really good work is being done here, at an exceptionally low cost, apart altogether from the question of whether or not we can "liek creation" in our smelting operations. Let us be content to make it widely known that conditions are unusually favourable and costs low, and we shall be far more likely to attract the serious attention of capitalists than if we make assertions they

speedily find to be untrue and as a consequence discount other statements that really are true and worthy of their careful consideration. Men with large sums of money at their disposal to use in enterprises of merit are not deceived by flare heads or the hysterics of irresponsible writers for newspapers, but the unembellished record of simple facts may lead them to investigate and possibly invest. To have induced a single outside capitalist to put money into the development of the natural resources of the Province is to have accomplished good work, while to only succeed in tickling the fancy or flattering the vanity of a thousand home readers not prepared to find money for a similar purpose is so much waste effort.

By the time this shall be published the tonnage of ore produced by Boundary district mines during the current year will have reached a total of about 600,000 tons. With only three months to expire, it is quite evident that the stated ambition of the Boundary to achieve an output of 1,000,000 tons this year cannot possibly be gratified. Indeed it appears doubtful if the year's tonnage will much exceed 800,000 tons, although there is a possibility of its reaching 850,000 if it be found practicable to run all ten furnaces of the three local smelters with little interruption during the whole period of three months. But even if the 800,000 tons mark be not exceeded, this will mean that the gross value of the mineral production of this district will be not less than \$4,000,000. The tonnage for 1903 of the Yale district, which include Greenwood, Grand Forks and Osoyoos mining divisions, according to the Report of the Minister of Mines, was 607,284 tons valued at \$3,654,234 or an average value of rather less than \$5.25 per ton. Calculated on the same basis, this year's production in the district should reach a total value of about \$4,200,000, so that an estimate of \$4,000,000 seems to be a reasonable one. Such an estimate allows for the smaller tonnage of high-grade gold and silver ores raising the general average value, without which \$5.25 per ton is too high. Of course, the reaching of a total output of \$4,000,000 is conditional upon nothing occurring to prevent a maintenance of ore production at not less than the present average weekly tonnage. It is interesting to note that a total output of the value above estimated means a daily output of about \$11,000 for every day of the calendar year, Sundays and holidays included. For a district that half a dozen years ago (leaving the gold production of Camp McKinney and Fairview, in Osoyoos division, out of account) did not contribute that much in the whole year to the mineral production of the Province, it is manifest that it has during the intervening years made great progress or it would not by now have attained to the creditable position of producing about 20 per cent. in value of the total mineral production for the year of the whole of British Columbia.

A Mr. C. A. Ulrich, describing himself as a "mining and general agent," of Nelson has issued a circular inviting subscription to an issue of 100,000 pro-

moters shares in an undertaking called the British Columbia Mining & Industrial Investment Syndicate, Ltd., which, it is said, has acquired the Great Hope and Alma galena claims at Crawford Creek "with the purpose to work them at once." The circular states that a tunnel has been driven into the mountain on the boundary line of the two properties; but there is no mention of the distance driven or of the actual result accomplished by this development work. The reef, however, we are told, is four feet in thickness and "crops out the whole width of both claims a distance of 3,000 feet and numerous cuttings confirm that an enormous quantity of ore waits to be brought out." All of which is surely somewhat vague and indefinite. After stating further that the ore carries, according to assay and smelter tests, 40 ozs. of silver and 70 per cent. of lead to the ton, "while an unusual amount of carbonates are present," the value of the latter being, it is suggested, sufficient to defray "all expenses in connection with the work" (but whether this means the expenses in connection with the work of promoting the enterprise or of operating the mine is not quite clear). Mr. Ulrich later on remarks that the ore is *not* a very high-class one, but that the great quantity available, the easy method of mining and so on, guarantee the success of the undertaking. There is, it will be noted, a definite statement, or very nearly so, in respect to the value, but absolutely no definite information in respect to the quantity of "ore in sight." Presuming that Mr. Ulrich is interesting himself in a perfectly legitimate scheme, and we have no reason at all to doubt that such is not the case, we would also suggest to him in all friendliness the futility of endeavouring to secure the co-operation of brokers or the assistance of others likely to invest their money in an undertaking of this kind, without furnishing proof, in the shape of (say) references, of his *bona fides*. Mr. Ulrich may perhaps be well known and highly respected in Nelson, but we are not aware if he enjoys a wider repute. Again the circumstances would be very unusual indeed to commend to the mind of the prudent investor Mr. Ulrich's proposal that money subscribed for promoters' shares in the British Columbia Mining & Industrial Investment Syndicate, Ltd., should be entrusted to his sole keeping instead of, as is now customary, to that of a Board of Directors on whom the responsibility of the judicious disposition of the syndicate's funds would devolve.

The much vexed question of the "two per cent tax" is again brought prominently to the fore by the action of the Provincial Government in taking proceedings before the Court of Revision to recover from the Le Roi Company the sum of \$19,637.23, which it is claimed is due, over and above the amounts paid by the company on account of the mineral tax on ore mined by the company for the fiscal years ending June 30th, 1902 and 1903. The Government in claiming this large sum does so on the grounds that the quarterly returns made by the company to the treasury department during the periods mentioned do not

agree with the returns published in the company's annual reports, and that whereas on the showing of the former returns \$17,621.85 was paid in taxes, the Government was actually entitled to \$37,259.08 if the latter returns are accurate. In making the returns to the Government the Le Roi Company apparently took advantage of a technicality and, regarding the smelter as a separate undertaking entitled to a reasonable profit on the cost of smelting the ores, calculated accordingly. But in the company's annual report no such distinction could have been made. If we are correct in this assumption, and the profits credited to the smelter were no more than those usually earned by custom reduction works operating in the Province, blame can hardly attach to the Le Roi Company for adopting this plan to avoid paying a rate of taxation on a higher value per ton than other mining companies not owning and operating reduction works of their own. But this is really one of the principal arguments concerning the alleged inequitable incidence of the two per cent. tax, that mining companies owning their own smelters are either in a less or in a more advantageous position as regards the payment of the tax according to whether or not the practice adopted by the Le Roi Company is allowable. We observe that the Granby Company also recently entered an appeal against the assessment levied under the two per cent tax. The company is reported in the press to have made a return showing the gross value of the ore to be \$3.75 per ton, and the nett or taxable value \$1.26, the deductions being, smelter treatment \$1.76, freight 33 cents and smelter profit 40 cents. In addition to the levy of the two per cent tax the assessor held that income tax should be paid on the smelter profits. This claim, however, was not upheld by the Court of Revision.

Among many references, lately published, to the persistent report that Mr. Jas. J. Hill, of the Great Northern Railway, has secured control of a stock-majority of the Granby Consolidated Mining, Smelting & Power Company, is one in a Montreal newspaper that purports to be an account of an interview with Mr. S. H. C. Miner, president of the company; which attributes to that gentleman the statement that the report is true. We do not know—apart from the very natural sentiment that British control, whether Canadian or United Kingdom, would be more pleasing to think of—that it matters who has control, so long as the mine and the smelter that treats its ores are in British Columbia. Far better for the province that the moving spirit directing the industrial policy of this comparatively big undertaking be in the United States if an energetic policy of development and expansion be followed, than that it be in England with such drawbacks to progress as have characterised some of our English-controlled mining enterprises. It is quite unlikely that Mr. Hill, or those holding stock under his influence and direction, will attempt to build up a smelting industry south of the International Boundary line to the detriment of the best interests of British Colum-

bia, for the Granby Company has already expended large sums of money in establishing and equipping its smelter at Grand Forks. The mine certainly cannot be moved out of the country. Nor is it probable that those seeking business for the Great Northern Railway, whether in the coal mining regions of South-east Kootenay, the metalliferous mining districts of West Kootenay and the Boundary, or the big undeveloped Similkameen, will deliberately adopt a policy that would eventually arouse much opposition to them and their undertakings in the province. The prospects are that the extension of financial interests in British Columbia industries of men of influence in railway circles will hasten the provision of adequate transportation facilities for districts at present needing them badly, and will supply a healthy competition in other districts now under the domination of one railway. The legislature of the province or that of the Dominion will, if necessary, at any time, be able to devise an effective means of protection against any important movement that works substantial injury to our industrial interests.

In a short leader the *Nelson Daily News* recently referred to the reported resumption of work at the lead mines in Ontario and Quebec, as a result of the bonus on lead provided by the Dominion Government, pointing out that lead mine operators in British Columbia need feel no alarm on the score of Eastern competition, but rather welcome it, as the operation of the Eastern Canadian lead mines and the establishment of lead manufacturing works in Montreal would render it an easier matter to influence Government in the desired direction towards securing tariff modifications both in respect to raw materials and manufactured products. This view, we think, is a sensible one; but in any case the greater proportion of the bounty offered will necessarily continue to be earned by British Columbia producers. The method of stimulating industry by the adoption of the bonus system may be admissible under certain and abnormal conditions, but it should be likened to the administration of a powerful tonic to a person suffering from temporary prostration, the effects of which if not counteracted might result in a chronic disability. To continue indefinitely a course of tonic-taking (to carry on the simile) would be to ultimately weaken or destroy the natural functions of recuperative energy, and not improbably bring about a condition when an abandonment of the practice would have perhaps a fatal termination. In the present case the provision of a bounty on lead has been effectual in improving conditions, in our lead producing districts where previously a most pronounced depression obtained, but before the period anticipated in the Bounty Act expires, it is to be hoped that provision will be made, in better accord with sound economic principles, and along the lines of tariff reform, for the upbuilding and continued prosperity of an industry which is already one of considerable importance to Canada, and whose potentialities in the direction of development and expansion promise so well. While

we are on the subject we may be permitted to advert to a case which came to our notice the other day, when the provision of a Government bounty instead of inducing the establishment of permanent industry was not regarded as an inducement. For some time past, but more particularly in recent months, a great deal of investigation and enquiry has been instituted by capitalists desiring to inform themselves regarding the value and extent of the iron deposits on Texada Island and at Barclay Sound, on the West Coast of Vancouver Island, with a view to their utilisation in supplying the pig-iron requirements of the Puget Sound and other western markets, amounting at present to approximately 20,000 tons annually. The inauguration of this industry although a relatively unimportant one at this time is nevertheless much to be desired; but it is questioned, we have heard, whether it would be wise to establish works for the production of pig-iron in British Columbia, when it would probably be more profitable in three years' time to ship the raw material to the United States and manufacture there. As matters are it would pay better to make pig-iron on the spot, as costs of handling and freight would be less in this case, and the bounty on pig-iron off-sets the American duty on the manufactured product. But, the investor asks himself, what assurance or likelihood is there of a renewal of the subsidy when the period of the present arrangement expires. And if it is not renewed, with the American duty to meet, it would not pay to manufacture for that market, which is, and is likely to remain for some time to come, the only available market for our British Columbian iron.

We publish elsewhere in this issue a letter from Mr. R. C. Campbell-Johnston in reply to comments we last month made on a recent contribution of his to the *London Mining Journal*. The particular points we raised were (1) whether Mr. Campbell-Johnston's unqualified statement that the cheapest smelting extant is in British Columbia is open to question, and (2) whether he was justified in asserting that the present practice of British Columbia coal companies is to coke the coal in the ovens for only twenty-four hours. Mr. Campbell-Johnston replies to the effect that his advices are that Tennessee costs, to which we referred last month, are 35 cents per ton for roasting ore and \$1.15 for smelting, and that the cost of converting to blister copper has to be added, while the best British Columbia costs for the same result, viz., blister copper, are \$1.35 per ton of ore treated. Now, our information is that the Tennessee Copper Company now smelts its ore without first roasting it. Further, within the last fortnight there was published in the *Nelson Daily News* a report of the hearing of the Granby Company's appeal against the assessment made under the Act authorising the levy of the two per cent. mineral tax, from which report we take the following: "The assessment was based upon the affidavits made quarterly of the amount and value of ore shipped from the Granby mines, freight and treatment, and smelter profit. The gross value of the ore

was put at \$3.75 per ton, less smelter treatment \$1.76, freight 33 cents, and smelter profit 40 cents, a total deduction of \$2.49." Assuming that the affidavit of those who know the actual cost of the smelting (stated to be \$1.76), which probably includes the cost of converting to blister copper, is to be depended on, we see no good reason for accepting Mr. Campbell-Johnston's unsupported statement that blister copper can be produced in British Columbia for \$1.35 per ton of ore treated, nor do we suppose the Granby Company's costs are much higher than those at other smelters operating in the Boundary, where, as is generally admitted, smelting costs are, by reason of the exceptionally favourable conditions, lower than at other smelting points in the province. Then, as to the time taken to burn coke—if Mr. Campbell-Johnston is sincere in his expressed willingness to "beg forgiveness" if he has done the coal companies an injustice, he can best demonstrate his sincerity by ascertaining whether the assertion we challenged was correct, and, if not, by giving his acknowledgment of his error as wide publicity, through the *London Mining Journal*, as he gave to his unjust reflection on the coal companies. Mr. Campbell-Johnston is characteristically inaccurate in his conclusion that we are eager to advertise Tennessee as a cheaper source of copper than British Columbia. What we are eager to do is to state simple facts, and if it can be shown, upon incontrovertible evidence, that the cheapest smelting extant actually is in British Columbia we shall be only too pleased to avail ourselves of every opportunity to make known that fact, both in the columns of the *MINING RECORD* and through other influential channels open to us. On the contrary, we strongly deprecate exaggeration, whether in the direction of making claims for results not achieved, or in undeserved reflections on the work or products of companies operating in the province.

AN UNRELIABLE REVIEW.

THE *Mining Reporter* of Denver, Colorado has lately been favourably noticed in several of the newspapers of the Kootenay as a generally reliable mining journal. Our own observation has led us to conclude that its claim to reliability, so far as the information it publishes relative to British Columbia is concerned, of which we are qualified to judge, is, as a rule, well-founded. But for once, though, it has leant on a broken reed, and as a consequence published an article on "Mining in British Columbia," written by Arthur Lakes, that is not only most inaccurate, but does not even do the Province the barest justice in the direction of giving any conception of the comparative importance—for a country so young in lode-mining—of its mines, nor in conveying any idea of the amount and value of its mineral production. In fact, in the latter connection it does the very opposite, and that to an extreme degree. We feel that we have reasonable grounds for complaint that a widely circulated journal of acknowledged good repute should accept from a contributor an article pur-

porting to review an important industry of this country of which he has little personal knowledge. Professor Lakes has certainly visited British Columbia, or one corner of it, for we know that last year he came north via Nelson to inspect some mining claim or claims in the mountains west of Upper Arrow Lake, and that a few days ago he was reported to have been visiting Ymir, but that he is entirely out of touch with mining developments in the Province is very evident, since his article, now under notice is simply a very fragmentary rehash of portions of a mining bulletin published by the Bureau of Provincial Information and now quite out of date. The Professor is a prolific writer, but in the best interests of the mining industry of this Province we would respectfully urge him to turn his attention to other countries when seeking subject matter for his contributions, unless he will take ordinary care in obtaining data and in bringing his information up to date.

The Professor's information is so full of inaccuracies that it would take pages of space to correct them all, but since many of them are of minor moment we shall restrict our criticism to only two or three of those that are of importance. In regard to the mineral production, practically all the information given is that "Lode mines in 1901 produced \$4,348.63 in gold," and that "the Ymir mine produced \$340,000 in one year." It does not help British Columbia in the least to suggest that the first-quoted amount is a misprint. The simple fact remains that a writer well known in mining circles in the United States makes the statement, according to the *Mining Reporter*, that in 1901 our lode mines produced \$4,348.63 in gold when, as a matter of fact, their production that year was valued at \$13,683,044, in the following proportions: Gold, \$4,348,603; silver, \$2,884,745; lead, \$2,002,733, and copper, \$4,446,963. To show the total mineral production of that year, the value of placer gold, coal and coke, etc., \$6,403,736 must be added, the year's gross production having been \$20,086,780. If Professor Lakes had taken the Report of the Minister of Mines for 1903, issued last May, and had quoted from it to the effect that in that year the lode mines produced 232.831 oz. gold, 2,996,204 oz. silver, 18,089,283 lbs. lead and 34,359,921 lbs. copper, there would have been no reasonable grounds for complaint in this particular, even though mention was not made of the fact that the exceptional conditions that made the production of silver and lead in 1903 the lowest for years had since been removed. But in giving only the most meagre information about production, and that grossly mis-representative, infinitely more harm was done than would have been the case had no production figures at all been given.

Another of the series of mis-representations is the following: "East Kootenay ores require no concentration or sorting. They occur in parallel depressions or channels with a width of about 75 feet and a maximum depth of 40 feet." What an utter absurdity, when the St. Eugene mine, in the Fort Steele Division of East Kootenay, the biggest lead producer in Canada, which in 1900 contributed a large proportion

of the 63,358,621 lbs. of lead produced in British Columbia in that year, concentrates practically all its ore, while its underground workings include twelve tunnels, aggregating more than 10,000 lineal feet of development, the highest at 100 feet vertical depth below the summit of the hill and the lowest at 1,800 feet, with a shaft sunk from the floor of the 1,800-ft. level to a depth of 125 feet and having large bodies of ore opened up by means of drifts and cross-cuts at this 1,925-ft. level.

Without further dwelling upon the unfortunate mis-statements the *Mining Reporter* has, admittedly with the best intentions, been instrumental in spreading abroad, we think we may fairly ask that journal to do British Columbia the justice of directing attention to the untrustworthiness of Professor Lakes' article, and in the future to decline to publish information relative to mining in this Province unless reliably assured that it comes from a dependable source.

RAILWAYS INTO THE SIMILKAMEEN.

DURING the last year or so there has been published much speculative comment relative to the intentions of railway companies with regard to building railways into the Similkameen. Lately this subject has again been receiving the attention of provincial newspapers, several of which have been alleging reasons for the presence in the province last month of certain Canadian Pacific and Great Northern railway officials, and have associated with their having been here the recent visits to the Similkameen of representatives of those railway companies and the Granby Consolidated M. S. & P. Company. The stories told respecting the business at the coast and in the Similkameen, respectively, of these officials and advance agents, were plausible enough, even ingenious in their construction. The Great Northern is stated to intend to proceed immediately with the building of a railway from Midway, in the Boundary district, to Princeton, in the Similkameen; the Canadian Pacific is supposed to be preparing to head off that intruder from the United States, while the Granby company has had its "geologist"—by the way, that gentleman when formerly in the same company's employ was its ore buyer, since when he has been engaged in business as a mining broker in Spokane; an astute business man, no doubt, but unlikely to lay claim to being a geologist—"making a general roundup of information concerning the mining prospects of the entire country, the output of which it is planned shall be drained into the Granby works." Certain incidents are regarded as undeniable circumstantial evidence of the correctness of the first above-mentioned assumption, these being that twenty miles of the route of the railway have already been surveyed from Midway westward, and that rails are being sent in from Bellingham, Washington.

Now, we well know that no comment we, nor for that matter, that any journal, may make, will affect in the least the action or inaction, whichever it shall

transpire is to be their policy, of the railway companies, so that we cannot fairly be charged with "knocking" in making the remarks that follow. We earnestly desire to see the extensive Similkameen country, with its immense possibilities in agricultural, pastoral and mineral resources, opened up by railways, for without adequate transportation facilities those resources must, except to a very limited extent, remain undeveloped, but we require more evidence than that half-a-dozen agents of railway and mining companies have visited the district and afterwards met prominent officials of their companies and reported to them, or that a short length of the proposed railway route has been surveyed and a few rails been shipped from the coast. As a matter of fact the Great Northern or the V. V. & E., which in this connection are regarded as one and the same, nearly two years ago had surveyors on the route west from Midway towards the Okanagan country, which has to be crossed en route to the Similkameen, and they then spent some time in trying to get a suitable grade up Meyers Creek to the top of the divide between the Boundary and Okanagan districts. Probably they renewed their efforts this year. As to rails for that part of the country—the company is sending in steel for its branch to Phoenix, now in course of active construction, and when it shall proceed to complete the 12 to 15 miles of railway it has already had graded between Curlew (Washington), and Midway it will require rails for that length also before it can continue its line westwards.

As to the entire output of the Similkameen being drained into the Granby works—well, once get railways into that country and its big mineral showings well developed, half a dozen local smelters as large as that of the Granby Company will find more than enough ore available to tax their treatment capacity to its fullest extent, but that will not be until after development work on a large scale shall have been done, which will be several years hence. No, the Granby and other smelters may by and bye find it suit them to obtain from the Similkameen, certain special ores for fluxing purposes, but for the great bulk of their ore supplies they will continue to look to their home mines. With the opening up of the Similkameen by railways will come the development of the coal resources of the district as well as its metalliferous mines. The northern Similkameen, which includes promising mining camps on the Tulameen and some of its tributaries, and the Nicola country—Aspen Grove, Coutlee, and north to Ten-Mile and other camps—will most likely be reached by a branch railway going in from the C. P. R. main

line, starting from Spence's Bridge or some more suitable point, and when transportation shall be thus assured both the coal and ore showings of the Nicola district will be developed, as is suggested by present activity in drilling for coal and prospecting mineral claims in that part of the country.

That the Similkameen will eventually become one of the most important mining sections of the province is believed by many. Thus far it has not been given much opportunity to demonstrate that it is well worthy the attention of men prepared to put money into the development of its mineral resources. With the single exception of the Nickel Plate, no mining property in the district has had any very considerable amount of money expended on its development. That exception, though, has proved, and is continuing to be, a splendid advertisement of the capabilities of the country. But men or companies with half a million or a million dollars to expend in mining in this way are but seldom met with. Yet the turn of the Similkameen is assuredly coming.

The opening up of the mining districts situated long distances from railways, unless it be those having rich placer gold-fields, is usually slow. The mineral claims that now constitute the larger mines of Rossland camp were located in 1889-90; they were situated only eight or nine miles from a navigable river, with a down-grade all the way from the mines to the water, yet it was not until the year 1896 that railway transportation facilities were provided. The mines in the Boundary now producing on a large scale were located in 1891; five years later development commenced in earnest, but they had to wait until the beginning of 1900 for the completion of the railway that enabled them to become shippers. Prospecting work on the coal measures of the Crow's Nest Pass was commenced in 1887, but ten years elapsed before money was obtained for opening up the coal mines, and it was not until the autumn of the year 1898 that the railway reached the mines. It is true the Similkameen has already waited years for the long-talked-of railway construction, and doubtless many interested in its mineral claims have experienced the heart-sickness of hope deferred, yet it would seem that an end to the long waiting is at length within measurable distance, if not close at hand. While it is almost too much to expect that railway construction will be commenced, or if commenced will be carried on vigorously, before next spring, there really does seem to be good reason to think by the autumn of next year construction will be in active progress and that thereafter the extensive development of the Similkameen will speedily take place.

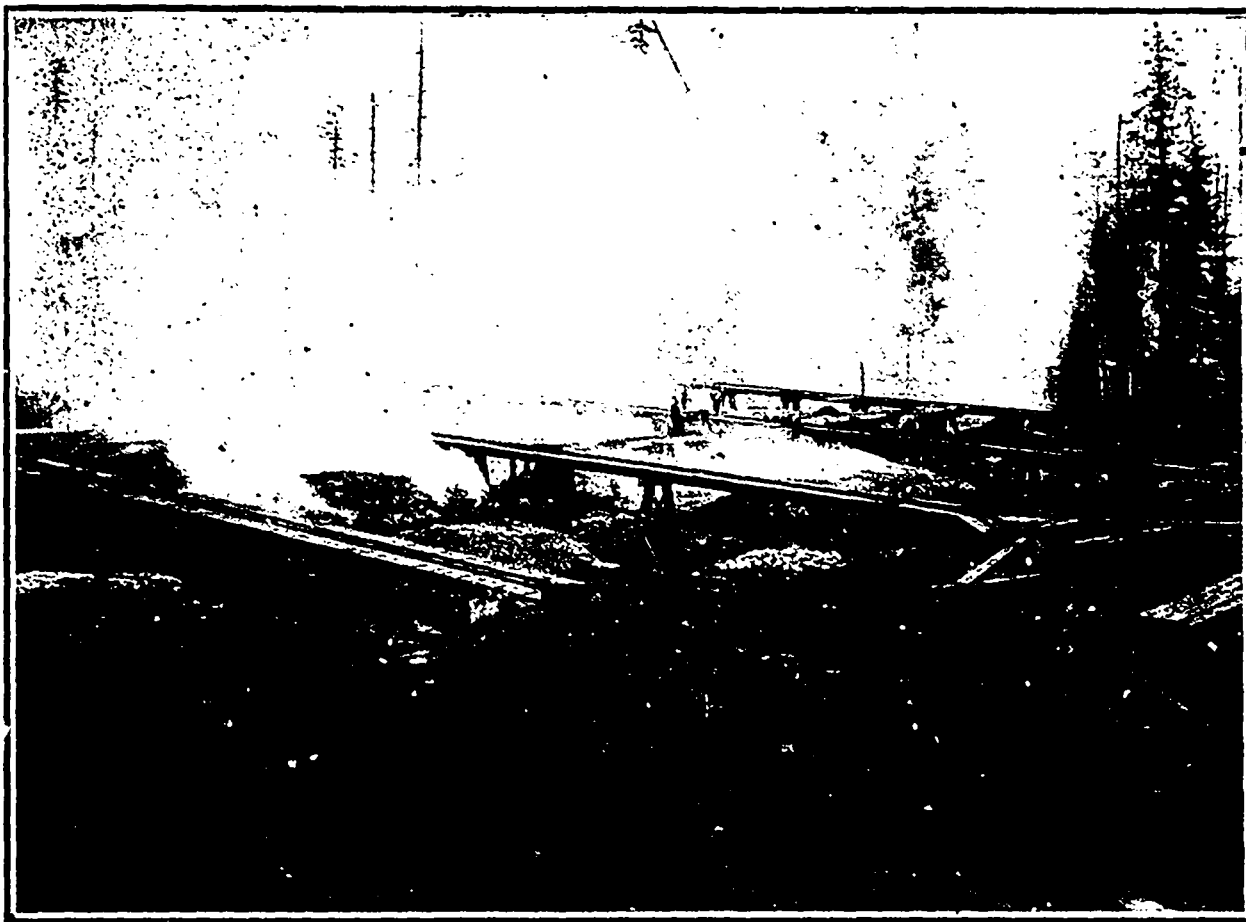
ORE-ROASTING AT THE TYEE COPPER COMPANY'S SMELTER ON VANCOUVER ISLAND.

(By E. Jacobs.)

IN the March, 1903, number of the *MINING RECORD* there was published an illustrated description of the smelting works of the Tyee Copper Company, situated at Ladysmith, on Oyster Harbour, which is the shipping place of the well-known Wellington collieries of Vancouver Island. This smelter had then been in actual operation only about ten weeks. Since then it has done good work, both in regard to the

dent. The Tyee mine at Mount Sicker is about 11 miles north-west of Duncans, while the smelter is about 20 miles north of the latter town and along the line of railway to Nanaimo.

While substantial improvements have been made in and about the smelting works, and others are now being effected, it is not intended to notice these in the present article, the purpose of which is to describe the manner of dealing with the bulk of the ore received here before it reaches the furnace, particularly the arrangement, appointments and operating methods of the ore-roasting yard, in connection with which there are several interesting features, notably the appliances



The Roast Yard, Showing Permanent Trestles and Burning Ore Piles.

metallurgical practice there in vogue and the financial results shown by the published accounts of the company.

The Tyee Copper Company is a British incorporation, registered in England in April, 1900. It was organized to acquire and work a group of copper-gold mineral claims situate on Mount Sicker, Vancouver Island. The head office of the company is in London, and the British Columbia office at Duncans, 40 miles north of Victoria and on the Esquimalt & Nanaimo Railway. Mr. Clermont Livingston is general manager; Mr. Thos. Kiddie, manager of the smelter, and Mr. E. C. Musgrave, mine superinten-

for building the ore piles, the making of the ore-screenings or "fines" into bricks which are roasted with the screened ore or "roughs," and the custom followed of roasting the ore in smaller and shallower piles than is usual at most smelters, which generally build their ore piles much higher or deeper than is done here.

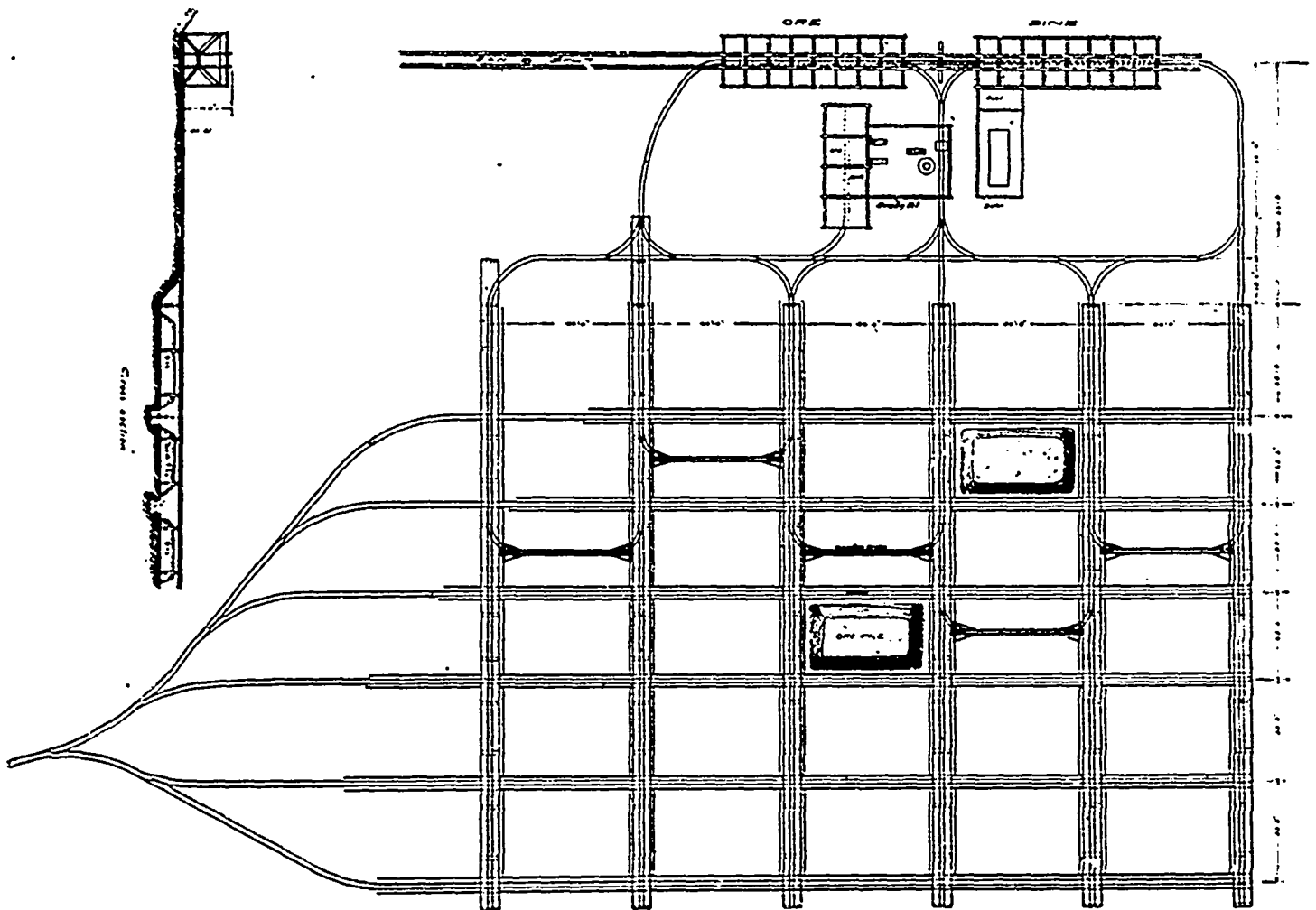
The main supply of ore for treatment at this smelter comes from the company's Tyee mine. The ore consists of chalcopryite, carrying gold, silver and zinc as well as copper, and contained in a matrix of quartz and barytes, with some alumina. The following general average assay and analysis of 48,623 tons (wet

weight) of Tye ore received from the mine during the fiscal year ended April 30, 1904, will serve to show its character and valuable contents:

Copper (wet) by electrolytic assay	4.56 per cent.
Silver	2.87 oz. per ton.
Gold	0.14 " " "
Iron	11.94 per cent.
Zinc	6.60 " "
Silica	13.50 " "
Alumina	3.95 " "
Barium sulphate	37.30 " "
Line	2.20 " "
Magnesia	Trace
Sulphur (as sulphides)	16.62 " "

an average of 177 tons per diem to 249.6 tons, an increase of 72.6 tons.

The ore is crushed and passed over a sorting belt at the mine and is conveyed thence by an aerial tramway a distance of $3\frac{1}{2}$ miles to the E. & N. Railway at near Somenos, the difference in altitude between upper and lower terminals being about 2,000 feet. It is hauled to the smelter a distance of 17 miles in bottom-dumping 30-ton railway cars, the proportion to be smelted raw going to receiving bins immediately behind the furnace house and that to be roasted to bins above the roast yard at the highest level of the smelter site. A spur from the railway runs, on a rising grade, to the top of the roast yard



Plan of Roast Yard, Showing Arrangement of Tramway Tracks

As the proportion of barium sulphate is 37 to 38 per cent. and the zinc 6.6 per cent., the smelting of this ore, in the absence of any previous experience or recorded results as a guide, presented a problem, which, however, Mr. Kiddie soon solved, the outcome of his experiments and experience with the ore being that the smelting practice was so materially improved that eventually the furnace work compared very favourably with earlier results, the treatment capacity of the furnace having been increased from

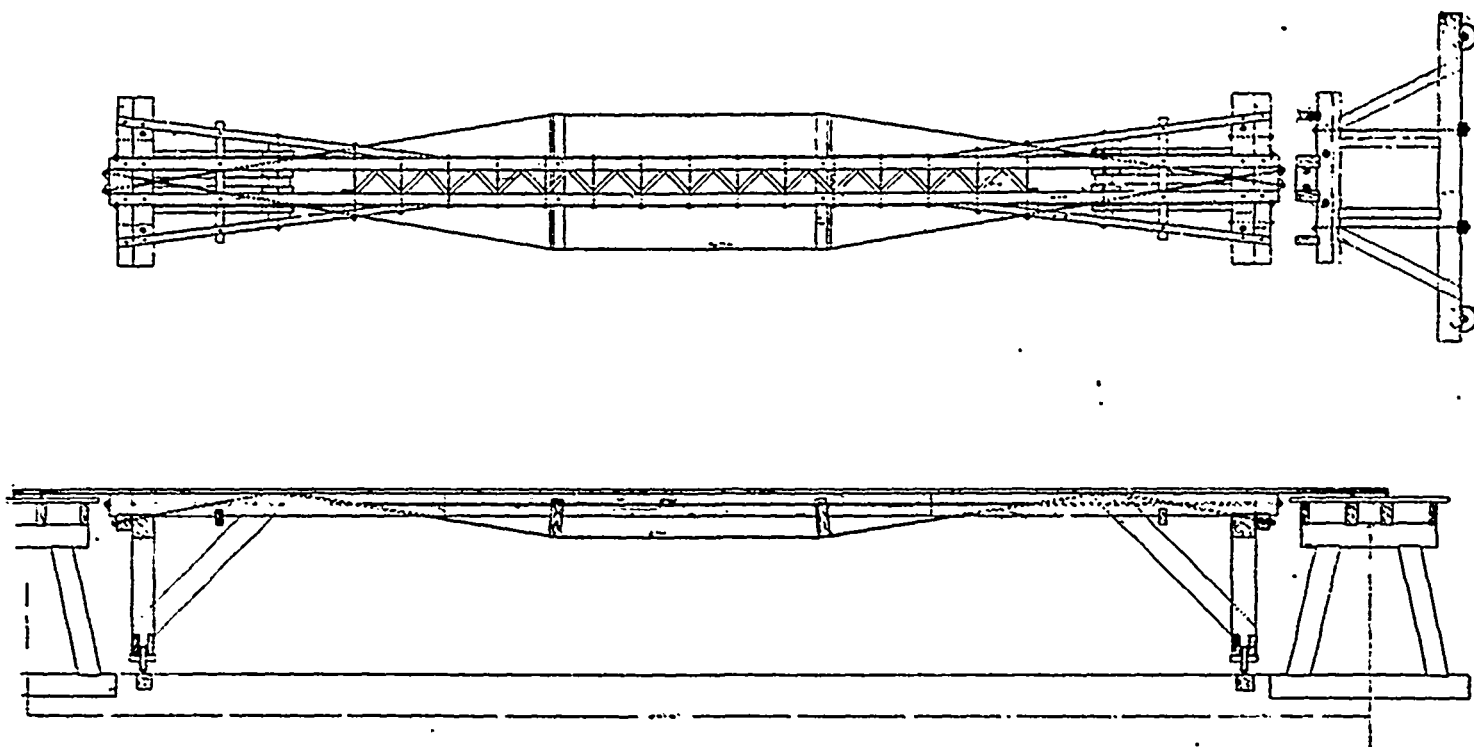
receiving bins, of which there are 16, having a total storage capacity of about 1,600 tons of crushed ore. These bins are constructed with hopper bottoms which are high enough to allow ample head room for the men to work under them. The cross section shown on plan of roast yard herewith outlines the bins.

The ore falls from the railway cars on to fixed screens placed in the bins. These screens are set at an angle of about 40° and they screen out, to $\frac{3}{8}$ -inch

size and less, the fine ore, which falls into a separate compartment, built in the centre of each bin. The surface of the screens is so arranged, by bending the sides downwards, that the "roughs" are distributed all about the bins, thus preventing the screened ore from piling up immediately underneath the lower ends of the screens. All bins have bottom-discharge gates, through which the ore is drawn off into ore-cars running on tram tracks, the roughs going to the roast piles and the fines to the brick house to there be made into bricks.

The level of the roast yard is about 8 feet below that of the tram tracks under the receiving bins, these

tration giving details of bridges) and bridging the spaces between the trestles. They are so constructed as to admit of their being easily moved over and past the ore beds, as required. The bridges carry tram tracks which, by means of adjustable curves, substituted for the turntables at first used, connect with the tracks on the trestles and allow of the side-dumping ore cars being run over them from the part of the trestle nearest to the ore bed on which the pile is to be built up. The arrangement of the tram tracks over the ore beds and their connection with both the receiving bins and the tramways (since double-tracked) to the burnt ore bins, is shown in the accompanying



TRAVELLING BRIDGE
FOR
TYLER COPPER CO.
Lodgepole, BC.
July 1911

Movable Bridge, Showing Details of Construction.

tracks being carried lengthwise of the yard on a series of six trestles, built 60 feet apart, measured from centre to centre. These trestles are permanent structures, the fire from the burning ore in the roast piles not coming into contact with them. At right-angles to the trestles there are six cuttings or trenches each 4 feet deep and 36 or 40 feet (centre to centre) apart, these and the trestles dividing the yard into beds. The row of beds nearest the receiving bins and the two farthest rows are wider than the three central ones, the wider beds having been added after the others had been in use for a time.

Between the permanent trestles there are movable bridges, these travelling on wheels (as shown in illus-

plan of the roast yard, which also gives examples, at two points, of ore piles when built, and shows the position of the travelling bridges in various parts of the roast yard.

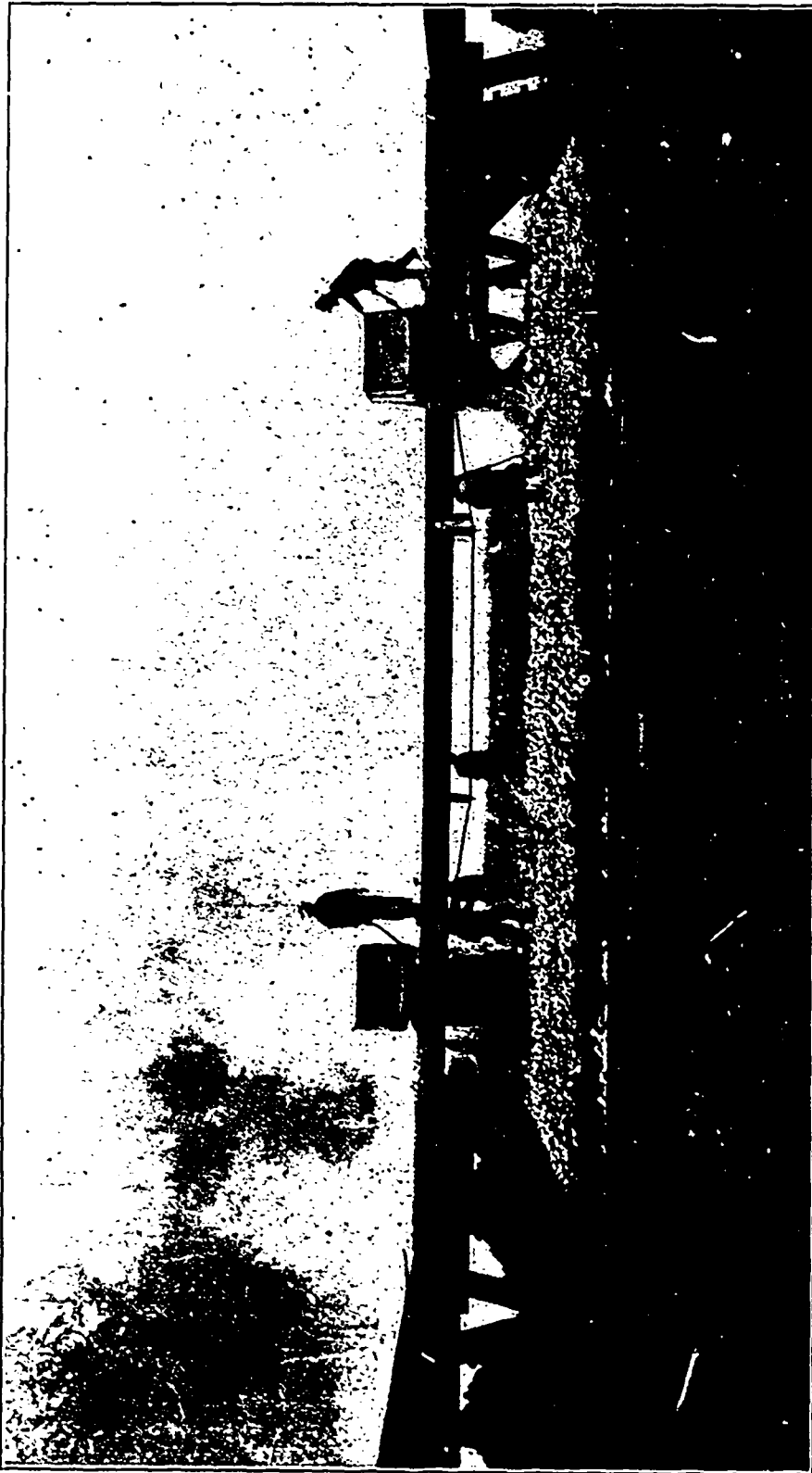
The ore piles are built 50 feet long, by 24 feet wide and 7 feet high. They contain on an average about 300 tons of ore to the pile. The object in not building them higher is to shorten the time required for roasting and, as well, the period during which the burnt ore shall necessarily be exposed to rain and consequent leaching, this latter being an important consideration where the rainfall is considerable. The ore is piled on a layer of about 12 inches of cordwood, each pile requiring some eight cords of wood. The

ore falls from both sides of the cars as they are moved along the bridges, and it is so uniformly distributed

The period ordinarily occupied in burning these piles of ore is about three weeks.

The bricks of fines are roasted with the screened ore. The process of making the fines into bricks is as simple as that of ordinary brick-making. The plant for this purpose consists of two one-horse power pug mills and a specially constructed drying floor, so arranged as to equalize the heating over the whole floor space. The building housing the former is 60 by 30 feet and that covering the latter 140 by 30 feet. The pug mills are such as are commonly used in brick-making. The drying floor is bottom-heated. It is fired from both ends, with flues of red brick tiling between each fire box and two separate stacks (one for each set of heating furnaces) the flues, which are covered with clay and rolled, forming the drying floor. This has proved a practical and very economical mode of drying, the capacity of this plant being 8,000 bricks, equal to 28 tons of ore per day.

Method of Building Roast Piles, Showing Movable Bridge and Side-dumping Cars.



as to obviate any necessity for shovelling, excepting for the levelling off when the pile is being completed.

treatment in burning to that given the other ore in the piles. The bricks after burning are hard and porous

and are particularly suitable for smelting in the blast furnace, the oxidation of the zinc, copper and iron in the ore being remarkably complete, average samples

any necessity that might otherwise exist for building and operating mechanical roasting furnaces and the subsequent briquetting of the roasted material. The



General View of Tyee Copper Company's Smelter, Ladysmith, Vancouver Island.

of large piles of burnt bricks giving 1.5 to 2.5 per cent. sulphur as sulphides, as against 7 per cent. in the ordinary burnt ore. This process does away entirely with

roasted bricks are also an improvement on the ordinary briquettes, which at best are tender and very liable to make fines in the furnace, thus retarding its

work. The bricks, on the other hand, stand rough handling and usage and are a valuable addition to the furnace charge of ordinary burnt ore.

The roasted ore is shovelled into 2¼-ton ore cars standing on tracks in the cuttings between the ore piles. The tops of the cars are on the same level as that of the floor of the ore beds. As half of each pile can be shovelled to the nearest cars, the distance it has to be thus moved is proportionately lessened. Horses draw the ore cars two at a time along a level track to the burnt ore bins, which are distant about 1,500 feet. The loaded cars are run on a trestle over the bins, situated just behind the smelter building. There are 18 of these ore bins, these having a total capacity of 800 tons. They are constructed with central bottom-discharge gates, emptying into charging cars which run on rails over the scales to the charging floor of the furnace.

The ore from the Tyee mine has proved to be a comparatively free-burning ore and but little trouble has been experienced by its cintering in the roast heaps. As already stated, the average percentage of sulphur in the burnt ore is about 7 per cent., this being exclusive of the sulphur contained in the barium sulphate, which is not oxidized in the process of roasting. A general average analysis of the 34,948 tons of burnt ore smelted during the year ended April 30, 1904, was as follows:

Iron	10.50 per cent.
Silica	17.90 " "
Zinc	7.50 " "
Barium sulphate.	38.90 " "
Magnesia	Trace.
Sulphur (as sulphide)	7.09 " "

The Tyee Copper Company is to be congratulated on having been the first in the province to introduce the above-mentioned improvements. The movable bridges are Mr. Kiddie's own invention, and the idea of making the ore fines into bricks and the arrangements for drying, are also to be credited to that gentleman. Other proposed improvements about the works are under consideration, repeated experimenting having shown their practicability and cost-saving effect. It is to be hoped that the available supply of ores will soon largely increase, so as to warrant the addition of more furnaces and the eventual installation of a Bessemerizing plant, both of which were included in the original plans of the works.

In conclusion it is desired to acknowledge the courtesy of the Provincial Department of Mines in permitting the use of four of the blocks that illustrate this article, which will probably serve to indicate that on Vancouver Island, as well as in the interior of the province, progress is being made in the direction of reducing smelting costs and improving metallurgical practice.

THE DETERMINATION OF CONCENTRATING ORE.*

(By Wm. H. Kritzer.)

OBTAIN samples of the ore from all parts of the mine, using care. Then have complete and reliable assays made, and if the ore has a gross value of several times what the expense is to mine it, proceed as follows to determine the size of particles to which the ore should be crushed for treatment:

Crush an average sample to pass through a No. 4 mesh screen onto a No. 8. If the product remaining on the latter screen separates readily by hand panning, there will be no necessity of crushing it finer. If the product does not separate freely, then crush it so that it will pass through a No. 10 and remain on a No. 16, and repeat the panning process.

This operation of crushing, panning and screening is to be continued through a No. 16, 24, 30, 40 and 60 mesh, respectively, or until the mineral readily separates from the gangue in the pan, weighing carefully each part which is left remaining on each screen, also the part that also passes the No. 60 mesh screen. This procedure will give you a fair approximation of how the ore will crush, and if it will have many fines or slimes. Note how each lot separates; examine the tailings or waste under a magnifying glass to see if the mineral is released from the rock, for among the different samples one should be found that is clean or free from inclosed mineral. This will be about the size to which the ore should be crushed. Observe if the material that passes through the No. 60 mesh has much float mineral, also if it contains an unusual amount of mineral, for if so it will slime. From the weights you can ascertain about what can be expected in crushing, and if a large amount is secured from the screens it is an indication that the ore will slime more or less. If the material left on a coarse screen is free from mineral and comparatively large, no fine crushing will be required for concentration or separation, and the ore should be easy to work.

The percentage of concentrates in ore can be estimated by taking 20 83 ounces of ore (10,000 grains) crushed to pass through a 40 mesh screen and washing it very carefully in a batea or pan, as long as concentrates appear. Dry and weigh. Each grain will represent one-hundredth of 1 per cent. If the concentrates weigh 300 grains, the quartz contains 3 per cent. of values, or, if 60 grains, six-tenths of 1 per cent. If the concentrates are worth \$150 per ton, the value of each ton of ore is \$4.50, or, if six-tenths of 1 per cent., 90 cents per ton.

To find the loss in tailings, take a sample every half hour (if you have no self-sampler) for twelve hours by passing dipper under the discharge, being careful not to allow it to overflow. Settle the material collected by sifting several teaspoonfuls of powdered alum over the surface of the water, allow it to remain quiet until the water becomes clear, then syphon it off and evaporate the residue remaining.

* Mining and Scientific Press.

Mix thoroughly when dry and take three samples of 300 grams, or 5,000 grains, each. Place one of these samples in a two-quart vessel and add about a quart of water. Stir thoroughly, and after having allowed it to stand for several minutes pour the wash water into a larger vessel. Continue doing this until the water from the sample is comparatively clear. To this wash water collected add powdered alum, and after settling remove the clear water and evaporate the material left at the bottom. Then weigh to ascertain the percentage of slimes, and assay.

After the sands have been removed from the slimes separate into three sizes by passing them through a 40 and 60-mesh screen. Weigh each to ascertain the percentages of sands, and assay. If the assay shows that the greatest loss occurs in the slimes, then you are crushing too fine; but if the assay of the coarse sands contains the most values, then you are not crushing fine enough. Mills, as a rule, crush too fine. This can be ascertained only by making tests as above, changing the mesh of screens until the loss in the coarse sands and slimes is about equal, remembering that with the coarser screens you increase your crushing capacity.

To test tailings, dry and weigh out 17.35 pounds (10,000 grains) and wash as described above. Dry and weigh the concentrates. Each grain will represent one-hundredth of 1 per cent, and a loss of 2 cents, if the concentrates are worth \$200 per ton. If the 10,000 grains in sample contain 4 grains of concentrates, the loss will be 8 cents per ton. If the concentrates are worth \$50 per ton, multiply fifty by four, and 2 cents is the value of the concentrates in one ton of tailings.

THE OTTAWA MINE, SLOCAN CITY M. D.

(By W. D. McGregor.)

A PRIVATELY OWNED PROPERTY THAT HAS THIS SEASON STEPPED INTO A FIRST PLACE AMONG THE MINES OF THE DRY ORE BELT.

LOCATED in the autumn of 1893 on a cropping of rich silver ore that was discovered on the gulch of one of the northern tributaries to Springer Creek. The history of this property is typical of the camp and contains more than one moral.

As there was ore in plain sight assaying into the hundreds of ounces the boom of '94 saw the property bonded for a fancy figure to one of the amateur mining syndicates that at that time were overrunning the country. Unfortunately the management was as unpractical as the organization and after spending some time and a good deal of money in proving that the mountain was not all ore, they threw up their bond just at the time when other and similar failures were operating to the discredit of the camp. Failing in the attempt to find a prospective purchaser on their terms the owners made one or two intermittent and abortive efforts to open the mine. Interests changed hands and in '98 the property came into the hands of a couple of local men and one of the original owners, who did considerable work, valuable as to prospect,

ing, but a failure as far as finding ore was concerned. The property languished for a time but the next season four practical miners took a lease and bond on the prospect and after driving some 50 or 60 feet, cut into the top of what is now called the big shoot. They found the ore continuous for some 20 feet varying in width up to 20 inches and rich enough to sort easily to 200 or with 'choice' running over 500 oz. to the ton. They were able to ship enough from the drift and the stope above to pay them handsomely and recognizing the fact that to properly open a property such as this appeared to be called for considerable capital, they decided to sell. This was not as easy as it would seem. Several examinations were made. The ore was rich but it might not go down—and it was not until Mr. R. T. McPhee, the present manager of the mine, inspected the proposition for Messrs. Noble & Coleman of Pittsburg, Ohio, who were at the time visiting their property, the Iron Mask, on Ten Mile Creek, that they were able to find any one to tackle the venture. It turned out to be in good hands. Messrs. Noble et. al left the matter in Mr. McPhee's hands two years ago, and according to Mr. Noble's own statement in July. "The mine has paid all expenses, including the price of the property and is now on velvet."

The mine is situated about a mile north of the main Springer Creek wagon road with which the local road connects at a point about 5 miles from the R. R. giving a 7-mile haul to the ore bins at a cost of about \$3.00 per ton.

As one approaches up the zig-zag road there is nothing to mark the presence of a big mine except the dumps of waste rock at the tunnel mouths and even these are small on the great slope of the mountain side. A cluster of small buildings, includes a comfortable bunk-house and the cook's headquarters. No steam or power plant, no pump, nothing but the series of tunnels boring into the steep side hill and slicing off section after section of the vein inside.

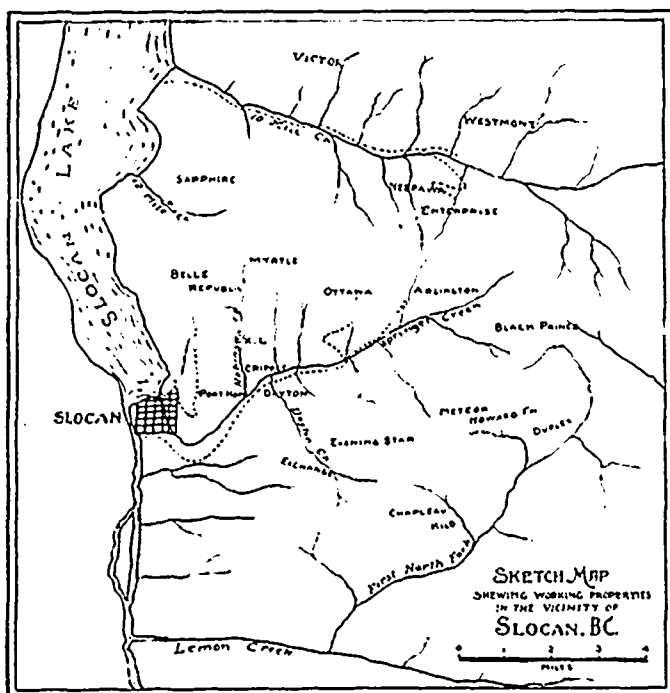
The mine occupies a section of one of the typical North and South fissure zones or belts which run through this part of the country, one similar to that on which the Arlington and Speculator (2 miles East) are located as well as the Colorado, Myrtle, I. X. L. and the developing prospects in the section between 10-Mile and Springer Creeks. In connection with most of these the mineralized zone is marked by silicious ore bearing deposits along each side as well as irregular stringers, following fracture planes in the crushed mass between. This gives the appearance of twin parallel quartz veins from fifty to a couple of hundred feet apart with quartz stringers showing, running in any direction. The strike of the belt and therefore of the twin veins is very slightly East of North dipping to the East and it is on the hanging wall side of the East vein that the big ore shoot has been developed. The whole width of the belt has been cut on the third and fourth levels and both sides will be worked or rather are being worked as good ore is found in both.

The series of tunnels driven by the present owners

2, 3 and 4 including one intermediate, measure about 3,000 feet on the lead. Besides these the development work shows some 500 feet of raise and 575 feet of crosscut-work.

The same people have purchased the Mayetta group adjoining the Ottawa group on the North, thus extending the holdings of the vein well up the mountain and giving them a good reserve of much needed mine timber. They have already contracted for considerable preliminary work on this newly acquired portion.

The present condition of the mine shows the first ore shoot on the East vein increasing in length and value down to the fourth level where it is approximately 300 feet long, with the face of the drift in ore of a second shoot after passing through some 100 feet of barren ground, while the drift at the same level on the West vein shows an ore shoot 60 feet long. Development is being carried on continuously



on this level and by a cross cut tunnel which is being driven westerly and is now approaching the East vein at level No. 5. The present ore reserves consist of an estimated 2,000 tons of sorted ore in the stopes above four and about three times as much low grade ore from the second-class dump and left in the stopes when the main pay streak is extracted. The question of treating the second-class ore is not acute but further exploration may at any time show larger bodies of this: in the meantime some experiments are being made in concentrations. The ore is silicious, with its values in native silver, argentite and grey copper and exceedingly well concentrated into the pay shoots. These vary in width from a few inches to 5 feet and ore is broken out clear in the stopes, calling for comparatively light timber work.

Sorting is done by hand, consisting simply of the removal of the least mineralized portion of the ore

which under this treatment run about 200 oz. About 30 men are employed and the monthly expense is between \$4,000 and \$5,000; while the net profit for the month of July was given in round figures at \$20,000.

The total yield has been about 1,500 tons, 975 tons of which are this year's product.

OUTLOOK FOR COAL MINING.

The outlook for coal mining in the province, judging by reports lately published in the daily newspapers, may be regarded as more satisfactory at present than at any previous time since 1901. The Wellington Colliery Company and the Western Fuel Company, each owning several of the coal mines operating on Vancouver Island, are stated to have entered into an arrangement which provides that the latter company shall market all the coal sent to San Francisco by the two companies and since that city is the headquarters of the Western Fuel Company there need not be any doubt that sales will be actively pushed in California, where the selling company has extensive business connections. Next, there is the recent public announcement that big steamships of the Seattle-Oriental line the Great Northern Railway Company is about to establish, are to be supplied with hard coal from No. 7 Slope of the Wellington Colliery Company's Comox colliery. About 3,000 tons per month will be required when the Minnesota shortly takes up the running on the new line, and twice that quantity when her sister ship, North Dakota, now being built, shall go into service. Then the Crow's Nest Pass Coal Company is reported from Fernie to have made contracts for the delivery at Montana points of large quantities of coal and coke. The export trade in these fuels may therefore be expected to shortly show an appreciably large increase, though considerable improvement may not be experienced in time to favourably affect to any very marked extent the production of the year now hastening to its close. The competition of fuel oil will hardly reduce sales on the Pacific coast much more than it has already done, while the steady increase in local consumption, occasioned by the gradual enlargement and extension of home industries throughout the province, will in part compensate for any loss of trade resulting from the substitution of oil for coal as fuel. The entering into competition with the Crow's Nest Pass Coal Company by the International Coal & Coke Company, of Coleman, Alberta, will take from the former company a considerable portion of its Boundary coke trade, since the Granby Company, the largest consumer of coke in the Boundary district, will, it is understood, transfer its custom to the latter company whenever it shall be in a position to supply fuel in sufficient quantity, which will be very shortly. That will not however, make much difference, since the Crow's Nest Pass Coal Company will probably be able to readily dispose of all the coke it can make, especially when the extension of the Great Northern branch railway from Jennings, Montana, shall be completed to Fernie, as it will be ere long. Altogether

the prospects are that the demand for coal and coke will have the effect of making this year's total production larger than that of last. It may not reach a total that will constitute a record production for any year, but if existing amicable relations between the colliery owners and their employees continue undisturbed, as they may be expected to do, next year should see the province's present record production of 1,460,331 long tons (exclusive of coke), in 1901 exceeded.

land Machin, 2nd vice-president of the Association, by Mr. Aldridge, the manager of the works. This collection consists of samples of crude ore consigned to the smelter from both gold-copper and silver-lead mines, lime and iron rock used for fluxing purposes, copper matte, lead bullion, lead cathodes, lead pipe of various sizes up to two-inch, briquetted matte and flue dust, and last, a bar of silver weighing 602½ oz., and valued at \$347. The exhibit should serve as a useful object lesson to residents of the



Exhibit at the Victoria Exhibition of Lead and Manufactured Lead from the Canadian Smelting Works, Trail.—Mr. R. Machin, 2nd Vice-President of the P. M. A., who was largely instrumental in securing the exhibit is standing to the right of the picture, while Mr. Patterson, another member of the Mineral Exhibit Committee, is on the left.

MINERAL EXHIBIT AT VICTORIA.

THANKS to the public-spiritedness and energy displayed by the executive committee of the local branch of the Provincial Mining Association, coupled with the responsive co-operation of mine-owners and others, a remarkably fine exhibit of British Columbian ores, minerals and smelter products was placed on view at the Annual Autumn Fair, which was in progress during the last week of September. The chief feature of this exhibit, however, was a most representative and educational collection of products from the Trail smelter, very kindly sent at the request of Mr. Row-

Coast cities who will thus better realize the important industrial developments now taking place in the Kootenays. The collection of ore and matte from the Tye Copper Company's smelter is also deserving of commendation. In addition to the smelter exhibits there is also a very fine collection of ores from all sections of the province, the magnificent specimens of hornite and chalcopryite from the new strike on the Indian Chief, at Sidney Inlet, attracting especial notice, as did too some fine copper ore from the Arctic Chief mine at Whitehorse. In view of the attention now being directed to the development of the iron ore deposits of the West Coast of Vancouver Island, those responsible for the display are to be

conglomerated on securing some splendid specimens of magnetite from the Gordon River mines and of brown hematite from Quatsino Sound.

THE SILVER DOLLAR GROUP, IN NORTHERN LARDEAU.

THE Silver Dollar group, owned by the Elwood Tinworkers Gold Mining Company of Elwood, Indiana, is situated on Mohawk Creek, between three and four miles south-east of Camborne, in the Fish River camp of the Lardeau district. The group is in the neighborhood of the Beatrice group, from which a shipment of about 280 tons of ore, sent out some time since, is stated to have yielded a substantial profit, notwithstanding a long haul to the place of shipment.

The Silver Dollar is in what is known as the gold belt of the Northern Lardeau, which belt, taking Lexington Mountain, near Camborne, as its centre, apparently extends south-east to the Beatrice group, and north-west to the Nelson group, covering so far as at present known a total distance of about ten miles, in numerous places along which length veins with free gold showing in the quartz have been exposed. Little development work of importance has been done, however, excepting on the Eva and Oyster-Criterion groups on Lexington Mountain, which are about in the centre of the belt, and at the Beatrice in one direction and on the Gold Finch and Camborne group in the other. Recent discoveries of ore carrying high values have encouraged owners of other claims to prospect them, so that it may be expected several producing mines, beside those in the immediate vicinity of Camborne, will ere long be opened up.

From a description of the Silver Dollar property published last month in the *Revelstoke Herald* it is learned that the group consists of three full mineral claims and two fractions, namely, the Little Johnny, Iron Dollar, Carbonate Hill, Gilman fraction and Carbonate Hill fraction. The development work consists of three tunnels, open cuts and prospect shafts. Not much prospecting has yet been done on the Little Johnny and Carbonate Hill claims, but the work on the remaining claims is stated to have exposed four separate leads, each carrying high values in gold and silver. A drift from one of the tunnels showed ore the whole length of the 100 feet drifted, and assay returns gave from \$2.40 to \$15 in free gold to the ton. In another part of the group, on the Iron Dollar claim, about 20 inches of high-grade steel galena have been exposed on the foot-wall of one lead, while three feet of quartz show on the hanging side of a parallel lead. The quartz veins occur in schist, some of which has been found to be impregnated with free gold. The indications are that other leads opened on adjoining claims will also be found on the Silver Dollar group after more prospecting work shall have been done.

A saw mill and air compressor have been purchased and these will be hauled to the property as soon as the

trail shall be in condition to admit of this being done. Before deciding what kind of reduction plant to put in the company will have a series of tests made so as to determine what method of treatment will be most suitable for the Silver Dollar ore. Mr. J. A. Darragh is in charge of the property, which is considered to be a very promising one.

OIL EXPLOITATION IN ALBERTA.

THE Western Oil and Coal Company has issued the following supplementary report regarding work done:—No. 1 Well on Section 29, which is generally referred to as the Prospect Well, was drilled down to 1,496 ft. 6 in. The first showing of oil was a soft shale from 130 ft. depth to 139 ft., this oil was a thick heavy oil. The next showing of oil was in a soft shale from 448 ft. depth to 454 ft. The next showing was from 1,043 ft. depth to 1,073 ft. and in the same formation. There was also a small showing at 1,132 ft. and 1,216 ft. These showings are all confirmed by the log of the well. After 1,216 ft. the formation became much harder and no sign of oil or gas was obtained, except at 1,300 ft., where a considerable volume of gas was struck. For these reasons the Prospect Well was plugged, and a new well started on the same section about 1,000 ft. from No. 1 Well on a gum bed which occurs there. It is thought that it will not be necessary to go deeper than 1,130 ft. for the high grade oil but if it is found by our experience from the No. 2 or No. 3 Wells that it is desirable to go still deeper we can easily go back to the Prospect or No. 1 Well and sink as deep as found desirable. From the evidences we have been able to file with the Department of the Interior, the Dominion Government have agreed to give the company patents to 1,920 acres of land and they are holding 3,840 acres more in reserve for the Company pending our further operations. The ground in the vicinity of No. 1 Well has been surveyed and a plan is now in process of preparation.

At the last session of the House of Commons an Act was passed granting a bonus of 52½c. per barrel on every barrel of crude oil produced in Canada.

No. 2 Well on Section 23 is in charge of Fred. C. Beresford, who has proved himself a competent driller, on August 6th this well was down 580 feet and casing was down 547 feet, the well was free from water and in good condition.

No. 3 Well on Section 29 is again running in good shape. There was a great deal of trouble experienced with water at the beginning with this well and at 200 ft. depth the sinker-bar was lost in the well. These misadventures caused over ten weeks' delay, but the well has been cleaned out, the water shut off and the drilling is again in operation. On the 6th of August the well was down 212 feet.

The logs of No. 2 and No. 3 Wells confirm the experiences of the Prospect Well up to date and we believe with proper care they will both be made good producing wells.

THE DISCOVERY OF PREHISTORIC RELICS
IN THE YUKON.

THERE have been recently exhibited in the British Columbian Coast cities some extremely interesting relics of prehistoric times in the shape of the skulls, tusks, molars, thigh and other bones of mastodons, the remains having been discovered by two miners at a depth of some fifty feet, while working their claim on one of the Klondike creeks. The



Front View of Mastodon Skull and Tusks.

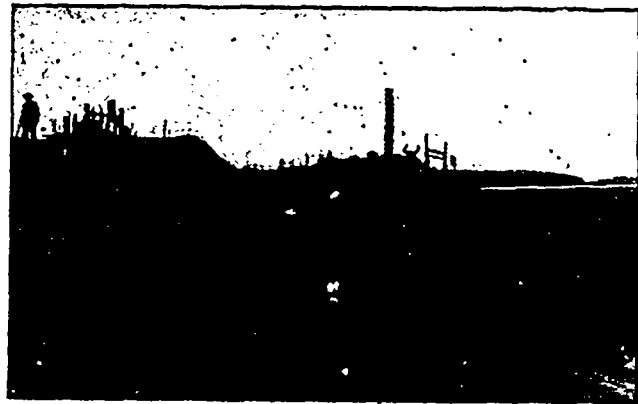
skull of this colossal and erstwhile awe-inspiring beast, weighs alone over nine hundred pounds, whilst a single tusk weighs two hundred and forty pounds, judging from the length of the thigh bone the height of the animal when alive was probably well over twenty feet, with a bulk fully in proportion. The remains after their discoveries were claimed by the Canadian Government, two of our illustrations being reproduced from photographs officially taken at the



A view taken by the Canadian Government of Mastodon skull as found in mine.

time of the discovery; but subsequently this claim was waived, on the understanding that the Government should have the option of purchase, after the owners had the opportunity of exhibiting their treasure at the St. Louis Exposition. The gravel mine

itself in which the bones were found was not, we understand, rich, but this fortunate discovery, notwithstanding the cost of bringing the skull to the surface, which was considerable, involving as it did, the opening of a wide shaft and other expenses, since incurred, is nevertheless likely to prove a very remunerative one to the owners of the property. We trust, however, that eventually these interesting relics will find a permanent resting-place in the museum of the Geological Society at Ottawa. The mastodon in general form and other characteristics closely resembled the elephants, the two groups being alone distinguished by the teeth, though even this distinction is largely an artificial and arbitrary one. The tusks differ from those of some species of elephants in that apparently they are never so much curved, whilst lower incisors, never found in true elephants, according to eminent authority, are present throughout life in some species of mastodons. The mastodon is supposed to have existed in the Old World from the middle of the Miocene to the end of the Pliocene, but several species on this continent are believed to have survived to a quite late Pleistocene period. As



The Yukon Gravel Mine in which the prehistoric relics were found.

remains—a single molar tooth, and later a fragment of tusk—both belonging to mastodon have been during the last century discovered in Australia, it is evident that the range of the genus was very extensive, it being known that generally recognized species existed in Europe, India and both North and South America.

BULLETIN ON MINING IN BRITISH
COLUMBIA.

THE Bureau of Provincial Information has had prepared another Bulletin on Mining in British Columbia. This bulletin, which is No. 19 of the publications of the Bureau, is more comprehensive than those on the same subject issued in other years. Its information has been drawn largely from official sources and much care has been taken in checking the statistics. The mineral industry is first treated topically; then come reviews of mining in the various districts of the province, the order usually observed in Table VII of the Minister of Mines Report (Pro-

duction in Detail of the Metalliferous Mines) being followed; next come a series of special articles by Mr. E. Jacobs, (to whom was entrusted the general work of selection and revision of the subject matter), and finally a chapter on the provincial Department of Mines and a Synopsis of Mining Laws. The Table of Contents contains fairly full information to facilitate the finding of what is written on any given subject or district. The advance sheets were seen by the MINING RECORD too late in the month to allow of any lengthy comment being made on the contents of the bulletin for this issue. Briefly summarising these contents, it may be mentioned that after an introductory chapter covering the history of mining in the province, British Columbia is shown to be the "Mineral Province" of Canada; the chapter on "Mineral Production" gives statistics of production: "Placer and Hydraulic Mining" shortly covers that branch; "Lode Mining" shows the considerable developments and production of recent years; the "Outlook for Zinc Mining" reviews the position in regard to that metal; the "Occurrence of Platinum" and the "Prospects for Cinnabar" give information on these subjects; then follow "Iron Mining" and "Coal Mining," and next comes a short account of "Other Mineral Resources." Some 75 pages are devoted to notes on the mining districts of the province, together with information relative to leading mines and total production of the more important districts. The special articles are on the "Crow's Nest Coal-fields," "Coast Coal-fields," "Smelting and Other Reduction Works" and a short article on "Water Power in Mining Districts." The notice of the Department of Mines shows the lines upon which the Bureau of Mines, of which the Provincial Mineralogist, Mr. W. F. Robertson is the executive head under the Hon. the Minister of Mines, is conducted, and gives information relative to the Provincial Assay Office and the Mineral Museum. As the bulletin has been prepared chiefly for gratuitous distribution in the United States, whence 10,000 copies are to be sent (to the St. Louis Exposition) the inclusion of a Synopsis of the Mining Laws should prove useful. The illustrations are limited in number, showing the smelters and coke works of the province. The cover is a striking one, the design having been carried out by the B. C. Photo-Engraving Company, of Victoria, and the printing in two colours having been done with the excellence of finish for which Mr. W. H. Clarke, foreman pressman at the government printing office, is so well known. It may be mentioned, in conclusion, that although the letter of transmittal, from the late secretary of the Bureau of Provincial Information, Mr. R. E. Gosnell (to whom is due the credit of having got out this timely bulletin) to the Hon. the Provincial Secretary bears date May 1, 1904, the later revision, which is accountable for the delay in having the bulletin printed, brought some of the information in it up to August.

C. P. R. CO'S BANKHEAD COLLIERY.

THE Canadian Pacific Railway Company's anthracite coal mines at Banff are already sufficiently developed to admit of markets being sought for their product, which will shortly be delivered in the coast cities. The *Calgary Herald* recently published some descriptive matter showing the progress that has been made at the Bankhead Colliery, as these coal mines have been named. Operations are under the direction of Mr. W. H. Aldridge, general manager of the Canadian Smelting Works, Trail, who has charge of the development and equipment of the C. P. R. Company's coal mines. From the *Herald's* description the following is taken:

The C. P. R. has leased from the Dominion government about 5,000 acres. The land is all in the National Park. The coal land runs in a strip about six miles long and a little over a mile wide. Over two years ago the company started surveyors, engineers, etc., to locate the coal fields. Their reports were very encouraging. Mr. Aldridge now hopes to see Bankhead coal used all the way from Winnipeg to San Francisco. The C. P. R. pays 30 cents per year per acre for the land leased and the government also gets 10 cents on each ton of coal mined. As yet the output of the mine is only about 150 tons per day, but the capacity will be increased by spring to 1,000 or 1,500 tons per day.

As yet no definite estimate of the amount of coal in the mountain can be made, but there is in sight already enough coal to supply more than the Canadian west will require for a period of fifty years or more. The coal itself is of fine quality. In the lower seams it is semi-anthracite, while the top seams seem to be more of the semi-bituminous, being lower in carbon and higher in volatile matter. Several analyses show that in the lower seams there is between 83 and 84 per cent. of fixed carbon, about 10 per cent. of volatile matter, and about 5½ per cent. ash. Some samples have assayed as high as 86 per cent. of fixed carbon. The coal is excellent for both furnaces and stoves. Experiments show that with the fire draft boxes similar to those used on a number of American railways it will make good fuel for engines. Six grades of coal are being produced now: lump, egg, stove, nut, pea and No. 1 buckwheat. The temporary breaker handles these kinds now, but by spring when the big permanent breaker with its capacity of 3,000 tons per day shall be working, other grades of coal will be placed on the market.

A dozen seams of coal have already been located, all dipping to the west at an angle of 45 degrees. These seams vary from four to sixteen feet in width, and some of them have been traced for almost a dozen miles, showing an enormous body of coal. Only two seams are at present being worked, and they measure nine feet. Drift openings have been made to these seams and tunnels have been driven 1,600 feet. To supply the air to work these seams parallel levels above the tunnel levels have been made, thus giving a constant supply of fresh air. On the surface both the seams are connected.

So far all the work done is development. Later breasts will be turned from the levels. These breasts it is intended will be constructed off the entries every sixty feet, and will be driven up the pitch to the surface. With these breasts 24 feet in width this will leave a solid pillar of 30 feet, to act as a support.

The depth the seams run below the present entries has not yet been determined definitely. One seam has been followed down to a depth of 300 feet, and men are still working on it.

General manager Aldridge and superintendent Henrietta are taking every means known to science to make these anthracite mines safe. The airways are so constructed that it will be impossible for any noxious gases to gather.

of mining and smelting, \$3.05 per ton, with a net profit of \$2.57 per ton. Total area, 170 acres, and equipment equal to handling at least 500 tons per day.

"The Morrison group is in shape to ship 150 tons per day, with 200,000 tons in sight. Ore can be placed on cars when the spur is built for \$1.25 per ton, and on account of containing 20 per cent. sulphur, is especially desirable for fluxing. Average smelter returns show 0.2 ounce gold, from 0.5 to 1 ounce silver and 0.6 per cent. copper. Average value \$4.05 per ton. Cost of mining and smelting \$2.90 per ton; profit \$1.15 per ton.

"In the Athelstan-Jackpot there are 100,000 tons in sight, which can be mined at 60 cents per ton, being on the open quarry system. Ores run from 0.2



Montreal & Boston C. M. & S. Co.'s Sunset Mine.

THE MONTREAL AND BOSTON CONSOLIDATED MINING & SMELTING CO.

FROM a circular recently issued under authority of the Montreal & Boston Con. Mining & Smelting Co., Ltd., in New York, some interesting details of what is in prospect for this new Boundary corporation are taken:

"Regarding the Brooklyn it is given out that this mine has 350,000 tons of ore practically ready for shipment, which can be placed on the cars at a cost of \$1.25 per ton. Average values for smelting returns are given at 2 per cent. copper, 0.1 ounce gold, 0.3 ounce silver, average value \$5.62 per ton. Cost

to 0.8 ounce in gold and 0.5 to 0.7 ounce silver, and can be mined and smelted at \$3.40 per ton. Ores average \$7.50 per ton, leaving profit of \$4.50 per ton. This profit will be increased by \$1 per ton as soon as the spur to the mine is completed.

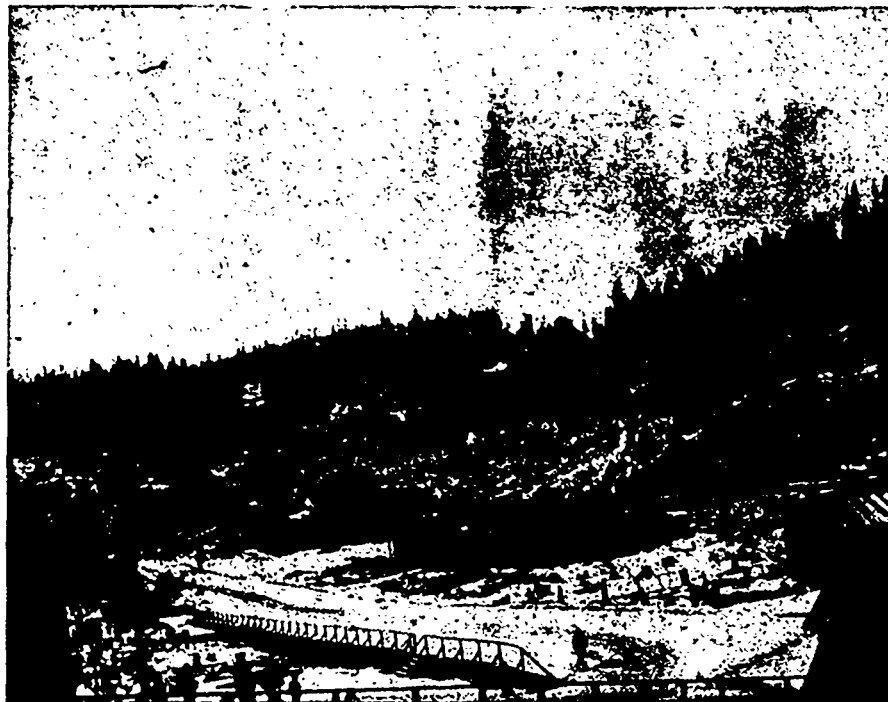
"The Mountain Rose in Summit camp is much of the same character ore as the Sunset, in Deadwood camp, all owned by the company, and valuable chiefly as fluxes, having large excesses of iron, with some gold, silver and copper values. Both have an immense tonnage of this ore that can be cheaply quarried.

"As is well known the company's smelter is located at Boundary Falls, about four miles below Greenwood, and now has a daily capacity of 650 tons daily,

with two furnaces. The third furnace on the ground will make a capacity of 1,000 tons daily, when the smelting costs would be \$1.50 per ton. During 1903 this smelter treated 112,226 tons of ore, producing 2,551,142 pounds of refined copper, 7,705 ounces of gold, and 58,728 ounces of silver. This was the result however, of operating one furnace 288 and two furnaces 110 days.

"It is estimated that, in order to obtain the best results from a metallurgical standpoint, with four furnaces in operation, the daily charge would consist approximately of the following:

NOTE.—The foregoing has been taken from the *Phoenix Pioneer*. As we are not in possession of a copy of the circular from which it is stated to have been taken, we have not been able to compare it with that document. It will be noted that there is an error in the figures relating to the Athelstan-Jackpot, but we reprint them as they were published by the *Pioneer* not knowing where the error is. The only comment we have to offer at present on the estimates of values and prospective profits is that we think the latter excessive, and regard the statement as having been made from a stock-selling and somewhat visionary



Montreal & Boston C. M. & S. Co.'s Brooklyn Mine.

Dominion Copper ore	700	tons
Morrison	150	"
Athelstan	120	"
Sunset	230	
Mountain Rose }		
<hr/>		
Total	1,200	tons

point of view rather than from a basis of known actual experience of well-established mining and smelting companies operating in the Boundary district.—Editor MINING RECORD.

FILING NOTES AND CLIPPINGS.

"Such a charge when everything is in full running order, would, it is claimed, make a profit of \$2,511.50 per day or \$916,697.50 per annum, being 14 per cent. on the par value of the stock issued.

"All allowance for slag losses, freight and refining charges, etc., have been deducted from the above figures, and no estimate has been made except on ore actually developed and blocked out. The freight charges are estimated at from 15 cents to 30 cents per ton, and that there is enough now ready to last the smelter two years at 1,000 tons per day, the smelter value of which is over \$4,000,000. In 60 days the third furnace, now on the ground, can be installed, and in 90 days a fourth furnace can be added."

MR. W. G. SWART, of Denver, Colorado, writing to the *Engineering and Mining Journal*, tells of a system of filing notes and clippings he has used for nearly eight years. As there are probably many readers of the MINING RECORD who keep clippings but who, owing to their not having adopted a suitable system of filing, find that those on any particular subject are not readily accessible when wanted, Mr. Swart's description of the system he has found very satisfactory in actual use is here republished. He writes: "In filing clippings I use a manila folder about 6 by 9 in., such as is used in business houses for filing commercial agency reports. Any envelope will answer, but the folders have two

advantages—greater capacity and permitting the clippings to be run over rapidly without removing from the folder. The folders or envelopes should stand on edge alphabetically in a drawer or case, with guide cards or letters, so that they may themselves be run over as rapidly as cards. One of my folders holds from 50 to 80 average clippings. All clippings in one folder bear on the same subject, and that a closely restricted one.

This subject is written on the outside of the folder at the top, followed (on the first folder of any set or group) by the letter A. When this folder is filled, a second like it is placed behind it, with the same heading, but marked B, and so on. For instance, under the general subject 'Mining,' my first folder has written across the top 'Mining—Air—A.' The second

its proper position. I will say here that I use a separate card index, but a fair substitute is a list on the outside of the holder of the articles contained therein. My own cards, clippings and pamphlets now weigh considerably more than 150 lb., which in its entirety is anything but portable, yet in five minutes I can produce in compact, portable and convenient form for packing, all the information I have on any given subject.

"Pamphlets and catalogues may be filed either in the folders, with them, or in a separate file. I use the latter, because the wide range of most catalogues does not yield itself readily to any system of subdivision, and filing simply by name gives the most satisfactory results.

"Inside each folder is a card or sheet of good paper,



Montreal & Boston C. M. & S. Co.'s Morrison Mine.

folder is marked 'Mining—Air—B.' The third 'Mining—Accounts—A.' The fourth, 'Mining—Books—A.' The remaining subdivisions under 'Mining' are: 'Coal,' 'Costs,' 'Drilling,' 'Engineering,' 'Examination,' 'Explosives,' 'Finances and Promotion,' 'Haulage,' 'Hoisting,' 'Hydraulic,' 'Law,' 'Light,' 'Management,' 'Miscellaneous,' 'Ore,' 'Pumping,' 'Sampling,' 'Shafts,' 'Signalling,' 'Timbering,' 'Tunnelling,' 'Ventilation.' Other subjects are even more closely subdivided.

"The first clipping placed in a folder will have written on its blank margin—preferably the top—say 'Mining—Hoisting—A-1.' The next, 'Mining—Hoisting—A-2,' etc., until the A holder is full and it becomes necessary to start the second or B folder. All clippings on any subject are thus together, any one can be reached instantly, and as quickly returned to

about 6 by 9 in. On this are written personal notes on the subject covered, reference to note books, catalogues, books, or other specific sources of information. In the case of two articles on one clipping, I file the clipping under the more important head, or the one most likely to be used. Then, in the other folder I place a small slip of paper, giving simply the title of the missing clipping, and where it is to be found; thus: 'Life of Punched Screens—See Cyanide—Refining—B-5—Reverse.' If case clippings are loaned, or kept out of the system for any reason, ticklers of this kind should be inserted.

"All of this is far simpler and quicker than it sounds. When once in operation, it requires an amount of time so small as to be negligible, yet it puts instantly under my hand all the information I

have noted during the past eight years. The working out of this system cost much thought and labour. Much of this might have been saved could I have had some intelligent instruction at the start in the methods and limitations of the system. I believe it would be possible and desirable for the engineering schools to save their graduates a vast amount of such labour by regularly giving to them the elements of a classification system suitable to their future needs, at a cost of neither much time nor money."

MINE SHAFTS AT IRONWOOD, MICHIGAN, U. S. A.

MEMBERS of the Lake Superior Mining Institute, which held its tenth annual meeting at Ironwood, Michigan, about six weeks ago, spent one day visiting mines in the vicinity of Ironwood. A special correspondent sent the *Engineering and Mining Journal* notes of shafts at some of the mines visited, as under:

"The new A shaft at Norrie mine, which has been under way about two years, and is now down in the footwall a trifle more than 1,000 ft., attracted most notice. This shaft is steel lined, 6 by 23 ft. inside timbers, and dips at an angle of 58°. The lining adopted differs slightly from anything of the kind ever before attempted. The shaft contains two skip compartments, each 6 by 6 ft., a cageway of the same size and a 4 by 6-ft. compartment for ladder, counterweight and pipes. It is lined, except for the upper 20 ft., with steel sets and wood lath. The wall plates are 30-lb. rails and the dividing pieces 3 to 4-in. I beams and channels. Old rails are found more convenient than beams for end-pieces and are cheaper. The various members of the sets are connected by riveted angle bars. Studdles are merely 4-ft. pieces of 16-lb. rails, or scrap of other sizes, with ends slotted for connection. Slots in the studdles fit over flanges in the wall plates so that they cannot be knocked out, except by a pressure that will bend them sharply. To facilitate work, and because the ground is soft, the plates are divided into two pieces. There are about 1,850 lb. steel in each set. Wood lath is found necessary. It has been found that the difference in area in the excavation, because of the thinness of the steel members amounts to a saving of about 21 per cent. over a wood-lined shaft having the same inside area; but the gross cost of sinking is about 13 per cent. greater.

"The first shafts sunk in the Ironwood district, in 1884, were all directly on the ore and large bodies of ore had to be left for supports. Later shafts were sunk in the hanging, but all new work is in the quartz-slate foot, about 250 feet from the ore horizon. Most shafts, especially those in mines of the United States Steel Corporation, that are closer than this to the ore, will probably be abandoned. Aside from the A shaft at the Norrie, three others at Ironwood are using steel to a greater or less extent.

"At the Newport's K shaft, a hoisting plant capable of hoisting a 10,000-lb. load, unbalanced from 2,000 ft. is going in. The drum has a straight face

and the duplex cylinders are 20 by 42 in. This shaft is now down 1,600 ft. At all the properties visited the development work and the permanent improvements are all of the most substantial character, being evidently designed for heavy duty and long life. This is one of the developments coming from the control of companies having abundant capital and sure of a large product."

STATUS OF UNIONISM IN THE UNITED STATES.

ALTHOUGH not an analogous case to that of the *Centre Star vs. Rossland Miners' Union* that was a few weeks ago decided against the union in the Supreme Court of British Columbia, the *Engineering Magazine*, of New York, made editorial reference in its August number to a decision in Illinois that is of much interest. It observed: "The most sensational development of late relating to the status of unionism is the much discussed decision of Judge Adams of the Illinois Appellate Court. In the case in question the unions attempted to enforce, by strike, certain most outrageous demands, and among them one for the exclusive employment of union men—in other words, they closed the shop. They picketed the works, were enjoined, persisted, and were fined and the ringleaders jailed for contempt. The case came before Judge Adams on appeal. He holds that a strike to compel an agreement constitutes duress, is unlawful and renders any agreement or contract obtained voidable; further—a much more important point—that the proposed agreement in this case would itself be unlawful because it would:—'if executed, tend to create a monopoly in favour of the members of the different unions to the exclusion of workmen not members of such unions. . . . Contracts tending to create a monopoly are void.' The decision, naturally has been sharply criticized but it is said that counsel expect it to be sustained in the Illinois Supreme Court. If so, it will be one of the most important leading cases in the United States."

CLASSIFICATION OF PULP.

IN the course of a recent contribution on the subject of the "Output of British Mines," a correspondent of the *Engineering and Mining Journal* made the following comment regarding classification in connection with Cornish mining. "Experiments have recently been made on a working basis which show that crushing through a 10-mesh instead of a 30-mesh—the aperture writers will please pardon the expression—70 per cent. of the pulp contains but little values, and is discarded, thereby increasing the capacity of the machinery 300 per cent., to reduce the wear and tear, the working costs, the loss in the tailings, and to increase the value of the concentrates. Mr. Abelspies, of the Polmear mine, has paid great attention to classification, and has applied his system to the complex ores of the mine. Mr. Martin, one of the professors of the Truro Technical School, has

patented a classifier which should, if largely used, do much to revive Cornwall. Now, in the mines the tin is crushed very fine, in some cases so fine as to render it useful on strops to whet razors. It has been said that after crushing to a 10 or 15-mesh, fully 50 per cent. can be immediately rejected, and that it contains less value than after going through a dozen or more mechanical and manual treatments. The coarser the ore can be concentrated, the better."

CORRESPONDENCE.

THE MINING LAW AND SECURITY OF TITLE.

TO THE EDITOR:—Sir: In your issue for August you refer to a statement made by Mr. John Keen of Kaslo in a circular letter issued to the members of the Executive Committee of the Provincial Mining Association. I wish to furnish the following facts, which, I believe, will prove that Mr. Keen's statement is absolutely correct.

I have for the last ten years followed the business of mining and prospecting in the province of British Columbia and in 1899 I made some mineral locations on Twenty Mile Creek, or what is known as Camp Hedley. Among the locations made by me are a group of claims situated above and adjoining the Yale Mining Company's millsite at Hedley. This company desired to build a gravity tramway from the Nickel Plate mine down to the mill and Mr. M. K. Rodgers, the manager of the company, proceeded to carry out the work across my group of mineral claims without my consent, and without incorporating a tramway or power company. Knowing that he had no authority to build, I ordered his workmen off my ground, as they were cutting and destroying valuable timber and mining works constructed by myself. Consequently Mr. Rodgers found himself compelled to incorporate a company (known as the Daly Reduction Company) in order to get power to construct and operate tramways and other works. But in complying with section 4 of the Tramway Incorporation Act, he neglected to state over what ground, or to or from what points the said company were intending to build their tramway, and accordingly I could not take advantage of section 5 of the said act. So the Lieutenant-Governor-in-Council granted Mr. Rodgers the right to construct a tramway over my property. Now, as certain sections of the B. C. Railway Act are to apply in regard to tramways, and as the said act amongst other things states that where the road is located over mineral claims, the owner of those claims is not allowed to do surface mining within a distance of one hundred and twenty feet of the centre of the road, it would mean a strip of ground 240 feet wide, which I am unable to work, except by drifting from some outside point. As far as I can see, there is nothing to prevent Mr. Rodgers' company, or any other company that may be incorporated, from building several more lines or branch lines over my property, which would leave me no ground whatever to operate. As it is, they have actually cut off all access to one of my mineral claims, there being no crossings constructed on the said tramway anywhere on my property. I have asked the Gold Commissioner for this district as well as the Minister of Mines for assistance, but the answers have been invariably the same, viz., "I would suggest your consulting an attorney in the matter."

Besides those claims, I located a mineral claim known as the Alpine (Lot 2672) and in due time applied for and obtained a Crown grant, and as I required the surface I obtained a Crown grant to the surface by paying \$5 an acre. The Yale Mining Company found it necessary to construct a flume over the said lot, and after giving security to the Gold Commissioner according to section 24 of the Water Clauses Consolidation Act, they proceeded to construct a grade for the flume as well as to run a tunnel of some two hundred feet in length, dumping several thousand tons of rock and boulders down on valuable ground.

To obtain any compensation for damage done in this case,

I should be obliged to sue—as the act states—on the security so given, which will mean the employment of an attorney and the expenses in connection therewith. To make matters worse, I have not only bought and paid for, but have been paying and am, and as far as I can see, will have to continue to pay, taxes on property, which I am not allowed to use or occupy. It would be interesting for myself as well as for all the prospectors, that are spending their hard-earned money as well as their labour and time in this province, to know what constitutes a free miner's rights.

In reading the Mineral Act, the average prospector will think that if he locates and records a mineral claim on vacant Crown land he will have the right to prospect and mine for gold and other mineral anywhere inside of the boundaries of his location. But my experience is that he can only enjoy those rights until such times as a corporation or company may require his ground; then it depends on the amount of money he is willing and able to spend, as well as the ability of his attorney, if he has any rights or not. I am well aware that no one can mine and carry away any ore found on his location, but a mineral claim is of very little use to the owner unless he has the unrestricted use of the surface of the said claim.

LOUIS O. HEDLUND.

Hedley, B.C., September 15th, 1904.

COMPARATIVE COSTS OF COPPER SMELTING.

TO THE EDITOR:—Sir: I have read with amusement your criticisms in your September issue of an article of mine that appeared in the *Mining Journal* of London on "B. C. as a Source of Copper"; and I note your eagerness to advertise Tennessee as a cheaper source of copper than British Columbia. Personally in my profession I luckily have other clients who do not share your unvarnished opinion of my abilities. We know that mining and metallurgical engineers, who have had the good fortune to gain a theoretical course in a British school of mines, followed by practical experience in metallurgy at Swansea, and practical mining experience under some of the many important British firms of engineers, we know that these have to endure the compliment of being called "only theoretical" in some parts of the world, especially if they are satisfied that a British training is as good as an American one. All this, however, is only personal, and is not to the point in our aim to legitimately attract capital to British Columbia.

You dispute without quoting figures that the cheapest smelting practice is extant in British Columbia and suggest that probably Tennessee has cheaper costs. My advice is that Tennessee costs are thirty-five (35) cents per ton for roasting plus one hundred and fifteen (115) cents for smelting to matte plus costs of converting to blister, whereas the best British Columbia costs for the same result, viz., blister copper, amount to the total of one hundred and thirty-five (135) cents per ton of ore treated. In commerce, costs of the product are what count to enable competition in the world's markets, and if conditions in British Columbia are more favourable from self-fluxing ores, then these cheap costs constitute an inducement to capital to mine in British Columbia. The average mixed costs of mining from open-cast and underground works are one dollar per ton and less in the Boundary district.

It is possible to reduce these costs even in the smelting department by feeding the furnace by means of more labour-saving appliances and eliminating more thoroughly the price of labour, and this matter is claiming the attention of many of the smelter managers; also in British Columbia by using hot blast to reduce the only necessary barren flux, viz., coke, at present costing seventy-five (75) cents and more per ton. With these objects accomplished, what is there to cause you mirth in predicting the reduction of smelting costs from \$1.35 to (85) eighty-five cents per ton?

Keremeos and West Fork can supply when needed later iron ores containing ample values to make profit on their use as flux, and further reduce refining charges, and Boundary

has valuable lime ores in the upper country to more than pay their way for mining and smelting as fluxes. A higher recovery of values by obtaining cleaner slags, (point one) .1 per cent of copper being equal to two pounds of copper valued at twenty-five (25) cents per ton of slags, will add to profits and offset costs.

If an injustice has been done to the coal companies, the writer will be the first to beg forgiveness; toughness to save waste in handling and transportation is as essential as to bear the weight of furnace charge. For their reputation, let us hope your experience, that the toughness of the coke cannot be improved by decreasing the ash with washing and by longer and perhaps slower burning, is really a fact, though a misfortune to the smelting industry. Why are so many different patterns of coke ovens being tried at different mines, of experience has already demonstrated the one that will produce the toughest coke?

RONALD C CAMPBELL-JOHNSTON.

Greenwood, B.C., September 7th, 1904.

YUKON MINING INTELLIGENCE.

THE *Yukon World* recently published some particulars of the stampede to Beaver Creek, which has created excitement in the vicinity of Circle and Rampart. Beaver Creek is a tributary of the Yukon River, which it enters near Fort Hamlin, about 300 miles below Circle. It heads in the same range as Birch Creek and in one place approaches within rather close proximity to the older and better-known creek. The discovery was made by a party of miners who spent last winter at the head of the creek, and who state that pans of wash run from ten cents to \$1.50 a pan.

Mr. A. N. C. Treadgold, prominent in connection with the Treadgold concession granted by the Dominion Government and relinquished on account of the great outcry there has been against it, recently returned to Dawson. In the course of a newspaper interview he expressed surprise at the prevailing pessimistic view taken locally relative to the exodus to the Tanana country that has taken place. He stated it as his opinion that as a means of attracting the attention of capitalists it would be infinitely better if there were half a dozen centres each as well known as Dawson, instead of only one, as is now the case. He thought the Dawson camp neither better nor worse than it was a year ago, but with every promise of its being better in the future.

It is reported that there is trouble between the miners and the storekeepers of Tanana as to the price at which gold dust shall be received as trade. The miners demand that they shall be allowed \$17 per ounce but the business men decline to allow more than \$16. The miners claim that assay returns received from the Selby Smelting Company of San Francisco show the gold to be worth \$17.51, but the storekeepers maintain that if they allow more than \$16 they are losers in realising on it.

It is announced that the building of the proposed railroad in the Tanana country is definitely assured, and that the equipment, including the rolling stock, is already on the way North. The road, as projected, will run to Golden City, the settlement on Discovery, Pedro Creek, distant 14 miles from Fairbanks and 26 from Chena. The road running up Gold Stream and thence up Pedro, a tributary, will reach all points where mining is in progress on the northern side of the divide. It is reported that the builders are more favourably disposed towards Chena as a terminal point than Fairbanks, on account of the superior transportation facilities at the former.

In connection with litigation between opposing factions holding interests in the Gold Run (Klondike) Mining Company, the conflicting interests, have agreed upon Lieut. Wm. Bradley, an Englishman well-known in the Klondike, in which he has been interested since 1898, as the inspector who shall have charge of the company's mining operations under the order made by Mr. Justice Craig, pending final judgment in the action now being prosecuted, and work on

the company's property, which is very valuable, was resumed at once.

Reports brought to Dawson from Tanana are generally favourable, as regards gold returns, but the question of transporting supplies to the creeks is at present a serious one to the miners, there being no roads in the country. It costs from 15 cents to 25 cents a pound to pack to the various creeks. One instance is mentioned where \$2,200 was paid for hauling a 20-horsepower boiler 12 miles. Cleary Creek has been attracting most attention at present, probably because the best dirt so far found has been located on that creek. The *Yukon World* mentions that on 2 below, where Krockla and Diver have a lay, as the result of two and a half days' run, with four men in the drift and the crudest kind of hoisting apparatus, the clean-up amounted to \$700. Manley and Boone, on 4 below, working 18 to 20 men, cleaned up for six days' run \$16,288. The topography of the Tanana is stated to be similar to that of the Klondike. At the head of Pedro Creek there is a huge dome just as there is at the head of Bonanza, all the gold-bearing creeks radiating from the peak like the spokes of a wheel, as do Bonanza, Hunker, Dominion and Quartz Creeks from the King dome.

The N. C. Company has established a new post on the upper Tanana, about 200 miles above Fairbanks. Ben Bennett, formerly a mail carrier on the Valdos route, is in charge. The site of this post is at the mouth of the Big Delta, a tributary of the Tanana, 12 miles above the United States telegraph station at Salt Jacket. Some discoveries have recently been made on the Big Delta, but their extent has not yet been learned, none of the prospectors having yet come out. Good reports have been brought out from Shaw Creek, another tributary of the Tanana. The latter discoveries have been made at about 30 miles from the mouth. Both the Big Delta and Shaw Creek head in the Coast Range, near Mount McKinley.

Returns received at the Comptroller's office at Dawson show that the output of gold mined in the immediate vicinity was valued at \$1,539,518.40 as compared with \$1,300,250.55 for July. This output is considered unusual for a month in which the rainfall is generally light, but this year copious rains fell in August, so that there was no shortage of water. Returns for Forty-mile and Whitehorse have not yet been received, so the above-stated amount does not show the full production of the Yukon Territory for August. It is estimated that the total output for the season will be about \$10,000,000, this estimate being based upon the reports of the Comptroller, to whom the export tax on all gold shipped out of the country is paid. The Government computes the amount of the tax payable on a basis of \$15 per ounce, but the general average value of the gold is above \$16 per ounce, and it is on this latter valuation that the above estimate of total value of the season's output is based.

Advices just received from Ottawa notify the local Government that the hydraulic lease issued September 1, 1901, in favour of the Alaska North-west Exploration Company for a tract of land on Ten-mile Creek, a tributary of Sixty-mile River, will be cancelled on the 19th September, the lessees having neither paid rent nor performed the work necessary to enable them to continue to hold the ground. This concession will be open to staking by free miners on the latter date. As good pay was reported as having been struck last summer on the adjoining concession, held by the Syndicat Lyonnais, the ground now to be thrown open will be promptly staked. It is known as the Bowie concession, having been first granted to Colonel Bowie and by him assigned to the Alaska North-west Exploration Company.

Recent reports from the Tanana state that most of those who have gone there without supplies for the winter or money to provide for their wants are likely to suffer much privation before next spring. While the prospects for the future of the camp are considered to be most promising, much of the best ground on the Cleary, the richest creek in the district, is stated to be from 45 to 60 feet deep, so that on most cases it is only after a lengthy period of prospecting that the paystreak is located. High freight rates have been almost prohibitive the past summer, so far as get-

ting in machinery to work the claims is concerned, consequently another season's work must be done before the field will be productive enough to support even those already dependent upon it. The outlook for the fast-approaching winter is, therefore, believed to be a bad one for many in the camp without means and for whom there is no work available.

Hans Austin, who has been in Alaska and the Yukon for eleven years without having once left the northern country, has at last made a stake. He spent the summer of 1893 rocking on Stewart River bars, and afterwards joined in all the stampedes to new finds, from the Kloudike to Nome. In 1901 he returned to Circle from Nome, and while prospecting on Eagle Creek news came of Pedro's discovery in the Tanana country. Austin remained at work near Circle while his partner made the trip overland on foot to Tanana, where he staked ground on Cleary afterwards proved to be very rich. Austin joined his partner in 1902 and since then the two have steadily prospected until now they have sold out five interests that will shortly bring them in \$100,000 to divide equally. The *Yukon World* says that "Austin is going outside to spend the winter, to boil some of the tin out of his system, the result of a continuous diet of canned goods for the past eleven years."

Rails and other material for Falcon Joslin's Tanana railway have been arriving in Dawson during the latter part of August, and going thence down river to Chena. Those who have been over the proposed route of the road describe it as without engineering difficulties, and having plenty of timber near at hand for ties, bridges, etc. From the lower terminus, which will probably be at Chena, to Golden, on Pedro Creek, the distance will be about 20 miles. It is proposed to next season continue the road over the divide to Cleary and Fairbanks Creeks.

W. W. Tinkham has returned to Dawson from a six-weeks' trip through the Forty-mile country. He visited every creek in that section on which gold has been discovered and men are at work. When in the Ketchumstock Hills he was 175 miles distant from the mouth of Forty-mile, yet still in the watershed of that stream. He reports the existence of large areas of bench gravels suitable for hydraulic mining, while there are many bars that could be dredged; also, that there is a fine body of quartz in the Ketchumstock Hills over the divide from which head streams tributary to the Tanana. He considers the probable continued productiveness of the Forty-mile country, which it is estimated will this season show a total production of more than \$200,000, general undervalued. Much of the output just mentioned is from the United States side of the boundary line, but the bulk of this gold passes through the business houses and banks of Dawson.

Official proclamation has been made ordering a re-division of the mining districts of Sixty-mile and Dawson, by which a section from the latter district, i.e. the territory tributary to the Sixty-mile River, including Boulder Creek and excluding Gold Creek, is added to the former. The re-arrangement will, it is said, greatly convenience miners working on and in the vicinity of Boulder Creek.

LEAD CORRODING WORKS AT MONTREAL.

INFORMATION comes from Montreal, Quebec, to the effect that the project to establish lead-corroding works in that city is to be carried into effect with as little delay as possible. Premises for the industry have been secured at Montreal, and arrangements made with the Canadian Pacific Railway Company for a suitable freight rate on the raw material from British Columbia. It is probable that the chief supply of lead will be obtained from the Canadian Smelting Works, Trail, the management of which a few weeks ago announced that negotiations were in progress for the establishment of lead-corroding works in one of the Eastern Canadian cities. The Carter White Lead Company, of Chicago, Illinois, are stated to have in hand this industry, which is a new one for Canada.

MACHINERY NOTES.

THE Britannia Copper Syndicate, Limited, Howe Sound, Mr. George H. Robinson, Managing Director, are actively engaged in installing their aerial tramway and mining buildings. They are developing a water power and will have available 500 horse power under an effective head of 1000 feet. They have contracted with the Pelton Water Wheel Company of San Francisco, for Pelton type wheels and they have purchased from the Canadian Westinghouse Company three phase alternating current generators to be direct connected to the Pelton wheels. This involves two 200 k.w. 6,600 volt generators and it is worthy of note that they are the highest voltage machines in the Province. They have a transmission three miles in length to the mines and the machines are wound for this voltage to obviate the necessity of installing raising transformers. They have purchased ten induction motors, the largest of which is 150 horse power to be installed at the mine three miles from the power house, which drives a compressor. The Britannia Syndicate have also purchased a Westinghouse-Baldwin electric locomotive for handling freight and ore, from ore bins to the dock. This will be one of the most complete mining plants on the Pacific Coast. The Hinton Electric Company are the contractors for the erection of the transmission line and machinery. Mr. Wynn Meredith, who is also consulting engineer of the Vancouver Power Company, is retained as electrical consulting engineer.

The Canadian Westinghouse Company sold last month to the Granby Consolidated Mining, Smelting and Power Company an electric locomotive to replace the steam locomotive for the haulage of ore from the Ironside mine to the rock breaker.

The last generator of the installation of the Vancouver Power Company, on the original contract for three 1,500 k.w. (2,000 h.p.) has just been delivered and is being placed in position. The three mile tunnel of the Company from Coquitlam River to Trout Lake is nearing completion and the plant will be running in the near future to its full capacity. The Westinghouse Company also secured an order for a 1,000 k.w. generator from the B. C. Electric Railway Company which is now being installed at the Goldstream power house which supplies Victoria with light and power.

Contracts have been let for cutting a right-of-way for a tramway from the Sullivan mine to the railway at Kimberley. Operations are to be resumed at the mine, which is stated to have about 300,000 tons of ore in sight, as soon as the roasters at the new smelter, now approaching completion, shall be ready to receive it.

A correspondent writing to the *Nelson Daily News* states that the Kootenay Ore Company has already commenced breaking ground at Kaslo for a building 80x100 feet in addition to their present works, in which will be installed within the next two months the most modern machinery for zinc separation on a large scale.

Mr. E. H. Thurston, owner of the Carmi, on the west fork of the Kettle River, has installed a stamp mill and concentrator at this mine. The plant is said to be running very smoothly.

Forest fires are reported to have destroyed the shafthouse, boiler and pump at the Golden Eagle mine, on the north fork of the Kettle River, with about \$2,500 loss and no insurance.

Although, owing to a temporary scarcity the new mill installed at the White Bear mine, Rossland, has not been given a fair test, the first returns received are not unsatisfactory. A profit of \$500 having been made with 15 stamps in five days.

Announcement has been made that during the winter a stamp mill will be erected by the Great Northern Mines Company at Poplar Creek to treat the gold ores of the Lucky Jack and Swede group properties.

Preliminaries are being arranged for the establishment of zinc-enriching works at Rosebery, on Slocan Lake. A contract has been let for the erection of the buildings, which are to be completed within about four months. Part of the

machinery has already been ordered from England and the remainder is to be purchased in Canada and the United States. It is stated that a lead stack will also be put in. The main supply of ore will come from the Monitor mine, at Three Forks, Slocan, where the plant is to be added to and the working force increased to nearly 100 men.

Two compressor plants have been ordered for installation this autumn at mines in the Camborne camp, and the capacity of one of the local stamp mills is to be increased from ten to twenty stamps.

The Elwood Tinworkers Gold Mining Company, owning the Silver Dollar, situated near Camborne, in the Fish River section of the Lardeau, have decided to install a compressor plant on that property.

COMPANY NOTES AND CABLES.

LE ROI NO 2.

"The tonnage shipped during the month of August amounted to 1,740 tons. Net receipts from smelter, \$47,426, \$38,927 being preliminary payment for 1,975 tons shipped, \$4,628 being deferred payment to 2,260 tons previously shipped, \$3,871 being payment for 115 tons concentrates shipped.

LE ROI.

"Shipped from the mine to the Northport smelter during the past month 8,312 tons of specially selected ore, containing 4,105 ozs. of gold, 3,911 ozs. of silver and 199,000 lbs. of copper. Estimated profit on this ore, after deducting cost of mining, smelting, realisation and depreciation, \$28,500. Expenditure on development work during the month, \$5,500."

VELVET-PORTLAND.

"During the month of August milled 672 tons, yielding 120 tons concentrates; estimate the value at \$4,900. Concentrates on hand value \$5,950."

TYEE COPPER.

The official report for August states—"Smelter ran 23 days during the month, and smelted—Tyee ore, 4,587 tons; Customs ore, 538 tons; 5125 tons. Matte produced from same, 512 tons; gross value of contents (copper, silver and gold), after deducting costs of refining and purchase of Customs ore, \$59,224. Aerial rope-way continues running satisfactorily."

ALASKA-TRENDWELL.

"240-stamp mill ran 30 $\frac{1}{4}$ days, 300-stamp mill ran 30 $\frac{3}{4}$ days. Crushed 88,046 tons ore; estimated realisable value of the mullion, \$69,000. Saved, 1,360 tons sulphurets; estimated realisable value of same \$69,063. Working expenses for month, \$88,507."

ARLINGTON (ERIE).

"Smelter returns received during the month of August amounted to \$4,266.07. The expenses for the month including development amounted to \$3,287.02. During the month 134 feet of development work was done.

GREAT NORTHERN MINES.

The annual general meeting of the Great Northern Mines, Ltd., has been postponed to the 24th of October.

IMPORTS OF MINING MACHINERY.

THE Trade and Navigation returns for July published by the Customs Department, Ottawa, give the following statistics relative to imports of mining machinery entered for consumption during that month:

"Mining smelting and reducing machinery, viz.: Coal cutting machines except percussion coal cutters, coal heading machines, coal augers and rotary coal drills, core drills, miners' safety lamps, coal washing machinery, coke-making machinery, ore drying machinery, ore roasting machinery, electric or magnetic machines for separating or concentrating iron ores, blast furnace water jackets, converters for metallurgical processes in iron or copper, briquette making machines, ball and rock emery grinding machines, copper

plates, plated or not, machinery for extraction of precious metals by the chlorination or cyanide processes, monitors, giants and elevators for hydraulic mining, amalgam safes, automatic ore samplers, automatic feeders, jigs, classifiers, separators, reorts, buddles, vanners, mercury pumps, pyrometers, bullion furnaces, amalgam cleaners, gold-mining slime tables, blast-furnace blowing engines, wrought iron tubing, butt or lap-welded, threaded or coupled or not, not less than 2 $\frac{1}{2}$ inches in diameter, imported for use exclusively in mining, smelting, reducing or refining:—

From Great Britain	\$ 4,310
United States	90,280
Other Countries	11,197
	<hr/>
	\$105,787

"And appliances of a kind not made in Canada, for use exclusively in alluvial gold mining, until July 1, 1905:—

From Great Britain
United States	6,917
Other Countries

TRADE NOTES, CIRCULARS AND CATALOGUES.

IT is worthy of note that not one dollar's worth of electrical apparatus outside of the manufacturer who has been locally represented a number of years, was in service on Vancouver Island until the Westinghouse interests established an office in British Columbia. This office is located at 152 Hastings street, west, in the wholesale and machinery district of Vancouver, B.C., and here a complete line of generators, motors, transformers and wattmeters is stocked. The office is in charge of Mr. H. A. Scribner and there is also available an electrical engineer, Mr. J. R. Read, who has had extensive experience in long distance transmission work in California. The office is well equipped to execute electrical orders and contracts of any magnitude. The Canadian Westinghouse Company, Limited, of Hamilton, Canada, have also opened offices in Winnipeg, Manitoba. The offices are located in the Union Bank Building. The representative in charge of the district covered by this office is Mr. W. E. Skinner, who was formerly associated with the Westinghouse Electric & Manufacturing Company, of Pittsburgh, Pa.

COAL EXPORTATION AND TRADE.

COAL and trade conditions in East Kootenay are reported to be very satisfactory. Coke and coal sales of the Crow's Nest Pass Coal Co. having been recently increased by special orders from the Great Northern Railway for 850 tons of coal daily. The *Free Press* states that Mr. Pearson, coke sales agent, has returned from Montana smelting centres and has intimated that the output shows improvement. The output from the mines is meanwhile steadily maintained.

The Canadian Pacific Railway Co.'s anthracite coal mine near Banff, Alberta, along the company's transcontinental railway, is now sufficiently developed to allow of the coal being placed on the market for sale. The coal is stated to be smokeless and particularly clean, and more efficient for domestic purposes than any of the soft coals on the local market. Arrangements are being made for the appointment of selling agents in the Coast cities of British Columbia.

Operations were resumed at the No. 1 colliery, Nanaimo, on Sept. 26th with the employment of four hundred men. The company has entered into new arrangements with the miners in the following respects:

1. Adoption of the single shift system of work.
2. Reduction in price of all supplies to miners of from 15 to 50 per cent.
3. Company will furnish only Wolf safety lamps where these are found to be necessary.
4. No charge for Wolf safety lamps other than breakages.
5. Company to contribute \$1,000 annually to Miners' Accident Fund.

6. Underground shift from 7 a.m. to 3 p.m. 7. Tripple shift from 7 a. m. to 4 p. m. 8. Men to pay for coal at the rate of \$2.50. Coal to be best-screened coal. 9. Men to pay for oil used in all lamps except safety lamps. 10. Men to purchase necessary working tools which will be redeemed at a value in proportion to the time they are used in case the miner should leave the employ of the Company. 11. Termination of the allowance of 25 cents per day on safety lamps. This is in view of the fact that the Company agree to supply Wolf lamps exclusively.

Intelligence has reached Vancouver that the Western Oil & Coal Company, which recently acquired in addition to its other properties, sixteen claims near the Flathead district, that the Great Northern railway in making a cutting through the property exposed a 20-foot seam of bituminous. The company has already struck oil in one of its wells.

RECENT PUBLICATIONS.

"Investigate before you invest" This is an admonition so frequently given prospective investors in mining stocks. The perplexed investor asks: "But how shall I investigate?" To answer this question, to thoroughly educate mining investors in the matter of investigating and in that of safeguarding themselves in other directions, Harry J. Newton, a well-known authority and writer on mining and mining finance, has written a book entitled Pitfalls of Mining Finance. The book is written for investors and by reading it they will acquire a thorough knowledge of all the pitfalls likely to beset their path when selecting their mining investments. The author shows a wide and thorough knowledge of his subject. Pitfalls of Mining Finance is written in 12 large chapters which completely cover the ground and serve as a college course in mining finance for the student who will apply himself to its pages. The book is published by the Daily Mining Record of Denver, Colo.

STATE VALUATION OF MINING PROPERTIES.

The following comment, under the above-quoted heading, of the *Mining Journal* of London, England, the oldest-established and most influential mining publication in the British Empire, is reproduced for the information of readers of the *MINING RECORD*:

"The difficulties attendant on the policy which has recently been advocated in regard to Western Australia of the making of official valuations of new discoveries in the public interest is illustrated by recent episodes in British Columbia. The Provincial Mineralogist, Mr. W. F. Robertson, whose position appears to correspond to that more commonly denominated in other colonies Commissioner of Mines, has for some time past found himself at variance with different individuals having interests in properties, of the character of which the technical chief of the Bureau of Mines found himself unable to take the same view as the proprietors. Last year it was in connection with the Lardeau district that his action was particularly criticised. So much interest did the whole question arouse that it was considered by the newly-formed Provincial Mining Association, of which the executive committee reported that in view of the opposition offered by the Bureau of Mines to the efforts made by mining men to improve the condition of the industry, that a radical change should be effected in the constitution and conduct of the Bureau. This resolution formed the subject of prolonged discussion at the annual convention at the end of February. While it was generally conceded that the staff was unequal to the amount of work which they were called upon to do, there was a clear division of opinion on the policy pursued, which focussed itself in attack and defence of the Provincial Mineralogist. The onus of the charges were that he had exceeded the scientific standpoint, and had made pessimistic reports which worked for the detriment of the various camps. Finally a resolution was passed asking the Government to consider the improvement of the efficiency of the Bureau,

and to improve the nature of its reports so as to assist the mining industry by scientific and geological information, and to avoid anything which might be misconstrued as affecting the commercial prospects and chances of mining districts. Since that time Mr. Robertson has apparently come into contact with other schemes in East Kootenay, and has in consequence been violently attacked in the local press. Of the particular merits of the controversy it is, of course, impossible for us to form any opinion, and it is only as an illustration of general principles we have called attention to them. Mr. Robertson's frankness and independence of judgment have received strong support from our local correspondents, and his valuable report on the industry for last year testified not only assiduity but a personal interest in the industry, while the Press attacks which we have seen are so intemperate in tone as necessarily to impress impartial opinion unfavorably. However, the stronger the case for the action of the Department, the better does it illustrate the difficulties inherent in Government action of this kind. The Department believes, no doubt rightly, that in a country like British Columbia, where British capital has been exceedingly unfortunate, and which at the present time requires paying propositions and not lucrative promotions, the introduction of foreign capital into unsound ventures would be disastrous. This, however, is a view which the land speculator and concessionaire cannot be expected to share, and the Department which interferes with business is bound to incur general unpopularity. An administration may, we think, do valuable work in giving facilities for independent examination, but if it goes beyond securing fair play for all parties it enters a domain where experience and common sense tell us the remedy is often worse than the disease."

SOME NOTES FROM THE MINING CAMPS.

ATLIN.

A promising discovery of quartz is reported to have been made at the headquarters of Boulder Creek. The ore carries satisfactory values in both gold and silver, and the surface showing indicates an ore-body approximately seventy feet wide. Exploratory work is now in progress. In the Alsek district coal has been discovered on both Kimberley and Sheep Creeks, the seam at the latter point being said to be fifteen feet wide.

Mr. R. Tolmie, Deputy Minister of Mines, who recently returned from Atlin states that the dredge now being operated by the British American Company is giving satisfactory results, although bed-rock has not yet been reached, meanwhile the Western Engineering Company has acquired control of property in the country and the British America Company is about to install a second dredge.

THE COAST.

It is reported that steps have been taken for the re-opening of the Alberni Consolidated mine at Alberni, V. I., a syndicate of Spokane investors having recently secured an option on the property with this end in view. In the operation of the mine in the past money was very recklessly wasted as a result largely of bad management, but at the same time geological conditions in the locality are themselves difficult.

CASCADE.

Advices received from the Cascade mine, Uchucklesit Harbour, Alberni, are to the effect that the 8-ft shaft is still in solid ore. In order to provide drainage for the Winter rains, a tunnel has been started which will strike this large deposit at the shaft some distance below the bottom, and the face of the tunnel is now in three feet of good ore, which is widening out as distance is attained. This tunnel will be continued along the ledge, and, it is believed, all in ore, for a distance of 180 feet where it will strike another large bunch of ore, as there is a heavy outcrop of ore in the surface above at this point. The ledge has been stripped at various points on the surface and it has proved to continue for several hundred feet. The management believes that the tunnel will

prove a splendid body of ore existing between the tunnel and the surface, sufficient to demonstrate that it has an extensive tonnage of high-grade shipping ore.

VANCOUVER ISLAND.

The Tyee Copper Company's aerial ropeway from its Tyee mine at Mt. Sicker down to the E. & N. Railway near Somenos, whence the ore is shipping to the smelter at Lady-smith, has had a new haulage rope put in and ore shipments to the smelter have been resumed. Owing to the defective condition of the old rope the smelter ran short of ore in July, so was only in operation 17 days.

CARIBOO.

A second clean-up has been made at the Cariboo Hydraulic mine, Bullion, the value of which is estimated at \$30,000.

LILLOOETT.

Dredging on the Fraser at Lillooett is in steady operation, the daily gold recovery averaging between six and seven hundred dollars.

KAMLOOPS.

A small seam of bituminous coal was encountered this week at a depth of 260 feet at the property of the Kamloops Coal Development Co., on Coal Hill. An effort is being made to thoroughly exploit the coal measures in this vicinity.

Operations are now resumed at the Iron Mask mine, which was recently equipped with concentrating and other machinery.

REVELSTOKE.

The Carnes Creek Consolidated Mining Company's properties, in the Big Bend district, on the Columbia River above Revelstoke, have lately been visited by Mr. Alex. Sharp, M.E., for the purpose of advising one of the principal shareholders as to the advisability of resuming development operations. It is probable that the decision will be favourable to more work being done on the claims.

The Prince Mining & Development Company, which owns the Standard group, situated about 33 miles north of Revelstoke and six miles west of the Columbia River, is sending up supplies, its intention being to work the property all next winter. The vein already opened up shows five to six feet of ore, chiefly copper pyrites with gold and silver values as well.

LARDEAU.

Progress is being made on the Mammoth group, near Camborne. A four-foot lead of galena has been found on the Sirdar claim, while on the Crescent, another of the group, 30 tons of ore have been sacked for shipment. Fifteen men are at work building a trail to this group.

The men employed on the Eva and Oyster-Criterion groups have had to live in tents since the destruction by fire of the mine buildings in these two neighbouring camps, but work on new bunk and boarding houses is to be commenced shortly.

A second shipment of silver bullion of 21,000 ounces, has been made from the combination silver mill of the Silver Cup Mines, Ltd., Ferguson, to the refinery at the Trail smelter. Owing to shortness of water there has only been sufficient power available for ten stamps to run, but rain has lately fallen so twice that number is now dropping.

It has been decided to continue operations at the Triune mine throughout the winter, instead of as formerly suspending operations at this season of the year. The mine is now shipping a considerable quantity of high-grade ore to Trail.

The Spokane Falls Placer Mining Company has let a contract for the construction of a dam across Lardo Creek, and 1,000 feet of flume is also to be built, it is anticipated that placing will be in operation on the company's ground by the middle of October.

VICTORIA.

The Badshot mine, on Gainer Creek, has been leased by a local syndicate, and already the shipment of ore has been commenced. This property is one of those known as the "Lime Dyke Series," the big "Lime Dyke," being one of the most prominent geological features of this part of the Lardeau country. One vein on the Badshot, outcropping

alongside the dyke, was lately described by Mr. R. W. Brock, of the Canadian Geological Survey as being several feet in width of decomposed calcite, quartz, galena and tetrahedrite. A galena vein, 18 inches in width and said to run \$5 per ton in gold, 235 oz. in silver and 75 per cent. lead, has also been opened up.

The Kootenay Consolidated Mining Company, of Minneapolis, Minn., has commenced to have ore packed out from its Old Gold claim, on the Duncan Slope. This company is a consolidation of five or six other companies formerly holding groups of mineral claims on the divide between the Duncans and Lardeau watersheds, and it plans extensive mining operations in the district when it shall have overcome existing difficulties of transportation.

On the Spyglass, at Poplar Creek, additional buildings are being erected so as to provide accommodation for more men, the intention being, now that the property has been purchased outright, to work a larger force the winter through. Developments continue to be satisfactory and the claim is regarded as one of the most promising in the camp.

SLOCAN.

Thirteen mining properties around Sandon that were idle during the time that the local silver-lead mining industry was under a cloud are now at work under lease.

It is reported that a project looking to the amalgamation of the Whitewater and Whitewater Deep properties is under consideration. Mr. Barclay Bonthorne representing the Erl Syndicate, Ltd., a British company, recently visited these mines.

Rich ore, containing native silver and free gold has been discovered on the Jo Jo claim, on the North Fork of Carpenter Creek. Similar ore has also been found on the McAllister claim, the vein on which is believed to be an extension of that on the Jo Jo.

A contract has been let for connecting by a raise two levels in the Capella mine, near New Denver. This property holds the record in the Slocan for a shipment of high-grade ore, a lot of 40,600 lbs., sent out sometime since, having returned about 990 ozs. silver per ton and netted \$10,101.

There is a likelihood of resumption of operations at the Noble Five, a mine which at one time paid handsomely. With this end in view the property was recently examined by Mr. W. J. Sutton of Victoria, an eminent geologist, retained by Mr. James Dunsmuir to look after his mineral interests.

Several car-loads of zinc ore have been shipped recently to Kaslo sampler from the Lucky Jim mine.

It is announced that capitalists of Rochester, N. Y., intend erecting a zinc smelter at New Denver, on Slocan Lake. These men are stated to already be largely interested in a smelter in Denver, Colorado, as they own a mining property in the Slocan known as the Hartney which, together with neighbouring mines, will supply the zinc ore to the local smelter.

At the Reco mine, which in former years was one of the dividend-payers of the Slocan, new ore sheds and other buildings are to be erected at once and more men are to be employed in the mine, which is reported to be looking well and promising a considerable production through the ensuing winter.

On the Last Chance a winze has been sunk from No. 6 tunnel and at about 260 feet depth it encountered a large body of ore assaying 125 ozs. silver per ton and 50 per cent. lead. This ore-body lies at a depth of about 1,700 feet below the apex of the mountain, and its occurrence at that depth is considered to be very important to the mine and district.

The Ibox, at one time advertised in the Toronto papers as having \$2,000,000 worth of ore in sight, is now being advertised for sale to satisfy a judgment of \$1,406.25 obtained against it by several Kaslo miners.

It is announced that the buildings at the Chapelau mine in the Slocan City Division, which were recently destroyed by fire, will be rebuilt at once. The fire destroyed the tramway and some other buildings, the 10-stamp mill and the concentrator being, however, saved.

AINSWORTH.

A shoot of rich silver-lead ore has been encountered in No. 2 tunnel of the Bismark mine, on the South Fork of Kaslo Creek, Ainsworth Mining Division. Assays have given 250 ozs. silver and 70 per cent, lead, and it is estimated that there is \$17,000 worth of ore already exposed. The lower tunnel is to be extended with the object of tapping the same shoot of ore at a greater depth.

Two new veins have been discovered on the Vera group, also on the South Fork of Kaslo Creek. The width of one is given at 20 feet and of the other 18 feet. They are thought to be extensions of leads that have for some time been worked on the Cork and Province, two shipping properties across the creek.

NELSON.

Mr. C. A. Ulrich, a recent arrival, who is stated to have had a long mining experience in Australia and New Zealand, has arranged for the purchase of the Great Hope and Alma mineral claims, situate on Crawford Creek, near Nelson. The ore on this property is galena, carrying 40 ozs. silver per ton and 70 per cent. lead. An aerial ropeway from the mine to the wagon road is to be put in to facilitate shipment of ore to the smelter.

The Mollie Gibson mine is now in steady operation. Mr. C. E. Trethewey having recently been appointed superintendent. An additional 500 feet of tramway has been installed and other preparations made for the early commencement of shipments.

Exploration work has been commenced at the Crawford Bay iron mines, with the driving of a tunnel which is designed to encounter the ore at a depth of 1,000 feet.

YMIR.

Advices from Ymir, in the Nelson district of West Kootenay, state that ore milled in local mills and shipped from Ymir mines to the smelters now exceeds in quantity 10,000 tons per month. This shows a considerable improvement in the production. With the exception of the Ymir Company's gold mine, which now produces less than half of the total tonnage, the mines in the district are in their infancy.

The new strike of ore lately made in No. 3 tunnel of the Wilcox mine has been proved continuous for more than 150 feet. Raises are now being made and the ore is found to vary from two feet to three feet six inches in width. The depth from the surface is about 200 feet.

The Erie Placer Mining Company is preparing to start active operations on its placer ground on the North Fork of Salmon River. The gravel carries good value and the gold is coarse and easily recovered.

ROSSLAND.

It has been announced that the Government of British Columbia has commenced legal proceedings against the Le Roi Mining Company to recover the sum of \$19,637.23 claimed to be due and unpaid on account of the two per cent. mineral tax payable to the Government on ore produced. It is claimed that the company's quarterly returns to the Government, on which the two per cent. tax is usually collected, do not agree with the returns given in the company's annual reports, in which appear certain amounts as the value of the ore and certain other amounts as the cost of freight and treatment. The contention on behalf of the Government is that the tax should be paid on amount corresponding to the difference between such admitted total value and the acknowledged actual cost of freighting and treating the ore. On the other hand the company claims that the Northport smelter, at which the ore is treated, is owned by a separate organisation to the Le Roi Company and that consequently the deduction for the cost of smelting the ore, which the Act allows, should be the ordinary rate charged by the smelter for treating custom ores and not simply the bare cost of treating them. The amount alleged to be due is for the fiscal years ended June 30, 1902 and June 30 1903, for which periods the Le Roi Company paid to the Government on Mineral Tax account the sum of \$17,021.85 while the Government claims that it should have paid \$57,259.02. The difference between these two amounts is what is being sued for. There having recent-

ly been a change in the personnel of the management of the company, an adjournment to October 15 has been granted, in order to give the new management ample time to become familiar with the position. The question of whether a company owning its own smelter may deduct as cost of smelting the rates it charges for custom ores or whether it may only deduct actual cost of smelting is an important one. Government officials have long claimed that some such companies have not been paying as much as the Government is entitled to receive from them. It is noteworthy that the general manager of the Centre Star and War Eagle Companies, of Rosslund, which, by the way, do not own their own smelter, although a most persistent and outspoken opponent of the two per cent. Mineral Tax, has all along been most punctilious in paying the Government the full amount it was entitled to under the Act.

Ore crushing was commenced at the White Bear mill on August 31. Crushers, thirty-stamp Wilsley tables, etc., have been installed, but the Elmore oil plant is not yet complete, delivery of some of the machinery having been delayed. Until this shall arrive and be placed in position water concentration only will be practicable. The mill will have a present capacity of 75 to 100 tons per diem, but considerable enlargement is contemplated conditionally upon results with the initial installation warranting the carrying out of the additions in prospect.

The Le Roi No. 2 Company has bonded four claims on Red Mountain known as the Evening-Eureka group. The development of which has already commenced.

The Rosslund Miner states that construction will start immediately on an addition to the Velvet-Portland concentrator to double the crushing capacity of the mill. This is understood to have been the instructions received by cable from London yesterday, and work is to start forthwith.

When the present plant was constructed at the Velvet-Portland sufficient ground was blasted to permit of the addition, so that if the increase was adopted later the present building would not be injured by the blasting necessary for foundations. The company is, therefore, in a position to proceed immediately with the work. As all the machinery, or practically all, is carried in stock by the manufacturers, it is expected that little difficulty will be experienced in getting the increased plant into operation within six weeks or two months.

The concentration operations at the Velvet-Portland are described as most satisfactory, a large saving having been achieved by straight water concentration. The company is now reported to have concentrates to the value of \$10,000 stored at the mill. This may be shipped as soon as snow flies, rendering transport cheaper.

BOUNDARY DISTRICT.

An ore train was wrecked on the Phoenix branch of the Columbia & C. P. R. Co.'s Western Railway last month. A Shay engine with 25 cars of ore from the Granby mines and consigned to that company's smelter, left the track, owing to the air-brakes not acting when going down a long steep grade. The engine was badly damaged and nearly all the heavy bottom-dump cars were totally destroyed. Between 700 and 800 tons of ore were scattered about the wreck. The loss is stated at between \$40,000 and \$50,000. None of the train crew was seriously hurt, for when they found that neither air or hand brakes would hold the train they jumped off before the speed of the runaway got too great to allow of their doing so with a chance of saving their lives.

At the annual meeting of the Denoro Mines, Ltd., the President stated that 28,000 tons had been shipped during the year and besides liquidating a liability of \$20,000 the company had purchased a seven drill compressor and other plant, done much development work and had a substantial cash balance in hand.

A number of important transactions have recently taken place in this district. These include the bonding of the Lancashire Lass in Summit camp and the Sudbury in Deadwood camp by the Montreal & Boston Company; the bonding of

the E. P. U. group near Greenwood by a Dakota syndicate; and the bonding of the Strathmore, near Greenwood, by a Rossland syndicate. The Providence mine has meanwhile declared another dividend of 10 cents per share.

It is expected that the furnaces of the Boundary Falls smelter will be blown-in this week, ore shipments thereto having already commenced. The company is employing a force of 75 men and has purchased the Brooklyn dump from the Dominion Copper Co.

EAST KOOTENAY.

About 40 men are employed at construction work at the Sullivan Mining Company's smelter at Marysville, which is being pushed on towards completion. It is stated that an aerial tramway from the Sullivan Group mine to the smelter is to be built shortly. The Provincial Mineralogist visited this mine last year and in his official report he stated that the ore is a galena carrying an unusual amount of iron, the first class ore assaying 40 per cent. lead and 20 ozs. silver per ton, and the second class about 25 per cent. lead and 12 ozs. silver, varying somewhat according as it had been sorted. As the result of development there is a very large quantity of ore that may be classed as "in sight," and which from rough calculations may be put down as from 300,000 to 400,000 tons, assaying, approximately, 30 to 35 per cent. lead and 15 to 18 ozs. silver. The ore is of such a character, being chiefly metallic sulphides, as to preclude any method of water concentration, the only concentration possible being smelting.

The Perry Creek Hydraulic Mining Co. has completed the work of installing a very important plant at Perry Creek, by which the stream has been diverted from its course into a flume, 4x4 feet, and carried a distance of about four and half miles with a fall of approximately 600 feet. It is now proposed to work the creek bed which has been systematically prospected. The company has expended over \$100,000 on the work to the present time.

During August about 1,800 tons of concentrates were shipped from the St. Eugene mine, at Moyie. The shortness of water necessitated the mill being run on a light feed. It is anticipated that it will be practicable to continue operating, though at reduced capacity, until rain shall fall and increase the water supply.

It is reported that a new body of ore has been discovered in the North Star mine, at Kimberley, but the report has not been confirmed. Some months ago it was decided to wind up the North Star Company as the ore had been exhausted and neither extensive prospecting nor the reports of mining engineers gave encouragement to continue the search for more ore. The company paid altogether \$318,000 in dividends.

A statement has been published that the company controlling the Sullivan group of mines will have its smelter completed within three months, and that it intends to establish a refinery and lead-corroding works and to manufacture lead pipe.

It is proposed to form a company at Fort Steele to dredge a section of Wild Horse Creek where tailings were deposited from former placer mining operations. In the early 'sixties Wild Horse Creek mined by the crudest methods yielded twenty million dollars. It is supposed that a large percentage of gold was lost in the tailings, hence the project.

MINING MEN AND MATTERS.

Mr. Bernard MacDonald, formerly general manager of the Le Roi and other Rossland mines, is now at Guanajuato, Mexico, where he is erecting a cyanide plant.

We are happy to learn that Mr. Archibald Dick, Inspector of Mines, who was seriously ill for some weeks, has recovered sufficiently to resume his duties.

Mr. Frank Robbins, of Los Angeles, California, has been examining several of the quicksilver deposits of San Luis Obispo county, California.

A party of Japanese mining engineers visited Nanaimo during the month and inspected the Extension mines, taking

the opportunity to gain much practical information from the superintendent on methods in force at these collieries.

A Mr. Howard Dubois, of Philadelphia, described as a "platinum expert" has spent some weeks in Cariboo district, and recently proceeding to the Similkameen to investigate possible sources of platinum in that territory.

Mr. S. C. Holman, superintendent of the Mother Lode mine, who has enjoyed a two months' holiday, during which he visited the Treadwell mine, Alaska, Salt Lake City, Park City, Butte, and the St. Louis Fair, returned to Greenwood last month.

Mr. H. A. Guess, formerly in the custom assay business at Greenwood, Boundary district, but now of Silverton, Colorado, contributed a paper on The Commercial Wet Lead-Assay to the meeting of the American Institute of Mining Engineers held in the iron and copper regions of Lake Superior last month.

Mr. S. F. Parrish spent part of last month at Salt Lake City, Utah. It was his intention before returning to San Francisco to go into the old Nevada mining country, which is now becoming accessible by the construction of a railway from Salt Lake City to Los Angeles, and, as well, to visit mining properties near the Utah-Nevada line.

Mr. Alexander McDermott, of Beaumont, Texas, who recently visited the Flathead Valley, directs attention to the need of a waggon-road into that section either from Crow's Nest, Morrissey Mines or Gateway. Mr. McDermott states that both the present trails from Gateway and Roosville and from Crow's Nest are practically impassible except for light packing.

The Provincial Mineralogist, who has been visiting mines in the Nelson and Slocan mining districts since early in the summer, is expected to shortly return to headquarters in Victoria. The Provincial Assayer has also spent a couple of months visiting mining properties, but he has given his attention to Coast districts. The Deputy Minister of Mines has just returned from an official visit to the Atlin gold mining district, in the north-western part of the Province.

Mr. G. H. Barnhardt, who has been in sole charge of the Ymir mine since the first of the year, has resigned his position there, and will give his personal attention to the operation of the Porto Rico mine, on which he has a lease. A force of men have been working on the Porto Rico for some weeks past and are opening up new reserves of ore.

Mr. Barnhart is succeeded at the Ymir by Mr. S. J. Speak, of London, a mining engineer of wide experience. —*Ymir Herald*.

Mr. G. C. S. Lindsey, K. C., of Toronto, Ontario, who for some time past has taken a very active part in the business affairs of the Crow's Nest Pass Coal Company, has been appointed general manager of the company. Mr. Lindsey was already third vice-president, managing director and legal counsel to the company. Under the present system of management of the company's business each department has a distinct head. The mine operating department is under R. G. Drinnan, the sales and coke department under Mr. Pearson, and the accounting department under Mr. D. Davies.

Mr. Thos. Russell, retiring superintendent of the Western Fuel Company's collieries at Nanaimo, has been banquetted and presented with a valuable clock, five feet high, by the company's employees and Nanaimo friends. General regret was expressed at his resignation. Mr. Russell, who has been superintendent for five years, said of the company's collieries: "Departure Bay mine is now past the experimental stage and work is developing it very rapidly, and the mine will shortly be in a position to employ a large number of men. In No. 1 shaft a very extensive field is being opened up in No. 7 levels, in fact a field equal in area to the entire workings of the colliery for the past 50 years."

The Government Bureau of Provincial Information is getting out a bulletin on Mining in British Columbia. This will be a general review of the industry in the Province, including statistics of mineral production, notes of the more important various mining sections with brief descriptions of

mines, separate chapters on zinc, cinnabar, coal, iron, lode and placer mining, articles on the geology of the coal regions of the Province, on the smelting and other reduction works, water powers in mining districts, and other matters connected with mining. This bulletin is now being printed, the issue numbering 15,000, of which 10,000 will be sent to the St. Louis Exposition for gratuitous distribution there.

Changes are stated to have been made in connection with the management of the Le Roi, Mr. A. J. McMillan, managing director, is now general manager; Mr. J. W. Astley, C.E., is general superintendent; Mr. Albert I. Goodell, is superintendent of the company's smelter at Northport, Washington; Mr. J. H. Treverrow, is mine superintendent at Rossland, and Mr. W. S. Rugh succeeds Mr. J. S. Wallace as accountant in charge of the company's offices at Rossland. As Messrs. Astley and Treverrow for two or three years filled corresponding positions under Mr. McMillan at the Snowshoe mine, Boundary District, that gentleman knows well the capabilities and zeal of these men. Mr. Goodell was smelter manager last year at the Boundary Falls smelter, where he treated the greater part of the output of the Snowshoe mine, so that in the past he has had intimate business relations with Messrs. McMillan and Astley.

Dr. W. W. Van Baum, of Philadelphia, Pa., has been visiting the Rockland group of copper claims, situated near Silverton, Slocan Lake. Preparations are in progress for energetic development of this property during the ensuing winter. Dr. Van Baum is also interested in the Granby Company, owning big copper mines in the Boundary District.

Mr. Thos. E. Erehart, of Schenectady, N.Y., has assumed charge of the Lucky Boy mine at Trout Lake, and intends shortly resuming work on the property. It is stated that the Lucky Boy produced, during the twelve months it was shipping, 230 tons of ore averaging 250 ozs. silver per ton and 30 per cent. lead, which netted the company about \$23,000.

Among other recent visitors to Victoria was Mr. James F. Callbreath, chairman of the Denver Chamber of Commerce and secretary pro tem of the American Mining Congress. He only spent one day in the capital city, but between the hours spent in seeing the sights found time to have a chat with the secretary of the Provincial Mining Association of British Columbia, relative to the basis and working of that institution. He was enthusiastic over the good prospects for usefulness of the American Mining Congress and was of opinion that Colorado will do itself justice in supporting it.

Three teams competed in the miners' drilling contest at the Victoria Exhibition, viz., teams from Mt. Sicker, Van Anda and Greenwood. The first prize (\$250) was won by Richard R. Bozence and William Cullom, Tyee, Mount Sicker, with down-hole, 24 12-16 inches; upper, 11 8-16 inches. Jas. Foulds and Geo. Foulds, Greenwood were second (\$100) with down-hole, 22 14-16 inches; upper, 8 3-16 inches, and Wm. Leroy and J. Prendergast, Van Anda, third (\$50) with down-hole, 16 inches; upper, 8 1-16 inches.

MINING AND METALLURGICAL PATENTS.

(By Rowland Brittain, Patent Attorney, Vancouver, B.C.)

U. S. Patent No. 763,259—Classification of the Metallic Constituents of Ores. Granted to Arthur E. Cattermole, London, England, June 21st, 1904.

Claims—1. The herein described process of classifying metalliferous minerals agglomerated by oil which consists in successively agitating the agglomerated mineral with emulsifying agents of varying strength progressively to free the several minerals in succession.

2. The herein described process of classifying metalliferous minerals agglomerated by oil which consists in successively agitating the agglomerated mineral with emulsifying agents of varying strength progressively to free the several minerals in succession separating out each mineral in turn by a separating device and adding oil in the requisite small amounts to keep the granules of proper size and consistency.

3. The herein-described process of classifying metalliferous minerals agglomerated by oil which consists in successively

agitating the agglomerated mineral with solutions of soap and caustic alkali of varying strength progressively to free the several minerals in succession.

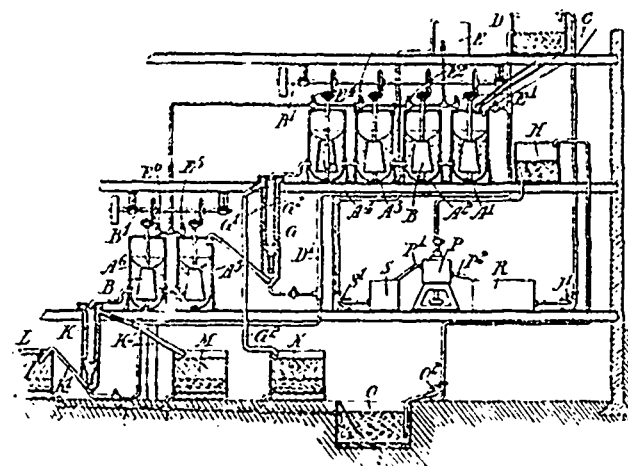
4. The herein-described process of classifying metalliferous minerals agglomerated by oil which consists in successively agitating the agglomerated mineral with solutions of soap and caustic alkali of varying strength progressively to free the several minerals in succession and separating out each in turn by an upward current.

5. The herein-described process of classifying metalliferous minerals agglomerated by oil which consists in successively agitating the agglomerated mineral with solutions of soap and caustic alkali of varying strength progressively to free the several minerals in succession, separating out each mineral in turn by an upward current and adding oil in the requisite small amounts to keep the granules of proper size and consistency.

U. S. Patent No. 766,655, Method of Smelting Ores and Cleaning Converter-slag, issued August 2nd, 1904, to Ralph Baggaley, Pittsburg, Pa.

Claims—1.—The method herein described which consists in contributing heat to the charge of a copper-ore-smelting furnace, and recovering values contained in the slag of a copper-converter by pouring molten converter-slag upon the charge in such furnace; substantially as described.

2.—The method herein described which consists in smelt-



ing sulphide ore pyritically and pouring the molten slag of a Bessemer converter upon the ore while being smelted; substantially as described.

3.—The method herein described which consists in smelting sulphide ore, charging the smelted product directly into a converter, charging also silicious ore into the converter, withdrawing the slag from time to time and pouring the same in molten condition upon the ore while being smelted; substantially as described.

4.—The method herein described which consists in contributing heat to the charge of a copper-ore-smelting furnace, and recovering values contained in the slag of a copper-converter, by distributing molten converter-slag upon the charge in the furnace; substantially as described.

U. S. Patent No. 769,938, issued September 13th, 1904, to Henry R. Cassel, New York, N.Y., on Process of Extracting Precious Metals from Ores or Slimes.

Claims—1. The process of extracting precious metals from ores, which consists in adding a bromide and a cyanide in solution to the ore, and then passing chlorine gas through the mixture, substantially as specified.

2. The process of extracting precious metals from ores, which consists in adding a bromide and a cyanide in solution to the ore, and then passing chlorine gas through the mixture to convert the bromide into bromine and form solvents for the precious metals, substantially as specified.

3. The process of extracting precious metals from ores, which consists in adding a bromide and a cyanide in solution to the ore, then passing chlorine gas through the mixture

to convert the bromide into bromine and form solvents for the precious metals, and re-converting the bromine into bromide, substantially as specified.

REPORT ON PATENTS.

(Specially Reported for the MINING RECORD by Dr. Oscar Nagel, New York.)

762,753.—Apparatus for magnetic separation. Clarence Q. Payne, Stamford, Conn.—A transversely-laminated separating carrier provided with a plurality of contracting magnetizable laminae whose outer edges are wholly out of contact with those of their adjacent laminae, in combination with two opposing magnetic surfaces both placed external to said carrier and between which said carrier is arranged to travel, and means for feeding the material to be separated.

762,774.—Apparatus for the concentration of minerals by means of oil. James W. Van Meter and Martin P. Boss, San Francisco, Cal.—An apparatus comprising a channel through which the oil flows, means for supplying pulp and water to the oil at the head of said channel, means in said channels at intervals for drawing off the settled gangue and water, means at the foot of said channel for separating the relatively upper and lower portions of the oil, and means for returning said separated upper portions of oil to the head of the channel.

762,967.—Ore separator. Henry A. Allen, Chicago, Ill.—An apparatus in which is combined a stationary circular closed receptacle, an inlet pipe arranged tangentially thereto, discharge openings above and below the level of the inlet openings, and a series of spirally-inclined ledges arranged with the forward end of one ledge above the rear end of the next succeeding ledge, the lower end of one ledge being below the level of the inlet opening, whereby the material fed to the receptacle may be directed upwardly upon the inclined ledges while the heavier particles may be free to fall between said ledges.

763,019.—Ore sizer and concentrator. Ansel H. Phinney, Turner, Mich.—An ore sizer and concentrator comprising a vat having a discharge element at one end, means at the opposite end to supply material, suspended in liquid, to the vat, a plurality of hoppers below the level of the discharge element and forming a series of water chambers, and a screen forming a false bottom extending over the hoppers, and having longitudinally-disposed laterally spaced screen elements extending below the water level of the vat, said screen elements serving to form a series of straight girdling channels opening at the bottom into the hoppers and extending from the feed to the discharge ends of the device.

763,197.—Ore slimer. Ira F. Monell, Boulder, Colo.—An ore slimer comprising a main frame, a belt frame supported in the main frame, rollers at the end of said belt frame, the said rollers being tapered from their centres outward, small rollers arranged between the first named rollers, and tapered from their centres outward, and endless belt movable over the several rollers, and means for distributing stock onto the belt.

762,869.—Apparatus for Treating Ores. Henry A. Allen, Chicago, Ill.—An apparatus comprising a continuous closed separating system in which is combined a main circular separating vessel, means for introducing thereto the materials to be separated, a pipe system each having an inlet at or near the bottom and an outlet at or near the top, a pump for inducing a circulation, heating means interposed in said pipe system, and a normally closed outlet at the bottom of said separating vessel, whereby a vertical whirl may be imparted to the material and fluids in said separating vessel while the heated fluid may be used over and over.

763,260.—Separation of the metallic Constituents of ores from gangue. Arthur E. Cattermole, Highgate, London, England.—A process which consists in agitating a mixture of powdered ore and water with oil in emulsion in water containing an alkaline emulsifying agent, so as to agglomerate the oil-coated particles into granules, and subjecting the mixture to classification to remove the small non-coated particles from the granules.

763,533.—Continuous kiln. Peter L. Youngren, Milwaukee, Wis.—The combination of inclosing walls, forming a series of brick-receiving compartments; a gas-producing oven for each compartment, communicating with a distributing flue in the side wall of the compartment; said wall having branch flues leading downwardly from the distributing flue and communicating with the lower portion of the compartment, and corresponding branch flues leading upwardly to the exterior and provided with suitable removable covers.

763,783.—Concentrating table. Gustave A. Overstrom, Anaconda, Mont.—A concentrating table, in combination with means for imparting a reciprocatory movement thereto, said table having an unobstructed tailings delivery edge said edge being inclined away from the line of reciprocatory movement from the head end of the table toward the opposite end thereof, and riffles arranged in diagonal relation with respect to said table.

763,662.—Apparatus for use in certain processes of extracting sulphides from ores. Guillaume D. Delprat, Broken Hill, New South Wales, Australia, assignor to Broken Hill Proprietary Company, Limited, Melbourne, Victoria, Australia, a company registered under the laws of Victoria, Australia—An apparatus in which the concentrates are floated to the top of a body of liquid, a pan having an inclined impermeable bottom down which the ore slides, means to feed liquid to the pan, a sump at the lower edge of the bottom for tailings, a discharge for concentrates at the liquid-level of the pan, a baffle-plate between the sump and pan extending from the discharge to near the lower edge of the inclined bottom to maintain a quiescent body of liquid in the sump and at the same time maintain a flow of liquid from the pan through the discharge.

764,044.—Process of smelting and reducing metals. Christian Diesler, Cablenz, Germany.—A process consisting in mixing the materials to be treated with carbonate of lime and carbon, placing the mixture in an air-tight retort, exhausting the air from the retort, subjecting the mass to the action of an electric current within the retort, and to the action of the gas generated therein in excess of five atmospheres of such gas, and exhausting such resultant gas after it has acted on the materials treated.

764,568.—Dump Car. Alfred Ellis, Passaic, N.J.—A dump car, a truck, a car-body pivotally supported thereby, a side-board having arms at its opposite ends connected to the car-body, links having each one end supported by a stationary pivot and its other end loosely connected with the corresponding arm, and rigid supporting arms or braces carried by said links adapted to contact with the truck.

764,979.—Ore Concentrator. Samson Beer, Butte, Mont.—An ore-mill, a pan, a driving shaft extending vertically through the pan, a hub surrounding the shaft a cap on the hub, a screw operating in said cap and engaging the top of the shaft for moving the hub vertically, a cylindrical part attached to the hub and having side openings, check-pieces extended outward from the sides of the openings, bearing-boxes mounted to rock in said check-pieces, and rollers having their shaft-bearings in said bearing-boxes.

765,013.—Magnetic Ore Separator. Frederick J. King, Croydon, England.—A magnetic separator comprising a set of magnet-bars for sorting the material, and another set of curved magnet-bars at right angles to the first set and overlapping the lower end of said first set for the purpose of separating the sorted material.

765,042.—Ore Concentrator. Fred N. Rogers, Denver, Colo.—The combination with a plurality of independent classifying concentrating surfaces arranged for progressive concentration, of means for independently shaking the respective concentrating surfaces to impart classifying movement to the pulp particles, and a conveyor adapted to convey and deliver desired portions of the more or less classified pulp in a sheet from one concentrating surface, without substantially intermingling or disturbing the existing classification thereof, to a succeeding concentrating surface, thereby effecting a progressive concentration over the successive concentrating surfaces.

765,158.—Process of Treating Iron. James W. Arnold, Covington, Ky.—A process which consists in rolling a highly heated charge into a ball and placing the same out of the path of the fresh charge, introducing a fresh charge, without the introduction of a current of air therewith, close to and between the fire and the preceding charge, in such a manner that while the fresh charge is being heated, the preceding charge is being reduced in temperature by the action and close proximity of the fresh charge.

767,105.—Magnetic Separator. Myron Dings, Milwaukee, Wis.—The combination of a electromagnet having a substantially vertical axis; a cup-shaped lower pole-piece partially inclosing the magnetic winding; an upper pole-piece covering the magnet and projecting marginally therefrom; a non-magnetic ring of less diameter than the upper pole-piece, but connected to the latter and arranged to cover the upper edge of the lower pole-piece; and a conical distributing shield covering the upper pole-piece except at its marginal edges.

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