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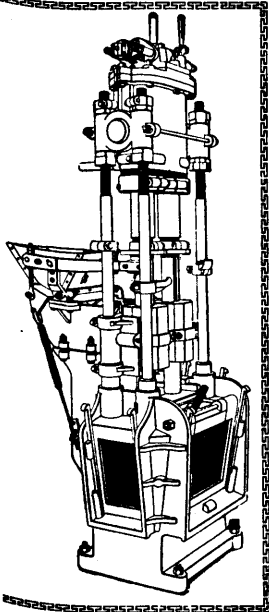
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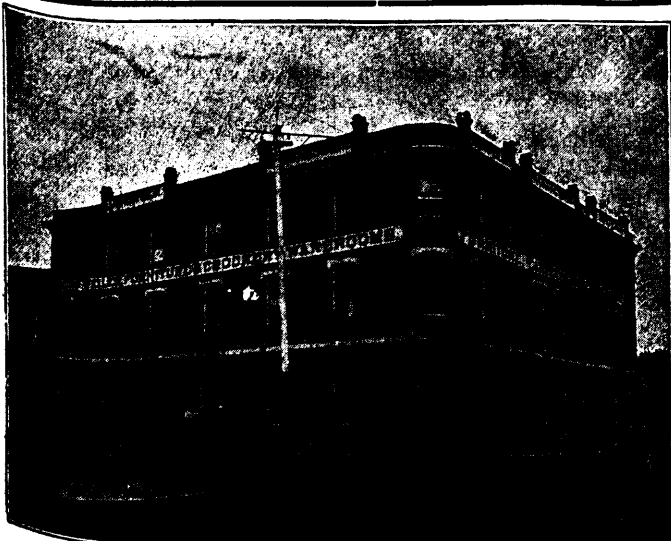
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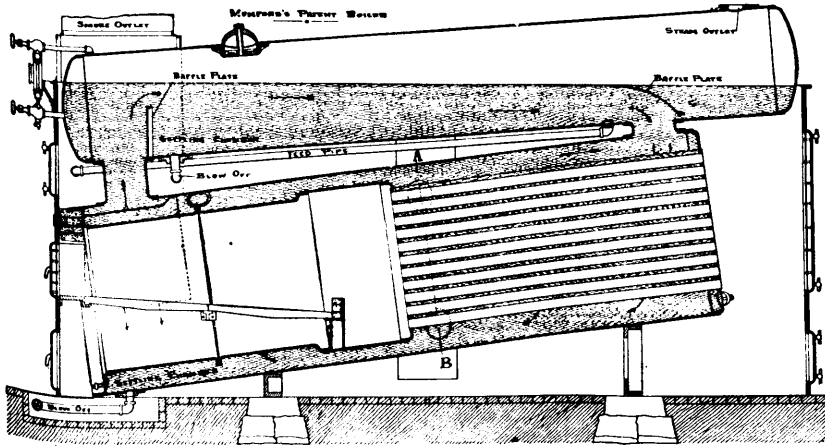
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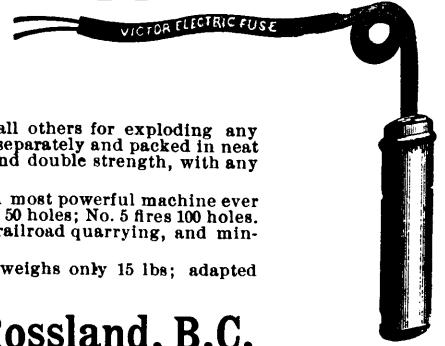
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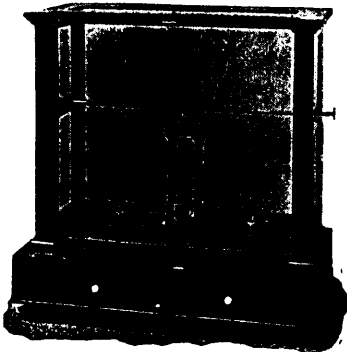
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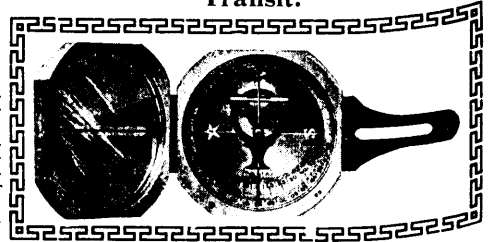
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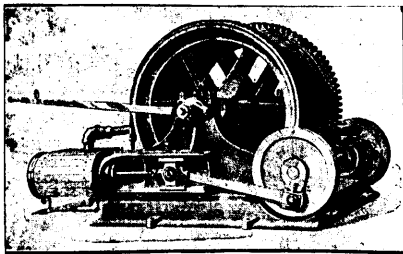
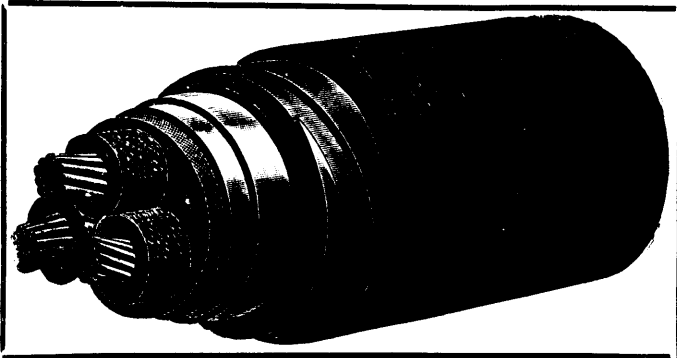
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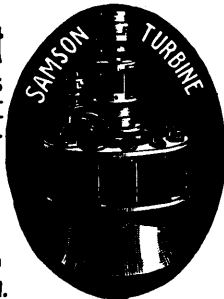
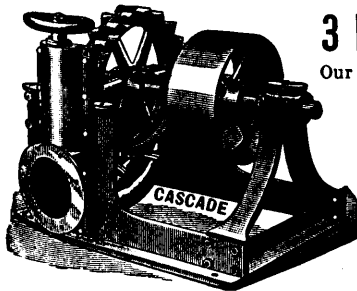
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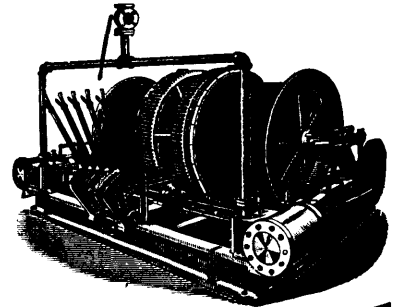
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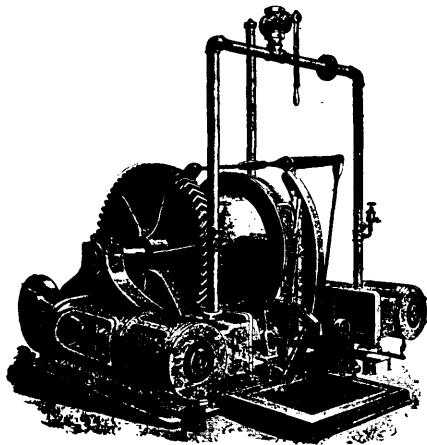
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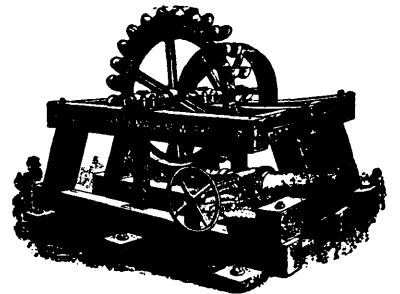
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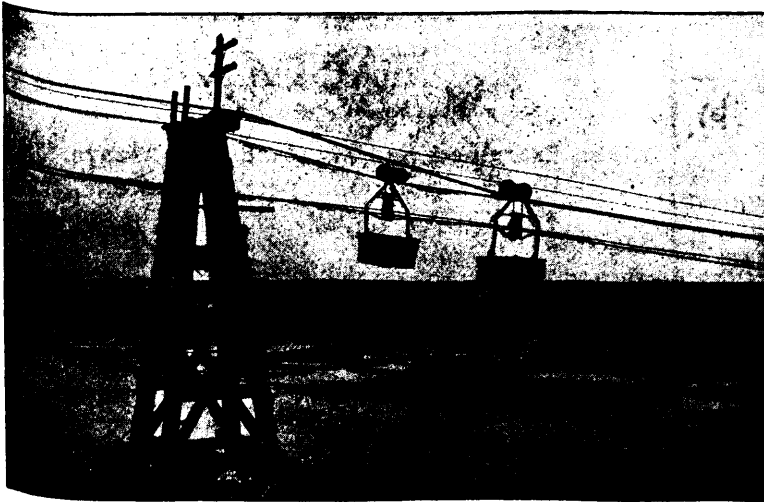
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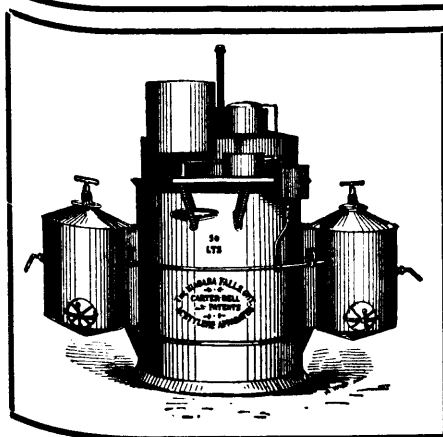
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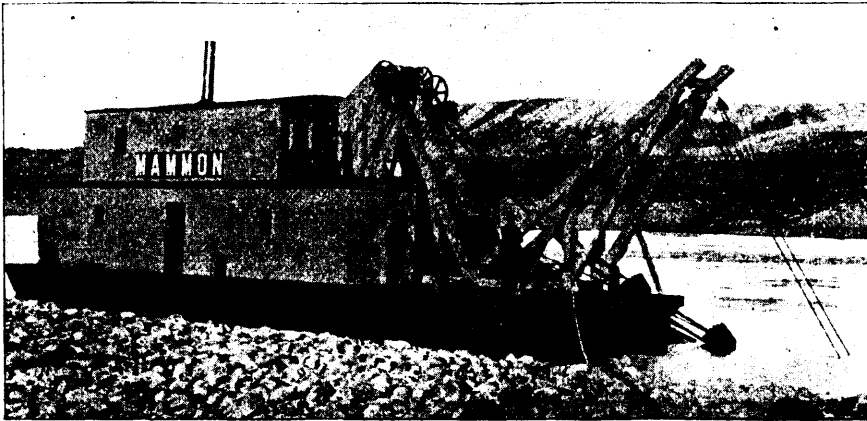
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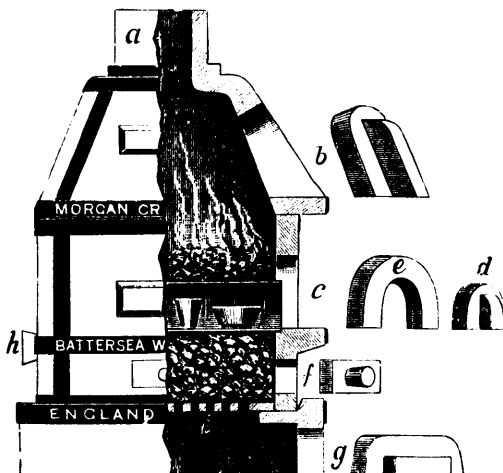
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	Customary Measures.	1896.		1897.	
		Quantity.	Value.	Quantity.	Value.
Gold Placer.....	Oz.....	27,201	\$ 544,026	25,676	\$ 513,520
" Quartz.....	Oz.....	62,259	1,244,180	106,141	2,122,820
Silver.....	Oz.....	3,135,343	2,100,689	5,472,971	3,272,836
Copper.....	Lbs.....	3,818,556	190,926	5,325,180	266,258
Lead.....	Lbs.....	24,199,977	721,384	38,841,135	1,390,517
Coal.....	Tons.....	846,235	2,327,145	882,854	2,648,562
Coke.....	Tons.....	615	3,075	17,832	89,155
Other Materials.....			15,000		151,600
			\$7,146,425		\$10,455,268

Production for 1890, \$2,608,608; for 1896, \$7,146,425; for 1897, \$10,456,268.

## GOLD.

Gold-bearing lodes are now being prospected in many parts of the province, and at Rossland magnificent ore-chutes of very profitable gold-copper ore are being mined and smelted, the Le Roi having paid to date \$725,000 in dividends, with a large and increasing amount of ore in sight as the workings attain greater depth, while systematic development on other properties is meeting with excellent results, mining having just fairly begun in this camp. Little doubt can be entertained that Rossland will become a heavy producer of gold, and that excellent properties now only await sufficient and abundant capital to become paying mines, to further aid in which the facilities for cheaper transportation and smelting are being now supplied. At Nelson and at Fairview, Camp McKinney, Greenwood, Central and other camps in the southern part of Yale, important work is being done on the quartz ledges there, several new mills being under erection.

Exploratory work has also been in progress in East Kootenay and in Lillooet, Alberni, and on the Gulf Islands and along the coast line of the Mainland, as well as in other parts of the province.

In Cariboo, several large undertakings, involving a large amount of capital, are at work exploring both modern and ancient river channels, the Cariboo Hydraulic Mining Co., on the Quesnelle River, proving, on development, to have in a channel of the latter kind, a great deposit of exceptional richness, while other parts of this district now offer every inducement to capital.

Into Cassiar, Omineca, and the great area to the north, as well as Cariboo, there now promises to be a great exodus of explorers, excited by rich diggings now being mined in the Yukon as on the Klondyke, to the north, and rivers and creeks long reported to be gold-bearing will now be made accessible, and well tested.

## SILVER-LEAD.

Despite the drop in the price of silver, the Slocan mines are being much more extensively worked, while the shipments of high grade ore are constantly increasing. The production for 1897 has much exceeded that of 1896, as such mines as the Payne, Ruth, Whitewater and other mines increased their output.

At Nelson, the Silver King or Hall Mines are shipping constantly a large amount of silver-copper ore, and the Lardeau, Trout Lake, Illecillewaet districts, on further exploration, promise to become rich. In East Kootenay large bodies of silver-lead ore will be mined on completion of the railroads now under construction.

## COPPER.

Copper is being produced to a limited extent at Rossland and Nelson, but the large deposits of at present low grade ore in the Boundary Creek district will be fully tested when the railroad, now almost assured, is constructed. Prospecting is being done at Kamloops, along the west coast of the Mainland and of Vancouver Island, as well as at many other points, and Texada is producing high grade bornite ore.

## COAL AND COKE.

The large collieries on Vancouver Island are producing about a million tons of coal annually, and at Comox an excellent coke is now being produced, much of which is shipped to the inland smelters. The great deposits of coking coal in East Kootenay, at the Crow's Nest Pass, are now being opened, as the C.P.R. is now being built to the Columbia River to supply the great mining regions with cheap coal and coke.

## SMELTERS AND RAILROADS.

The smelting industry is now beginning to assume large proportions, as preparations are being made to treat the ores of this Province within her own borders, a most important factor in the increasing prosperity of this country, entailing many does, and will, the employment of much capital and men. The extension of the railroad systems to different parts is now in progress, and the next few years will see many parts in which the prospects for good mining are excellent, made easy of access, while ores can be shipped with facility to the smelting centres, where the assembling of the various inter-fluxing ores will make possible the treatment of all British Columbia ores at home.

## CAPITAL.

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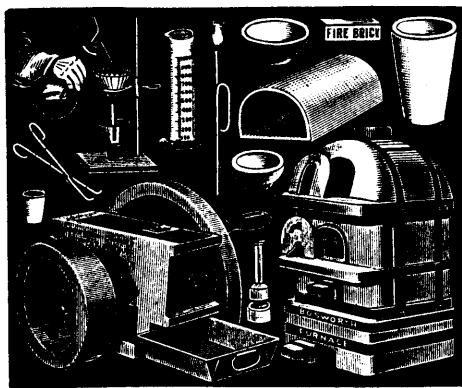
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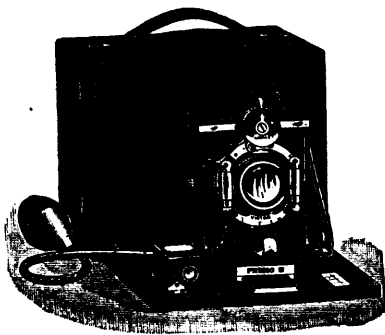
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# The Mining Record.

Vol. IV.

AUGUST, 1898.

No. 8

## BRITISH COLUMBIA MINING RECORD.

Devoted to the Mining Interests of British Columbia.

PUBLISHED BY

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ADVERTISING RATES ON APPLICATION.

H. MORTIMER LAMB, Managing Editor,

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P.O. Drawer 685, Victoria, B.C.

All communications relating to the business department of the British Columbia MINING RECORD to be addressed to the

BUSINESS MANAGER, B.C. MINING RECORD,  
P.O. Drawer 685, Victoria, B.C.

### THE MONTH.

THE Associated Gold Mines of British Columbia, Limited, has certainly as regards the status of its directorate in England an influential personnel, including one gentleman—Mr. Mure Ritchie—of mining experience, and chairman of the Millan & Askom Hematite Iron Co., limited, ASSOCIATED a North Lancashire concern. The other GOLD directors, influential though they may MINES. be, are not apparently possessed of personal mining experience, even in iron,

their number including an ex-Governor of Newfoundland, Sir Wm. Des Voeux; an Earl, in the person of Lord Yarmouth; an Irish railway director in Mr. Wm. J. Goulding and a Sir Edward Sullivan, Bart., who is, unless we greatly err, on the board of many and varied English companies and comes under the category of a professional director.

Under these circumstances, the Advisory Board in British Columbia should be exceptionally strong, considering the amount of capital proposed to be involved—£500,000 in all—and the very large amount of purchase money, £375,000, payable for the ninety-six properties, most of which are prospects and many of them none too promising at that.

But the Advisory Board in British Columbia of the Associated Gold Mines of B. C., limited, cannot be considered in anywise strong. It includes Mr. T. R. Hardiman who is mainly concerned in the exceedingly profitable transfer of the ninety-six properties to the company, and to whom we do no injustice in avering that his mining experience is mostly that of a claim purchaser, or rather bond-monger. He is certainly not a trained mining engineer. His coadjutor is Mr. Cattell, an upholsterer and mattress cleaner in Vancouver.

The company's prospectus shows that most of the properties are mere claims—a majority very cheaply bought, no doubt, though in the aggregate proposed to be very dearly sold to the Associated Gold Mines of British Columbia, Limited. Twenty of them are in the Lil-

loet country, in a region which, considering results to date in connection with the typical mine of the Golden Cache, must be considered on its trial as a gold quartz mining district, though in the past famous as a "gold placer country." The Okanagan Landing district in which are two other claims, the Mountain Chief and O.K., is certainly "not proven" yet and the Yale-Kamloops claims of the company are in a district which is up to the present of promise rather than performance. And when the prospectus avers, as it does, that the Kamloops camp is the richest gold-copper camp in the Province, it draws very largely indeed on the imagination; for although this district is sufficiently promising, it is still a "prospect" camp.

A little work seems, from the company's prospectus, to have been done on two claims in the Big Bend district, but as a tunnel is only stated to be in thirty feet on the Klondike claim here, and the adjoining one of the Yukon, only shows assays of \$3.30 and \$6 a ton, according to the prospectus; values are in these cases rather problematic possibilities and not by any means actualities. On another claim here, the Red Hussar, an assay of \$213 a ton has been got, but no great amount of work has been done and the assay was in all probability that of a well selected specimen. In the Albert Canyon district five claims are to be acquired near the Tangier and Waverley companies' properties, but the report on them only deals in generalities and is made by Mr. A. G. Thynne, who cannot be considered a mining expert of long standing.

Of the remaining claims proposed to be acquired by the company, there are some in the Lardeau district on which early indications are fairly promising for silver-lead, but in the description of these annexed to the prospectus there is much unsafe indulgence in glittering generalities, backed, as it would appear, by a two liberal use of Mr. Pellew-Harvey's name. Thus, as regards the Badshot group, it is stated that the ore averages from 150 to 1,500 ounces of silver to the ton—an extraordinary margin being thus given in the estimated average. It is also freely stated that there is enough ore on the dump to pay a dividend at once—on what amount calculated is not stated. Another claim of possibilities is the Robert E. Burns, in East Kootenay, which has, however, passed through many vicissitudes and though rated as amongst the more promising of the ninety-six proposed to be acquired by Mr. Hardiman's company, was not recently estimated at a very big purchase value by certain shrewd intending buyers.

Of claims in the Tulameen, where early railroad building is exceedingly unlikely at latest reports, the prospectus to the contrary, much is made, and the worth of certain claims in the Fire Mountain district is vouched for by Capt. Livingstone Thompson, a gentleman certainly more of an expert in surveying than in mining valuation and who makes no pretensions to rank as a mining engineer.

To sum up, as nearly all the ninety-six properties proposed to be acquired by the Associated Gold Mines of B.C. Limited, are claims virtually in or little beyond the prospect stage, not a few of the claims being of

but little present value. The price in stock and cash asked for them by Mr. Hardiman and the promoting syndicate with which he is associated, is exorbitantly high. They would, at fair present market values, be decidedly dear as a whole, at less than a tenth of the £375,000 asked for them in cash and stock. Moreover, the Advisory Board in B.C. affords no sufficient guarantee of sound supervision to British investors, consisting as it does of Mr. Hardiman, one of the vendors; also of a gentleman far better acquainted with mat-trass-making and cleaning than with mining.

It is small wonder, under such circumstances, that the British public had at last accounts subscribed only £28,000 of the £205,000 asked. Many were doubtless "warned off" by deprecatory comment in the *Statist*, and other financial papers of good standing in England, not specially "open to advertising inducements." We are glad that this has happened, for the Associated Gold Mines of B.C. Limited, is assuredly, under present proposed conditions of claim transfers, capitalization and local management, a good thing for the British investor to avoid, notwithstanding the "taking" names on its English Board of Directors, and notwithstanding, also, certain inspired puffs in the London *Financial Post*, and, to come nearer home, also in a certain Vancouver paper.

Since the above was written we have been requested by Mr. Pellew Harvey to state that he has resigned his connection as consulting engineer with the Associated Gold Mines of B.C. Ltd., ostensibly on the ground that his other engagements forbid his giving his undivided attention to the interests of the Company, but in reality because he is dissatisfied with the promotion methods of the undertaking. We congratulate Mr. Pellew Harvey. Meanwhile, could the Company possibly have made a wiser choice of a successor to Mr. Harvey, than Mr. W. Thos. Newman, the author of that interesting work, "Hidden Mines, and How to Find Them?" He is undoubtedly the very man they have been looking for.

We have before us the prospectus, as published June the 1st, in the *Financial Guide*—a rather second-class London journal—of the British Columbian Mineral Properties, Limited, a company organized in February last "with ED EXPERTS. the primary object of acquiring options" in British Columbia. The company owns two groups of properties, consisting of two claims situated about one and a-half miles from Slocan City, and another group of four prospects on Porcupine Creek in the Nelson division. The local directors are Messrs. G. R. Maxwell, M.P., and J. C. Kinchant, of Vancouver, while Mr. James Macfarlane is described as the company's consulting engineer. So far all appears fair and above board, but later on in the prospectus the following paragraph appears, which, we think, calls for comment: An opportunity has presented itself to the company, we are told, "of acquiring a third property, situated in the Nelson mining division, which would appear to be of the greatest promise and value. It has been reported upon by Mr. P. R. Ritchie, M.E., and by Colonel E. S. Topping, M.E., the locator of the now world-renowned Le Roi mine, and who up to quite recently was part proprietor of the same. Mr. Ritchie states that he entertains the very highest opinion of the property, and that he does not care who may be

sent out to examine it, for no one can fail to be impressed with its great possibilities.

"Colonel Topping, . . . has a reputation second to none in British Columbia as a shrewd and clever mining engineer."

Now, may we be permitted to ask these gentlemen, Messrs. Ritchie and Topping, the name of the institution from which they graduated in mining engineering? Certainly not from the school of practical experience, we opine? Mister, or as he is called or chooses to call himself, "Colonel" Topping is a very estimable person and has, perhaps, gained a perfunctory knowledge of mines and mining, but Mr. Ritchie's acquaintance with the subject is, we believe, limited principally to his possible dealings in coal in a small way as a trader or merchant some few months ago in Vancouver, and the occasional handling of gold (?) and silver change in that capacity. Mr. Ritchie is further described by the *Financial Guide* as an erst-while government official, "and as such, engaged in a task of the greatest responsibility, viz: the reporting upon the resources of the Northwest of Canada." Mr. Ritchie, we are credibly informed, really did compile a few facts for an emigration pamphlet. Now, the MINING RECORD has on one or two occasions been taken to task for indulging in what critics have stigmatised as "personal attacks." Well, what would you have? Here are men like Mr. Hardimen, of the Associated Gold Mines, to whom reference is made elsewhere in this issue, and Mr. Ritchie of this British Columbia Mining Properties, going to England and apparently representing themselves to be something they are not, with the obvious intention of extracting money from the public. Under such circumstances they must realize that they lay themselves open to very grave charges and place themselves in a position in which surely, no man having a fine sense of honour would care to find himself. The mineral claims owned by the British Columbian Mineral Properties, Limited, may or may not be valuable, but the point is that the company is grossly misleading the public by allowing the impression to obtain, that the ground has been favourably reported upon by competent and reliable mining engineers, which is not so. With regard to Mr. Topping, however, we believe and sincerely hope this view may prove correct, that the reference to him in this prospectus was entirely unauthorized, and we confidently expect that he will publicly state that such is indeed the case.

Some time ago it was announced that the Government of New Zealand had so far admitted the validity of the Mac Arthur-Forrest patents on the use of cyanide of potassium for gold extraction in that country, to pay the Company a round cash sum to secure possession of their monopoly in the Colony. The purchase was much criticized by influential mining journals on this continent, and it was pointed out that while the Mac Arthur-Forrest patents had been upheld in a few other countries, in New Zealand alone had the Company virtually received Government support and the process been converted into a State monopoly. It now seems, however, that the action of the New Zealand administration was not so ill-advised or foolish as at first appeared, and moreover, that the Government purchase of these patent rights was not made with the intention of drawing a revenue from the monopoly, but with the view of benefitting the mining community by ultimately removing all charges against mine-owners in connection with the use of the process.



Meanwhile all mine-owners using or proposing to use the cyanide treatment, are required to take out licenses from the Mining Warden of the district, and to pay royalties on the gold obtained, the tax being arranged on a sliding scale, low-grade or \$10 ore or under paying 15 cents, \$20 ore 50 cents, and over these values at the rate of 2½ per cent. per ton. But these charges are to cease directly the sum (£10,000) advanced by the Government to extinguish the Australian Gold-Recovery Company's rights, is repaid by this system of taxation into the treasury, and it is estimated on the basis of the royalty returns for the quarter ending March 1st, that the tax will not be longer in force than a period of four to five years. If for no other reason, the course adopted by the New Zealand Government in the present instance, has we think, much to commend it on the grounds of ordinary fairness. It is known, of course, that the courts of Australia and South Africa have refused to recognize the Mac Arthur-Forrest patents, and because the Cassel Company were demanding exorbitant royalties from mine-owners, these decisions were received in those countries with the greatest possible satisfaction. Nevertheless, it is admitted that the experiments and researches of Professor Mac Arthur resulted in the introduction of a perfected process of gold extraction which revolutionized the gold mining industry and succeeded in bringing South Africa and West Australia into the foremost rank of gold producing countries. While Professor Mac Arthur, it is true, was not himself responsible for the discovery that gold is soluble in cyanide of potassium, he was, however, the first to apply the principle to commercial uses, and the company acquiring the patent rights are, it seems just to conclude, to some extent entitled to benefit. The New Zealand Government have evidently so regarded the matter, and instead of allowing the Gold-Recovery Company's rights to become a matter for litigation, have taken the initiative, at the same time protecting the mine-owners, by paying the Company a fair though liberal price to relinquish all claims against mine-owners using the cyanide process in the Colony.

We have referred to this matter at some length, because it is possible that ere long the question of the Cassel Company's rights to receive royalties may become an important issue in British Columbia. At more than one mine in the country cyanide plants are now being installed, and if the treatment proves successful in these instances, it follows that the process will come into more or less general use for the treatment of ores of the same class throughout the Province.

New Zealand is often described, especially by would-be British Columbian reformers who have never been within a thousand miles of any of the islands of that colony, as a region where both laws and labour conditions are in general of the best. Those materially interested in gold mining in New Zealand, hold, however, that legislative and other conditions there leave much to be desired, as under present conditions profitable gold mining is greatly impeded. The eight hours working day is not deemed detrimental, but advantageous, as tending to more continuously well applied exertion. But in the case of low grade mines the compulsory closing down of mills for the whole twenty-four hours of Sunday is in this colony found to reduce unduly the net returns, and it is urged that the spirit of Sunday observance would be sufficiently observed by closing from 8 a.m. to 8 p.m. only on the "first day of the week." Still stronger

objection is taken to a yearly tax of one shilling per hundred pounds on the nominal capitalization of companies established in the country, and to a further tax amounting in effect to 2½ per cent. on all dividends declared. There is also, it seems, an export duty of two shillings—practically 50 cents—per ounce on gold; but as the resulting return is expended on mine district road-making, less exception is taken to this. However, as a whole, British Columbia mining laws are much more liberal towards the investor and mine-worker than are those of New Zealand, though perhaps the Yukon laws and regulations compare less favourably in this respect.

It is a really remarkable thing that however careful and conservative in his utterances a man in any other public capacity may be, no sooner is he elevated to the position and vested with the authority of a chairman of a mining company than he at once and invariably develops a quite unexpected talent in the art of "drawing the long bow." A striking illustration is afforded in the report of the statutory general meeting recently held in London, of the Whitewater Mines, Limited. Here the chairman after speaking, as well he might, in highly eulogistic terms of the Whitewater Mine proper, proceeds to draw therefrom some decidedly illogical conclusions concerning the value of the Company's other properties in the Whitewater vicinity. Because the Whitewater lead is said to have been proved to run through these two claims, the Irene and Myrtle R, the chairman first remarks, with more or less moderation, that "it is not unreasonable to expect that we have in these claims two properties which will prove to be as valuable as the Whitewater proper;" but seemingly not content with this expression of opinion, he later returns to the subject, and this time in a much more exaggerated strain: "When Mr. Kendall (the eminent engineer and resident partner in Vancouver of the firm of Messrs. Bewick, Moreing & Co.) visited the property to make his report, the ground," this chairman informs us, "was covered with snow, and Mr. Kendall was unable to trace the vein across the Irene and Myrtle R, and he therefore confined his estimate of the value of the mine to that which was visible from the workings of the Whitewater claim alone. "I state this," he continues, "to show that although no work of any considerable extent has been carried out upon the Irene and Myrtle R claims, there is no doubt that we have in these and the Tennie C—the whole of which belong to your Company—a value far and away above that of the Whitewater claim alone." Now, if the gentleman who presided at this statutory meeting of the Whitewater Company had been wise, or constituted a little differently from the ordinary run of company chairman, he would have restricted himself to commenting upon the reports on the Whitewater Mine as presented by the engineers, Mr. Kendall and Mr. Fowler, more particularly as the capitalization of the Company was fixed without consideration to the value of these outside claims. But, no; it is human nature to count one's birds before they are hatched, or to believe that all the ugly ducklings in the pond will develop the plumage of the only swan. Of course, in this case the claims owned by the Whitewater Mines, Ld., may prove to be quite as valuable as the profitable and promising mine after which the Company is named, and the chairman's sanguine expectations may, therefore, be realized. But this is not the point. The matter to be insisted on by the public is that



directors and promoters of mining companies should confine themselves to facts, vouched for by reputable engineers, and highly optimistic but irresponsible statements should not be tolerated. In the instance in point, neither Mr. Kendall's nor Mr. Fowler's report contained anything to justify the chairman's very fine and large predictions.

A delightfully humorous and clever letter by a correspondent signing himself "Assayer," was recently published by a San Francisco journal, dealing with the question of the often marked variation between the mine owner's statement of the value of his ore as published in company prospectuses, and actual average assays. The writer believes he has found a scientific method of accurately discounting the prospector's statements, and thereby determining the exact nature of any given ore body, at the same time avoiding the necessity of a visit to the property with a view to sampling and assaying. All have, he remarks, noticed that the prospectors statement is invariably a multiple of the true assay, so the writer's first attempt was to find the co-efficient of expansion. This he soon saw to be so modified that a formula was necessary for its complete expression, and the formula could not be obtained from theoretical considerations, but had to be deduced from a rigid and painstaking comparison of numberless assays. By this method he found the influence of time, distance, and the prospector's experience, and its expression, in the following formula:

Let A = true assay; S = owner's statement; y = number of years owner has prospected; t = time in weeks elapsed since last assay; d = distance in miles to prospect.

$$\text{Then } S = At \int \frac{dy}{y}$$

$$\therefore A = \frac{S}{t \int \frac{dy}{y}}$$

By finding d and y in terms of the other members of the equation, formulæ may be obtained for determining the experience of a prospector or the location of a prospect, which will be very convenient for those who contemplate grubstaking a man in the Klondike.

The writer is at present engaged in a research developing the relation between a prospect vein, according to the owner's statement, and the angle formed by the vein, the owner's eyes and the nearest valuable mine.

It is already clear, despite boom reports which continue to be circulated by imaginative correspondents of American newspapers, that the season's yield of Yukon gold will, though respectably large, fall much below the too sanguine first expectations. The territorial Inspector of Mines rates the 1898-9 output at \$7,000,000. His estimate will probably be fairly correct; but as Government officials, directly or indirectly concerned with royalty revenue connection, cannot, however well they plan and work, get absolutely full returns of the yield, it is likely that real results may add another million dollars or thereabouts to the reckoning. The returns will nevertheless be unexpectedly moderate, a fact which the Inspector attributes to the dearth of food and other supplies last winter in the Yukon, which caused many hundreds of miners to leave their work and abandon many claims for the time being in a state of arrested development. One sure result of a much less yield than was generally expected will be the prevention of any foolish or

dangerous rush to Klondike in the early autumn. Another result—and a good one—will be the prevention of the promotion of not a few very doubtful Yukon companies by London promoters of an unscrupulous class. The Klondike companies likely to be launched under existing circumstances will probably represent, on the whole, the "survival of the fittest," amongst a multitude of projects, most of which will die still-born.

The closing down of the British Columbia Iron Works, Vancouver, is a regrettable incident in connection with an engineering industry that has likely been more or less associated with mining enterprise. Recent working of the concern has involved a big loss, following which and bank pressure in respect of a large overdraft, has come the closing down of the iron works. Much of the recent loss occurred, it is understood, in connection with Yukon River steamer building and equipment contracts, the work being undertaken at far too low a price, and the result a very big balance on the wrong side of the Company's ledger. The affairs of the undertaking—one of the pioneer industries of the province—are being closely investigated, with a view, if possible, either to reconstruction, or to the sale of the plant and premises to a new organization. Considerable English capital was invested in the iron works, and it was the intention prior to the collapse, to make the manufacture of mining machinery a special feature of the works.

The salaries of Canadian public officials occupying positions of the highest importance, are too frequently meagre, by comparison with what they could otherwise earn by no more arduous work. Hence many an appointment goes to men of second or third rate calibre. The case of Mr. Wm. Ogilvie is not, however, an instance in point of this. Mr. Ogilvie is trusty and capable. But his salary, \$5,000 a year as Commissioner—virtually almost the equivalent of a Lieut.-Governorship—of the Yukon, is very inadequate to uphold such a position. It is certain that Mr. Ogilvie could easily make several times his yearly salary in the Yukon, were he there to act as the representative or promoter of joint stock enterprise. He is certainly receiving from the State nothing like the market value of his services.

We have heard a good deal lately of the sinning of Yukon government officials in acquiring claims and mining property in the North. Of course, there can be no question about it, the practice is wrong, and should not be allowed. But a man cannot be expected to live so many years of his life in such an utterly god-forsaken country on the pittance he would earn sitting on a stool in a departmental office at Ottawa; besides it is contrary to human nature to ask a poor wretch drawing only his dollar or two a day, while other men are making their fortunes, not to make some effort to follow their example. The Dominion Government recognize, we believe, in the case of postal officials, and the chartered banks recognize in the case of their clerks, that living is more expensive in the West than in the East, and consequently western employees receive higher pay. Apply this principle to the Yukon, and allow for the hardships, the discomforts, the temptations of official



since the new mine plant was completed and installed in June, 1896, he has not accorded so much of his time to the supervision of the property as before. But Mr. Bucke has not confined his labours to the Slocan only, for within the comparatively short period of six years he has had the management of no less than twelve properties situated in different sections of East and West Kootenay and in South Yale, and it is gratifying to know that in nearly every instance the mines or prospects with which he has been connected have turned out well, or give excellent promise of doing so. Two years ago Mr. Bucke became associated with Mr. W. Trethewey in the now well-known firm of Trethewey & Bucke, Mining Engineers, of Kaslo and Vancouver.

#### OUR LONDON LETTER.

AS I write we are in the financial doldrums. Business in the city in so far as stocks and shares are concerned, is well nigh at a standstill, and apart from purely investment operations there is little doing from day to day to punctuate the progress of the year.

Money, which is such a potent factor in financial matters—if you will excuse the apparent paradox—has cheapened during the past month to a considerable extent, and bank bills maturing three months hence can be sold at the ridiculously low discount rate of 1 1-16 per cent. per annum. This has, of course, caused an appreciation in all gilt-edged stocks, and directed a certain amount of business to the markets in which English and American Railway prior charges are dealt in. But so far as speculative transactions are concerned there is absolutely nothing doing, and in the Stock Exchange they are so idle that the more boisterous spirits have been driven to amuse themselves by horseplay and practical joking of every description, while a not inconsiderable portion of the community has seized the opportunity to indulge in a few weeks holidays, in order that when the expected period of activity arrives they may be prepared to cope with it. Of course, the war is in a certain measure responsible for the dullness, because it is recognized as possible that even yet the struggle between the United States and Spain may produce complications that would involve us. Europe, however, has shown such a desire to localize the duel that it is hoped that the recently uttered optimistic utterances of British Ministers will not be contradicted by individual departures from this policy of non-intervention in the strife.

So far as mines are concerned, absolute dullness is the prevailing feature. South Africans, Westralians, British Columbians and Miscellaneous, into which this market may be broadly divided are all very



MR. M. A. BUCKE, M.E., OF KASLO.

much in need of a tonic to revive their flagging energies. It is, however, encouraging to notice that the tone in the mining market is fairly good, and it is certain that only a little genuine activity is needed to put quite a different complexion upon the whole of this section. You must excuse me if I feel called upon to refer to the market generally, because I need not assure you that although the British Columbian Market is a sturdy youngster, it is not yet strong enough to run alone despite all that may be said to the contrary by those who would like to make us believe that this latest formed section in the mining department is already making rapid strides for first place. While I have every confidence in British Columbia's ability to justify all that can be said of it by its most ardent supporters, yet my duty as a correspondent compels me to try and present truthful pictures rather than highly coloured portraits. Judging from the condemnation of booms and the methods by which they are created, contained in your last issue, this course will meet with your approval. Both British Columbia and the Klondike have to do a great deal yet before they can successfully rival either South

Africa or Westralia, but there is no reason why if only a moderate proportion of the capital which has been put up during the past two years is devoted to the objects for which it was subscribed, the development of your mineral resources should not attract more and more attention to the mining potentialities of the Pacific Province.

Klondike is as yet an unknown quantity, but we must all admit that the wonderful stories about that far Northern gold mining area have vastly aided to stimulate interest in Europe in the various Canadian gold fields, and should prove of permanent service to the cause the MINING RECORD has at heart, always supposing that the millions already advanced for the exploitation of that unknown region are not irretrievably lost, and I note that you do not speak hopefully of the prospects of joint stock enterprises in that direction.

Ogilvie's warnings, no doubt, helped to check the rush of new companies, formed to carry on operations in the Klondike region, but I am afraid that his utterances were not given that publicity that they deserved. In many cases where his valuable speeches should have been reported word for word, only garbled and well nigh worthless records were published by a financial press which considers that all such reports as these should be paid for. The daily papers are, of course, quite unable to give such long reports in full, owing to the pressure of other matter. I attended most of the lectures myself and was charmed with Mr. Ogilvie's unconventional style of address, but I could not help regretting that he had not been advised to prepare his speeches beforehand, and even have them printed. The cost would have been trifling, and the reporters would often have been able to present their readers with more accurate reports of the various interesting addresses. Proper names and technical terms are difficult to follow at all times, and in Mr. Ogilvie's case (suffering as he was on several occasions from sore throat) doubly so. Mind, I do not want to be thought a detractor of Mr. Ogilvie's talents and kindness in speaking at times when he was physically incapacitated, but I sincerely regret that official effort was not made to prevent such words of wisdom and warning from being lost, owing to the absence of prepared notes or of an official reporter. And in saying this I do not for one moment overlook the efforts of the Incorporated Chamber of Mines, which I believe made the only official endeavour to preserve Mr. Ogilvie's advice for the benefit of those thousands of English investors whose interests the lecturer seemed so anxious to protect. All great lecturers now-a-days have a manager, and had Mr. Ogilvie been assisted in this way his speeches would have been preserved intact for the benefit of those who will need all the good advice he was able to offer them, when they are presently presented with the crowd of new companies which have been formed during the past few months by some of the most fourth-rate promoters in this city. Already the list of new companies registered and awaiting a favourable opportunity to make their debut, has assumed enormous proportions, and I have not the courage to ask you to print it in full. In the meanwhile promoters are waiting for that happy period when the public will be what is known here "as on the feed," in other words, less shy than they have been since the collapse of the Kaffir and West Australian booms taught them how foolish it it was to place

any faith in the statements of boomsters. It is a remarkable thing, but the most sagacious of business men are the veriest children when they are called upon to invest the money which they have shown such shrewdness in accumulating. English investors—and remember they are chiefly retired business men who have made their money in the heat and toil of the city—are often so stupid that one can hardly feel anything else but contempt for them. Promoters know this and trade on it. Dazzling stories have been cabled from the Yukon and the average investor with his few thousands invested in high grade stocks, paying from 2½ to 3 per cent., yearns after the gold pots of Klondike. The rest is easy. You have only to prepare a prospectus of an alluring character, print a few maps, or reproduce photographs of some claim or other, find a seller of a few claims—and there have been quite a number in this city—secure two or three titled guinea pigs, advertise lavishly and the trick is done. Happily we have been having such bad times that the deluge of new prospectuses has been stayed, but quite a number of dubious concerns have been launched already, and there are more to follow. It is, I am afraid, too much to hope that the lessons of the Kaffir and Westralian booms have been well learned. The warning as a rule lasts for four or five years, and then, a new crop of flats having sprung up in the meanwhile, there is a repetition of former farces.

The Yukon has provided an opportunity which the shady promoter dare not disregard. Everything is in his favour, and everything is against the investor. Difficult of access, verification of title, truth of reports, of so-called mining engineers, are all points that should make the European investor pause. Even in British Columbia, judging from the experience of the British

America Corporation, it is easy to have little misunderstandings between vendor and purchaser, and with British Columbia we have cable communication. How much more so then must be the risk in an ice-bound country like the Klondike. When Parliament has further amended the Companies' Acts the investor may have the protection he needs against the wild catter. Until then over-capitalization, misrepresentation and fraudulent reports will be the chief medium by which the unscrupulous promoter will transfer coin from the pockets of the public to his own. Unfortunately the very section of the press which should run the promoter to earth and drag him forth to the public from his burrows of undisclosed contracts, nominees and other subterfuges for hiding his connection with any particular concern is so venial that it is possible by lavish outlay to silence all but the absolutely fearless few—those who forming the exception prove the wretched rule of bribery and corruption. Mr. Hooley—ex-millionaire, now bankrupt—who has probably had as great an experience of the financial press as any other promoter in Europe, has threatened to publish a list of the papers, high and low, which have been blackmailing him during his career, and for the sake of financial morality it is to be hoped that his heart will not fail him, when in three weeks' time he faces his creditors in open court. I could jot down experiences in connection with the financial press, which would seem extravagant in the extreme, but I have an eye to the law of libel, and although when I can safely expose a piece of jobbery I shall not hesitate to do so, it is no good recording stories, which after all, could not be substantiated, owing to the methods adopted in silenc-

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ing the would-be detractor. Sufficient to say that the experience of Mr. Hooley is simply the experience of every prominent promoter who has been before the public for any length of time.

Happily, British Columbia journals seem to be determined to do their duty at this critical juncture in the history of the Province. Circumstanced as we are, we look to your press for the exposure of the most flagrant cases of abuse of confidence, because it is very difficult for the English journals to find out the weak spots. One of our

leading papers, the *Critic*, recently laid violent hands on a promotion of the Klondike and Columbian Gold-fields—the group with which the Premier and Mr. Pooley is associated—and known as the New Golden Twins, and shook it badly, basing its criticisms on that very, very sensational article which appeared in the June number of your Ottawa contemporary, the *Canadian Mining Review*. I hear that this article in Mr. Hess' paper—the journal which a year ago gave Labouchere such a roasting—has drawn a letter from Messrs. Spencer & Cridland, Solicitors, of 34 Victoria Street, Westminster. This address, you may remember, is the address of most of the Turner-Pooley group. If they should go for the *Critic* it will be a tough and very interesting battle, for we all know that Mr. Hess can take care of himself, and he has a habit of seldom coming off second best in the fray. The *Critic* is one of the most fearless of critics, and on the same plane with the *Statist*, the *Economist*, the *Investor's Review*, and a few other journals. By the way, I wonder if Mr. Turner has yet learnt to differentiate between the various classes of leading newspapers published in this city. Not only your Premier, but several other members of the Legislature, recently made an exhibition of themselves in the way they talked about the London press. Comparisons are always odious, but those instituted in the heat and strife of a recent battle, in which Mr. Turner was defending himself against those who had challenged his right to act as a director of London companies—a policy much to be regretted, I think, from every point of view—were more ridiculous than odious.

There is little in the way of news to tell you. The British Columbia market is dull, and quotations have been falling, especially those of the London & Globe group. Whitaker Wright's latest pet, the British American Corporation, have been as low as 15<sup>1</sup>/<sub>8</sub>, which is nearly 10 per cent. below the best price touched since incorporation. All kinds of rumours have been afloat, but an official statement at the end of the month seems to have put a little life into them, and B.A.C.s are back to about 17. We do not know yet what was the result of last Monday's Le Roi meeting. A feature in connection with this group has been the registration of quite a number of companies to take over the chief Rossland mines acquired, including the Le Roi (surely a little previous), the West Le Roi, the East Le Roi, the Columbia-Kootenay, and the Algonquin. The total capital of the combined companies is about £3,500,000. However, I have sent you full particulars of the latest indication of the Whitaker Wright and McIntosh programmes. The Turner-Pooley group, including the Klondike & Columbia Gold Fields, the Dawson City Trading, and the New Golden Twins, have been decidedly, nay suspiciously, flat. What can be the matter? Is someone trying to "rat," or is the market putting down prices against sellers? I

am glad I have not got any money invested in the group in question. The Tupper Company have shown their vitality by registering a concern with a capital of £100,000 to acquire the Velvet on Sophie Mountain. Hall Mines, less firm, but are like other British Columbia and Klondike Companies, very apathetic, the market for most of these shares being purely a nominal one. A highly respectable concern, the Canadian Pacific Exploration, Limited, has, at the suggestion of its local managers, ordered a 10-stamp equipment for its Porto Rico property at Ymir. Among local companies War Eagles have been in strong favour. London offices have been recently opened by the Dundee and the Wild Horse Companies, the former in charge of Mr. D. Kennedy, at 70 Gracechurch Street, and the latter at 53 Victoria Street, Westminster, London, with Mr. H. E. Baker as London Secretary. This is an example that will doubtless be followed largely by other local companies wishful of placing the facilities of a London Register at the disposal of those European investors who have been induced to acquire an interest in their shares. The list of quotations I forward you will furnish the June opening and closing prices of a number of the leading shares dealt in here, but I must again remind your readers that these quotations are largely nominal; indeed, in one case to my certain knowledge, although the price is glibly furnished by the dealers, there has never been one single transfer passed through the Company's books since its incorporation eighteen months ago. And this is one of the most respectable and attractive of the whole of the British Columbia Companies registered in London. So much for London prices. The Company in question, however, is pushing ahead, and believes in justifying confidence in it before trying to make a fictitious market in its shares like other British Columbia groups I know of.

I am afraid I am run to the end of my tether, but I must briefly refer to the chief applicant for British capital for British Columbia during the past few weeks, although I leave you to criticize it more fully yourselves. I refer to the Associated Gold Mines, which is out with a capital of £500,000 in £1 shares, 405,000 of which are issued, and 200,000 of which are taken by the vendor in part payment of the purchase money, £375,000. The Company acquires 96 properties in British Columbia, "the large majority of which are said to be gold mines." The list opened on Monday and closed on Wednesday, and I am told that the capital offered was largely underwritten at a premium of 70 per cent. I heard this afternoon that the subscriptions amount to £28,000 of the £205,000 offered. For a prospectus like this I consider that if the Directors have obtained 10 per cent. of what they asked for they are lucky. T. R. Hardiman, with C. Cattel and Captain Bouchier, of Vancouver, form the Advisory Board in British Columbia, while Mr. Pellew-Harvey is Consulting Mining Engineer, and Dr. Aubrey is General Manager and Secretary. The issue has not attracted much attention, and the wonderful puffs about it that appeared in the illustrated press a few months ago were money wasted, if all I hear be true. Thinking that you might like to know the capacity of the gentlemen who are to direct this concern, I have prepared a list showing their present directorial engagements, etc.:

Sir William Des Voeux (late Governor of Newfoundland) Chairman.

The Earl of Yarmouth

C. A. Cosmo Hamilton.

W. J. Goulding, is a Director of Gt. Southern & Western Ry. of Ireland; Chairman Kalsh & Co., Ltd.; Director Southern Hotels; Chairman W. & H. M. Goulding, Ltd.

Major J. E. Jameson, M.P., Director Brewery & Invest. Trust; is a Director Chicago Packing & Provision Co.; Chairman Ceresus North No. 1 Mine; Chairman Leather Stod. Wheel Co.; Chairman Menzies Mining & Exploration Co.; Managing Director Railway Station Indicator Co.

G. Mure Ritchie, is a Director Credit Assn. & Guar. Corpn.; Director London & Glasgow Finance; Chairman Millom & Askam Hematite Iron Ore Co.; Director New Era Assn.; Director Woodley's Reward Gold Mines.

Sir Edward Sullivan, Bart, is a Director of Porthgairn Harbour and Chairman of Automatic Cycle Rach. Co.; Cycle Manufacturer's Tape Co.; Detachable Pneumatic Tyre Synd. & Puncture Proof Pneumatic Tyre Co.

After such a long wait I thought we might have been presented with a list of Directors more suited both individually and in the aggregate for the management of a mining corporation than the above.

I have just seen the prospectus of another company which has been recently formed by a Scotch group. It is called the Klondike & Kootenay Syndicate, has a capital of £80,000, in £1 shares, and will possess as Chairman, Sir Albert Rothit, the President of the London Chamber of Commerce. It has been formed to enter into two agreements with the Scottish Australasian Gold Mines Agency Ltd., and the Glasgow Mining Trust Ltd., and an agreement with a Mr. T. R. Lane; to acquire mines, mining rights and auriferous land in B.C., Canada or elsewhere, and to carry out business of miners, smelters, carriers, shipowners, warehousemen, barge-owners, lightermen, forwarding agents, etc.

#### THE MONTH ODD NOTES FROM ROSSLAND.

The Le Roi still remains in the hands of our American cousins, and the long talked of deal of the B. A.

C. is not actually consummated. The Northport smelter is again in full blast and that plucky little town is booming. On a recent visit there hardly any trace of the great fire, which, a few weeks since, had nearly wiped that frontier settlement out of existence, was to be seen. New buildings, substantially erected, were going up all over the place. Indeed, to-day Northport boasts of more pukka (Anglice, stone or brick) structures than Rossland itself. "Experience comes, but wisdom lingers," is as true a saying to-day as it was in the time of Elizabeth. When our enthusiasm in our dwelling place gets heated by fire, then, and perhaps then only Rossland will profit by the experience of Seattle and Northport and put up something more fire-proof than the wooden buildings which are now the pride of Columbia avenue.

A new waggon road is to be constructed from here to tap Brooklyn, which is the latest addition to the towns of the Kootenays. It is not, however, primarily a mining centre, though plenty of valuable mines are in its vicinity; the celebrated Deer Park country being but two miles away across the lake. No; Brooklyn is the construction camp of the C.P.R. as it pushes its way westward from Lower

Arrow Lake. Only a few weeks old it has a resident population of 1,000 people. Three steamers call there daily. The citizens have already built a large wharf. They have four large merchandise stores which they claim are the biggest in British Columbia! Hotels are numberless. An electric light plant and an efficient water supply are already arranged for; also telegraph and telephone service. All supplies for the railroad in construction for 105 miles west must necessarily pass through the new town. The C.P.R. employ somewhere near 5,000 men on its works. When it is considered that between Robson and Brooklyn, before the railway can pass westward from the lake, nearly 2,000,000 cubic yards of rock must be removed, the growth of this city, which has grown like a gourd in the night, will be understood.

The labouring classes here have been deeply stirred up anent the atrocious scandals with regard to the contracting on the Crow's Nest Pass

CROW'S NEST PASS. RECORD last month, and it is to be hoped that the publicity thus given to the unfortunate maladministration of affairs in East Kootenay, will deter any attempt at a repetition in this locality. Of course it is hard to say who is responsible—the railroad company or the contractors. But *Punch*, years ago, wisely remarked in connection with constant railroad accidents for which no one was to blame, that the "only way to stop collisions was to attach a railroad director to the locomotive buffers."

However, the principal is in law responsible for the deeds of his agent. Nor are the agents and principals so widely sundered as the public are often led to believe. Take the case of the Trail-Robson railroad. It was supposed to have been built by Augustus Heinze on his own account, without any connection with the C.P.R. In fact when that railroad company took over the line, some injudicious friends of Mr Heinze howled. They declared that the poor smelter man had been "dished" by the great corporation. It had "cinched" him, and the hardly-treated benefactor to Rossland's industries had to sell anyhow. This was in the fall of 1891. Was it merely an ordinary coincidence that the spring of that very year an advertisement was inserted under the ægis of the C.P.R. in the *Seattle Times* to the effect that 400 men were wanted on the Trail-Robson railroad, then under construction? The contractors were not mentioned. The C.P.R. guaranteed the good faith of the attractive advertisement. It would return five dollars of the fare to the men on their arrival in Trail—that is to say, if they traveled over the Dominion line! Nothing was said of compulsory board, medical impositions and the like. At that very time, February-March, 1897, there were hundreds of men in Rossland and Trail, to say nothing of Spokane, out of work. How many men of the hundreds who travelled to Trail, cleared up the promised \$75 a month? How many men got even a half? How many men deserted the canvas camps in the snow along the bank of the Columbia River, in debt?

There has been enough of this kind of work. Let it be hoped that there will be no more. The Miners' Union in Rossland are shewing evidence of their strength, in the erection of the best built frame building in the camp. Some of the mine-owners fear the result. They predict strikes and troubles. That is to be deprecated, but the men remember that "God helps those who help themselves."



## ON THE STICKEEN TRAIL.

### MODES OF PACKING.

THOSE responsible for the circulation of the reports, this early spring, respecting the passability of the Stickeen-Teslin trail, and guilty of the unjustifiable booming of that route, which was described as pre-eminently the best for summer travel to the Yukon gold-centres, have a great deal to answer for, and it is matter of regret that a Victoria newspaper, whose editor, too, temporarily served as a director of a Klondike transportation company, misrepresented—though through ignorance and without malicious intent, we are willing to admit—the facts concerning this trail in such an uncalled for manner. Some blame, moreover, it appears, attached to the Provincial Government officials for the present deplorable condition of the Teslin trail, as from what we can learn, the large appropriation granted for its construction from the river at Telegraph Creek to Teslin Lake, was utterly wasted, the contractors most scandalously scamping the work, and yet receiving payment in full to the extent of the grant. Mr. Dennis, a member of Messrs. McKenzie & Mann's Engineering Corps, recently returned from



FULL STEAM AHEAD—THE DOG AND WHEELBARROW FASHION.  
(Photo by Edwards Bros., Vancouver.)

this section of the country, states emphatically that the trail from Glenora to Teslin, instead of being an open way over a prairie country, is nothing but an Indian trail over mountains, through swamps and heavy timber. Mr. Dennis describes in detail the appalling condition of the 3,000 miners, many of whom have lost every cent they had in the world in trying to get to the Klondike by this route. Hundreds of

outfits have been lost, and many of the stranded miners are approaching a destitute condition. The wail from the Stickeen route began last spring, just before the river opened, and after several hundred miners in small parties and large companies had made the start from Wrangel, hoping to reach Telegraph Creek over the ice. Disappointment and hardship was all they encountered. This is a most unfortunate state of things, but is no use attempting to gloss over hard facts, and it is undeniable that under existing conditions the Stickeen route is well nigh impracticable. This, however, is Mr. Dennis' account of some of his experiences: "While camped along the trail in the valley of the Little Tahltan, about thirty-five miles from Glenora, we were cut off from all communication with the outside world for a period of nearly six weeks. During the time all progress along the trail had ceased on account of the breakup of the river and



A FAIR DIVISION OF LABOUR—DOGS WITH 20-POUND PACKS.  
(Photo by Edwards Bros., Vancouver.)

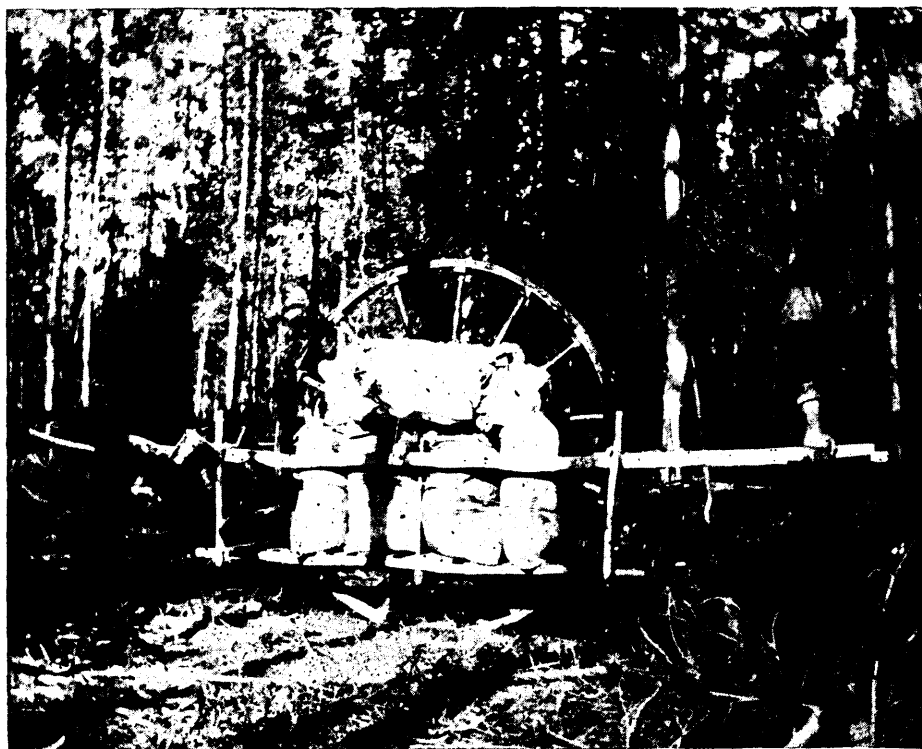
the condition of the snow on the first summit. By May 15th occasional small outfits began to dribble through. These men were taking in only a few hundred pounds, distributed upon their own backs and upon their dogs. With the drying out of the moss the stream of gold seekers swelled, and one could not but marvel at the ingenuity displayed by the Klondikers in their attempts to transport baggage through the wilderness. The roughness and narrowness of the trail demanded the use of one-wheeled vehicles. As a consequence, unicycles in all shapes and forms were fashioned rudely out of the poor material at hand. Men were tooling various wheelbarrows, wrought in the woods, with only an ax for work. With a stout man pushing and a well-trained dog pulling, 300 pounds could be taken over the first fifty miles of the trail. No uncommon sight was a wheel five or six feet in diameter, with a load placed in a framework below and to each side of the axle, bringing the centre of gravity very low. Such a



HARD GOING—THE TANDEM.

(Photo by Edwards Bros., Vancouver.)

contrivance required a man in front and one behind, and could carry as high as 500 pounds. Its general appearance is shown in the accompanying illustration. In some cases a horse might be seen in place of a man in front. Here it would require several men to keep the 'go devil' in an upright position, or to hold it back on a heavy down grade. The sharpest grades are the descent to the valleys of the Little and Big Tahltan rivers respectively. In the case of the latter outfits were lowered by block and tackle down a declivity of 150 feet. By June 1st pack trains were attempting the long pull over, and were finding the trail fairly serviceable for fifty-five miles, or as far as Shesley river. Here the mountain trail substantially ends, and the pathway winds through Willow and Muskeag swamps, out of which mosquitoes rise in sanguinary hordes and plague the wayfarer beyond endurance. Any modern treatise on contemporary martyrology, in order to be comprehensive, should catalogue the experience of men stalled along these stretches of the route to the gold fields.



THE UNICYCLE OR GO-DEVIL.

(Photo by Edwards Bros., Vancouver.)



Men begin to ask themselves how it was that they got side-tracked in this wilderness, and thus lost a whole season in a vain effort to get to the gold mines. Some men will tell you that they wished to thoroughly prospect the Hootalinqua route with their eyes open. Others will tell you that they could not consider Chilkooot or White Pass without a shudder; but the majority will tell you that they were booked through to Wrangel or Glenora with the impression that a waggon road had been constructed, and without the faintest conception of the difficulties that awaited them on leaving the Stickeen river.

#### \* SOUTHERN BRITISH COLUMBIA.

As it appeals to and effects the prospector and miner, the speculator and investor.

BY J. D. KENDALL.

INTRODUCTORY.

SO many "wild-cats" from British Columbia have been let loose of late, in England, that naturalists of that country, unacquainted with the zoology of other countries, may excusably conclude either that the wild-cat is confined to B.C. or that the lynx family of western Canada is of more than ordinary interest. Neither of these seemingly probable conclusions are however warranted by the facts "wild-cats" are, it is well known, common in all mining countries, and much finer specimens have been caught in other parts of the world than have yet been seen in B.C. or than are likely to find their way across the Atlantic, from this quarter of the globe, even if they exist, for there is a determined resolve either to exterminate these creatures, or so to expose the danger of dealing in them, that their export will cease to be profitable.

Another of the animal productions of British Columbia is a fish called the "sucker." It possesses a huge mouth and is said to gobble up at sight and indiscriminately all kinds of food, without pausing to enquire whether that which seems so is really safe and wholesome eating. The incautious action of this fish, in feeding, is so like that of some human beings in presence of a "deal" that, here, the *genus homo* is not inaptly considered as having its subdivision of suckers. The fish, as already said, belongs to British Columbia, but its human correlative has a world wide existence, and nowhere does it seem to be more numerous than in Great Britain. How, otherwise, can we account for the many unproved mining properties that have been floated on the London market as though they had large ascertained values. The British public know absolutely nothing about the mines of British Columbia. In only one instance, to date, have they been asked to invest in a dividend-paying mine, many of the others being more or less doubtful prospects, whilst a number are the veriest wildcats. Yet there are many dividend paying mines in British Columbia, but they are almost entirely owned by Americans. Why is this? Certainly not because Americans have any superior ability in mining, for many of the mines opened up by them here are about as rude specimens of the miner's art as could be found in a long journey. Mining is something more than mere drifting, rising, sinking and stopping. The man who simply carries out these works without studying carefully the structure of the ground through which he is passing, and has to pass, and without regulating the nature, direc-

tion and extent of his works thereby, has still to learn a most important lesson in mining. Nevertheless, a disregard of geological structure characterizes much of the work done in the mines just referred to. The reason of American success must therefore be sought in a direction outside of mining, and it is most probably found in the superior commercial methods employed by them. Englishmen are apt to look upon London as the dumping ground of every mine on earth that is for sale. No greater allusion could be fostered. Owners of mines that can be worked at a substantial profit, have no need to seek for a purchaser. The purchaser has rather to look for them, and that is exactly what the Americans do. Further, they keep track of the needy prospector and miner. When, in this way, they see a good thing (and no men know better how many cents are in a dollar) they buy, at once, on bed-rock terms. Although the payment of cash-down for prospects is a most objectionable practice, yet the advantage of quick decisions and early or immediate payments, partial or full, is well known to all who have had any experience in the Rockies, as to the best means of securing lowest possible terms. To these methods of procedure, undoubtedly is due the almost general success of Americans in B.C. mines, for in this way they get the pick of the field. The balance, consisting largely of "wild-cats," or properties requiring large sums for purchase or development, find their way, sooner or later, to London, accompanied in some cases, by the reports of men styling themselves M.E.'s or E.M.'s, but who are frequently, commercial travellers, insurance or land agents, or anything in fact but miners. Some of the properties so introduced might possibly, with proper management, be made into mines, but, if they seem to have any merit, their chances of success are perhaps ruined from the first by over-capitalization. There is at least one very glaring instance of this kind among English companies operating in B.C. A great benefit would accrue to the mining world if engineers, in order to prevent over capitalization, would clearly and unmistakably state in reports, for prospectus purposes, their opinion as to the value of the properties that are to be offered to the public. Such valuations are not intended to represent the actual value of the properties to which they relate, but only what may be safely given for them, and if a properly qualified engineer of large experience, cannot fix this sum, how can any one rely on the valuation of a promoter. The uncertainty can in all cases be covered by adjustment of margin. If a proposed undertaking is a pure gamble, and the public are invited to provide the funds, they should be told by the engineer the exact risk they are incurring. If they choose to ignore his facts and opinions, the responsibility rests with themselves.

One other preliminary may be mentioned before entering on the main object of this communication. It is a warning against the general acceptance of newspaper reports on mines. Many of these reports are written by men who have an interest in the properties about which they write. Others again are the work of regular correspondents who "write up" properties for a consideration in cash or shares. It is not supposed for a moment, that such reports would influence the opinions of capable men, after they had seen a mining property, but a cautious treatment of them before that event may save some cost, trouble and disappointment.

(To be continued.)

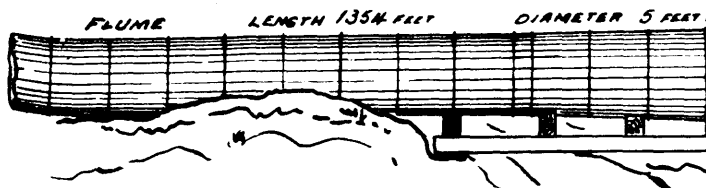
\*This paper was read, this month, before the Institute of Mining Engineers in London. Mr. Kendall kindly sends us a copy, specially arranged for the MINING RECORD.

## AIR VS. ELECTRICITY IN LONG DISTANCE TRANSMISSION.

(By W. S. Norman).

**T**HE high efficiency now obtainable by the Taylor system of hydraulically compressing air which develops 75 per cent. of the horse-power of any given water-power in compressed air, the excessive dryness and low temperature of the air so compressed, thus reducing to a minimum the loss in delivery, brings compressed air forward as the most economic form of delivering power in long distance transmission; and I propose to show in this article that for the uses of a mining camp, compressed air under the Taylor system is the cheapest in its first cost of installation, and immeasurably the cheapest in its cost of operation in comparison with electric power.

The Taylor system of hydraulically compressing air



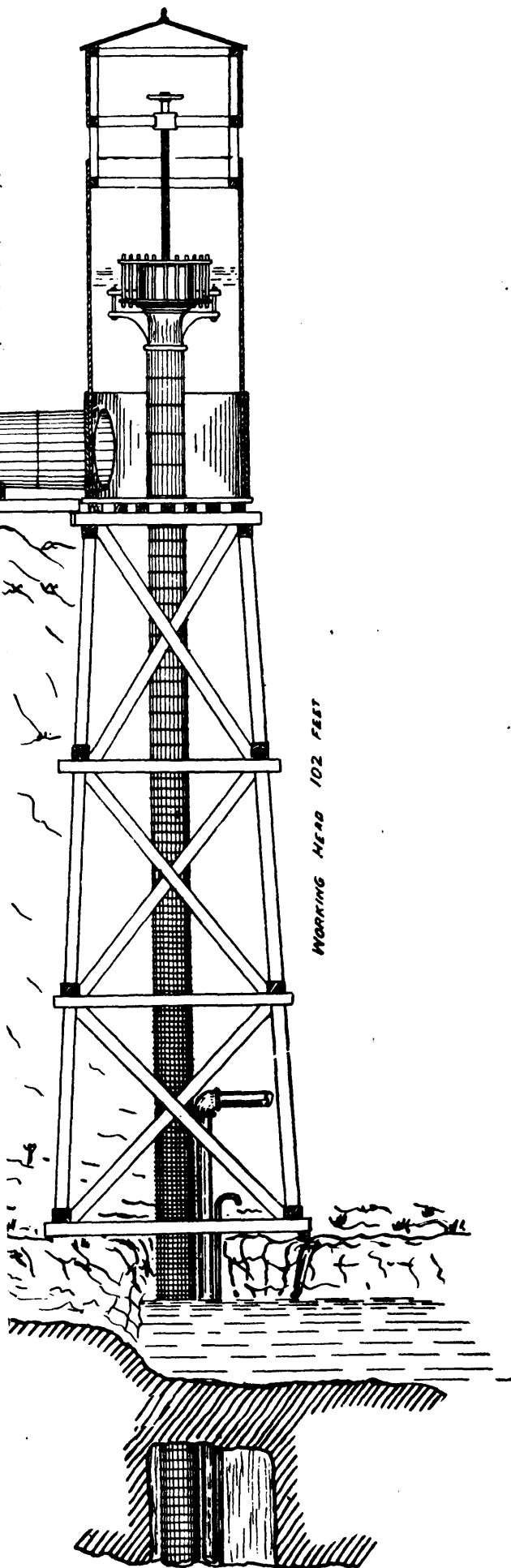
was fully explained in an article which appeared in the May number of the MINING RECORD, and the accompanying plan of the plant now in process of installation at Ainsworth, B.C., will refresh the memory of the reader as to the principle involved. This Ainsworth plant will develop 75 per cent. of the horse-power of the stream in actual compressed air, at a pressure of 90 pounds, and the air so delivered will be three times drier than the external atmosphere, and of the same temperature as the water which compresses it.

In comparing any two systems of power transmission, relative comparisons must be made upon the following points:—

1. Original cost of installation.
2. Cost of maintenance and operation, including their relation to load factor.
3. Efficiency of systems.
4. Relative simplicity of systems, and the superior advantages of operating with simple machinery.

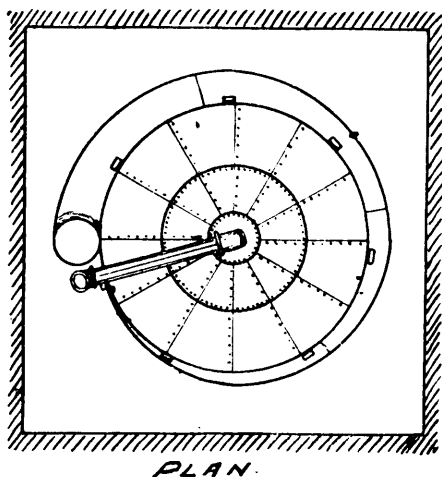
Starting with the acknowledged condition of all mining operations, namely, that a large portion of the ultimate power required must be compressed air, whether it is mechanically compressed by steam or from turbines, or from electricity transmitted by electric wires and converted by electric motors and mechanical compressors, or by the Taylor system, the absolute demand of the camp for a large share of its power must be air to drive the percussion drill, to ventilate the underground workings and to actuate the pumps; and since the major portion of the work to be done in the mine has to be performed by air, the general custom is to run all motive power by air, thus bringing the generating station under one roof.

For the purpose of comparison, we will assume the existence of a water-power eight miles from a group of mines, where the head is high and the cost of development is relatively low, the conditions to be fulfilled being the delivery of 10,000 cubic feet of free air at six atmospheres pressure, or sufficient free air to represent 1,000 net air h. p. delivered, and to actuate say 150 drills in ordinary rock. We shall consider the case of an electric plant at a water-power actuating motors in the heart of a mining district, the motors driving mechanical compressors in a central station, the air being delivered by mains to the



AIR COMPRESSOR PLANT INSTALLED AT AINSWORTH.

various mines, though a very common practice throughout the United States and Canada is the use of small separate mechanical compressors at the various properties, each actuated by its own separate motor, and each employing its own separate force of operators, thus materially increasing the cost of the air h.p. delivered at the drill. The air, h.p., however, which the conditions laid down above call for is not the air h.p. read from the indicator card of the compressor, which tells us nothing of the temperature of the air nor of the amount of moisture therein contained, but the air h.p. at its working conditions at the drill, where the moisture has been drawn off and where its temperature has been reduced almost to atmospheric conditions. To reach this degree of perfection, the mechanical compressors must deliver an air efficiency of 1,000 h.p., or 10,000 cubic feet of free air per minute at the mine, and our mechanical compressors, therefore, should have at least 1,500 gross h.p. capacity and be actuated by electric motors of at least 2,000 h.p. capacity, and our water-power must possess 3,000 gross h.p., which will give 2,400 net h.p. on the wheel shaft, and will give a dynamic force of 2,200 h.p., delivering 2,000 h.p. over the line at the electric motors. With the Taylor system there is but



the one transformation, that from the water to the compressed air, and no moving mechanism is used in the transformation. The water rapidly flowing down the down-flow pipe entrains the air, which is compressed in the receiving tank by the returning column of water, and from this tank it is automatically delivered absolutely free from moisture ready for use at the drill. The amount of loss in transmission is almost inappreciable if we care to invest a sufficient amount in pipe line. In the West, however, where freights are high and the pipe line cost is greater than the sinking of shaft cost, we will figure on a wider drop of pressure in the pipe line. At the compressor we will have a shaft sunk deep enough to produce 125 pounds pressure and allow 45 pounds loss of pressure in the line, delivering at the terminal at 80 pounds. This would be equivalent to a loss of 12 per cent. Reduction of pressure increases the volume of the air, and by using a 15-inch wrought iron pipe we can deliver at the terminal end 10,500 cubic feet of free air per minute, isothermally, and not adiabatically compressed, as in the case of all mechanical compressors, the h.p. of which would be rather more than 20 per cent. greater than the same volume of air adiabatically compressed. With these losses we should, therefore,

require 1,250 h.p. at the compressor, and a gross h.p. in water of 1,700 h.p. By raising the initial pressure to 200 pounds, and making a drop of pressure of 100 pounds in the pipe line, which would represent a loss of about 19 per cent. due to friction, the 1,000 h.p. could be carried in a 12-inch main, thus saving one-tenth in weight of iron in the plant.

#### I.—ORIGINAL COST OF INSTALLATION.

The cost of water-power development varies with the local conditions, and for the sake of comparison we will take a water-power having a high head, where the power can be developed, exclusive of the water-wheel cost, at \$20 per h.p. The following will be the cost of the electric plant, according to the figures given in Dr. Louis Bell's "Electrical Power Transmission," 1897:—

Electric plant, 3,000 gross h.p., at \$20 per h.p. ....	\$ 60,000
2,200 h.p. electric generators, at \$12 per h.p. ....	26,400
2,200 h.p. in transformers, at \$10 per h.p. ....	22,000
Pole lines and wires, eight miles. ....	35,000
2,750 h.p. in water-wheels, at \$15 per h.p., set in place. ....	41,250
Station building and equipment. ....	10,000
2,000 h.p. step-down transformers. ....	22,000
2,000 h.p. in motors, at \$12 per h.p. ....	24,000
1,500 h.p. compressor plant, set up in place. ....	75,000
Miscellaneous. ....	20,000

Total ..... \$335,650

The following will be the cost of the air plant under the Taylor system:—

1,750 gross h.p., water-power to develop, at \$20. ....	\$ 35,000
275-foot shaft, 8x8. ....	10,000
Down-flow pipe and compressor tank. ....	5,000
Eight miles 15-inch pipe line, all set in place, at \$1.50 per foot. ....	63,360
Sundries. ....	10,000

Total ..... \$123,360

#### 2.—COST OF MAINTENANCE AND OPERATION.

The following are the expenses of the electric plant:—

Superintendent of whole plant. ....	\$ 3,600
Four men at power generating station, at \$3 each per day. ....	4,380
Four men at compressor station and sub-electric station, at \$3 each per day. ....	4,380
Repairs to plant, 4 per cent. on capital cost. ....	13,483
Insurance, 2 per cent. on \$150,000. ....	3,000
Taxes, 2 per cent. ....	3,000
Two linemen at \$3 and team at \$1 per day. ....	2,555
Interest on investment, at 6 per cent. ....	20,235
Sinking fund, at 4 per cent. ....	13,488
Clerical work and office expenses. ....	4,000

Total ..... \$72,126

Should the power transmission plant be at a distance greater than ten miles, then the investment cost would be greater, as a step-down transformer station would be rendered necessary, entailing additional capital and additional operating charges. This brings the annual charge per air h.p. delivered at the drill up to \$72.12, and it is very questionable to-day whether in practice, under the most favourable conditions, a rate as low as this has ever been realized. It should be remembered that in almost every mining camp where electricity is used for the driving of compressors, numbers of small compressors are used on each different property, driven by their own separate motor, each entailing a separate operating force, and this, of course, adds largely to the cost of the air h.p. delivered at the drill. If, for instance, the electric h.p. is rented from a central company at a charge of say \$50 per h.p. per annum, delivered at the motor in the camp, it can be seen from the above figures that the

air h.p. delivered at the drill will cost between \$150 and \$200 per annum.

The following are the maintenance and operating expenses of the Taylor air plant:—

Maintenance of pipe line, at 4 per cent. ....	\$ 2,534
One man at station to keep racks clean .....	1,000
Depreciation in plant taken at 2 per cent., on account of absence of machinery .....	2,267
Management and interest .....	10,801
Total .....	\$16,602

Or a h.p. cost of \$16.60 per annum delivered at the drill.

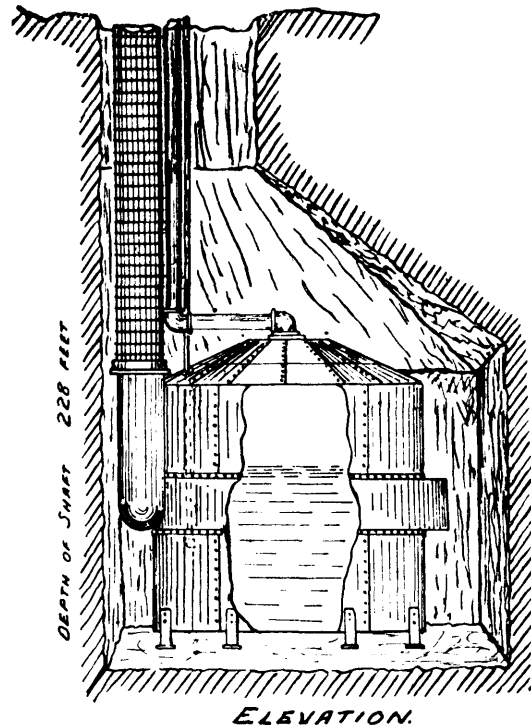
An important point to consider is the relation of the load factor in a power-generating plant. The load factor in a plant reaches its maximum of 100 per cent. when it operates at its full maximum capacity during the whole twenty-four hours. If it operates at less than its maximum capacity, or less than the twenty-four hours, then the load factor cannot reach 100 per cent. The great object in all electric plants is to raise the load factor, because it is found in actual experience that the operating expenses do not increase as the load factor increases, nor do they diminish as the load factor diminishes. Very few electric plants attain a load factor exceeding 50 per cent. In the case of the electric plant given above by Dr. Bell, he considers that if it runs on a load factor of 38 it attains all that can be expected. The point is just this: As has been mentioned, the operating expenses in an electric plant do not fall as the load factor falls. If the load factor falls down, say as much as 60 below its maximum, the operating expenses will only fall about 10 per cent. In the case of the Taylor air system, the operating expenses are merely nominal, being in the case considered only \$1,000 for a man to keep the water racks clean, so that this factor of loss due to a low and variable load factor is almost entirely eliminated in the Taylor air plant.

#### EFFICIENCY OF SYSTEMS.

In the case of the electric proposition there is a series of eight losses from transformation before the drill is actuated in the face of the stopes of the mine: First, from the water to the water-wheel; second, from the water-wheel to the dynamo; third, from the dynamo to the transformer; fourth, from the transformer to the line; fifth, from the line to the step-down transformer; sixth, from the transformer to the motor; seventh, from the motor to the compressor; and eighth, from the compressor to the drill. In the hydraulically compressed air plant under the Taylor system we just have two transformation losses—first from the water to the air in the receiving tank, and from the receiving tank to the drill. The Magog, Quebec, plant is actually running with an efficiency of delivered air of 62 per cent., and Professor Nicholson, of McGill College, Montreal, in a very able treatise on the plant, shows that the efficiency should have been 81 per cent. instead of 62, the difference being largely accounted for by a loss due to ineffective separation, 20 per cent. of the air taken down having escaped with the up-cast water. This was due to the small capacity of the separating tank; and, as Professor Nicholson points out, "all future plants will avoid this loss, and we may expect as high an efficiency from this system as when the power is given off at a turbine jack-shaft, when it is not by any means in such a fit state for transmission as it is in the shape of compressed air." Professor W. C. Unwin, F.R.S., author of "The Development and Transmission of Power,"

says: "I expect that an efficiency of 75 per cent. can be reached when the proportions of the apparatus have been better adjusted. This comparatively large compressor (referring to the Magog plant) is, therefore, an example of a very successful application of Mr. Taylor's system. It works almost automatically, and with very little supervision. It has no moving parts and nothing requiring adjustment, and the apparatus will cost very little for maintenance or repairs."

We come now to consider the respective losses in both systems due to transmission. It is generally believed that electricity has a much superior advantage over compressed air for transmission purposes, that is, that there is a much smaller loss of energy over electric wires than through pipe lines. Compressed air has been badly misrepresented in this respect; this loss has been greatly exaggerated, and the catalogues of air-compressing machinery companies have not improved matters any; in fact, they have done more harm than good as regards the interests of compressed air. The tables published in air compressor catalogues



usually speak only of the loss of pressure; they fail to tell us that the loss of pressure is not necessarily, or to the same extent, a loss of power. As Frank Richards, in his work on "Compressed Air," page 33, says: "The actual truth is that there is very little loss of power through the transmission of compressed air in suitable pipes to a reasonable distance, and the reasonable distance is not a short one. With pipes of proper size and in good condition, air may be transmitted say ten miles, with a loss of pressure of less than one pound per mile. If the air were at 80 pounds gauge or 95 pounds absolute upon entering the pipe, and 70 pounds gauge or 85 pounds absolute at the other end, there would be a loss of little more than 10 per cent. in absolute pressure, but at the same time there would be an increase of volume of 11 per cent. to compensate for this loss of pressure, and the loss of available power would be less than 3 per cent. With higher pressures still more favourable results could be shown."

As a competitor with electricity in long distance transmission, it seems almost like scientific heresy to claim for it equal if not greater efficiency; nevertheless the writer claims that within the 20-mile limit compressed air will compare in efficiency with electric transmission, while so far as operating and maintenance expenses are concerned, the electric proposition is not to be compared for a moment with that of air. Over 15,000 h.p. of mechanically compressed air is distributed to-day throughout the city of Paris, France, being transmitted from a series of stations from three to fifteen miles distant, with a loss of 10 pounds pressure in transmission. This compressed air is used for all kinds of purposes; and additional installations are constantly being made to meet the ever increasing demands.

Professor W. C. Unwin in his work on "The Development and Transmission of Power from Central Stations," page 186, says: "In comparatively short distance transmissions such as those in towns, the loss of pressure in the mains is so insignificant that it may be neglected. In long distance transmissions an accurate estimate of frictional loss is necessary. The author believes that he has shown, using data derived from careful experiments on twenty miles of main in Paris, that long distance transmission of power by compressed air is perfectly practicable." In the work referred to Professor Unwin gives the figures on a 10,000 h.p. plant, where the initial pressure is 132 pounds, and the transmission pipe is 20 miles in length and 30 inches in diameter, and shows that the loss of pressure in such a case would be only 12 per cent., which means a loss of power of less than 6 per cent.

It is not the purpose of the present article to institute a comparison between the work done by mechanical air compressors and the Taylor air compressor, its object being to show the comparison of the latter with electric transmission. As, however, the mechanical compressor becomes a part of the system in the electric proposition, being necessary at the distribution end of the line to convert the electric energy into compressed air, this is the proper place to say a few words as to the relative efficiencies of the product turned out by the mechanical compressor and the Taylor air compressor respectively. The Taylor compressor turns out absolutely dry air—a feat which is impossible of accomplishment by any known mechanical compressor. The great advantages of dry air are sufficiently well known to all air users, so it will not be necessary to dwell on this point here. From the very nature of mechanical compressors, it will never be possible for them to turn out dry air. Owing to the rise of temperature which accompanies all mechanical compression, mechanically compressed air will always contain a higher percentage of moisture than the surrounding atmosphere; in this sense the mechanical compressor acts like a moisture collector, and this moisture is discharged and freezes up in the machinery upon the expansion of the air when used. From actual tests it is found that the Taylor compressor turns out compressed air which is three times drier than the free air of the atmosphere from which it is drawn. This may appear somewhat surprising, but it is nevertheless true. It leaves the compressing tank absolutely dry and cool, its temperature being the same as the water which carries it down. This is the ideal condition to which all compressed air users and manufacturers of air compressing machinery have been striving to attain, and particularly in its application to mining, where compressed air is required for

constant use by the drills, will this advantage of obtaining absolutely dry and cool air be found to be an inestimable boon.

#### 4.—RELATIVE SIMPLICITY OF SYSTEMS AND THE SUPERIOR ADVANTAGES OF OPERATING WITH SIMPLE MACHINERY.

In long distance electric power transmission the apparatus used is of a highly unstable character, necessitating as it does constant supervision by skilled men. The multiplicity of transformers, high potential insulators and other high potential devices in long distance electric propositions renders them exceedingly liable to break-downs, particularly if the transmission line passes through a rough and wooded country. A break-down generally occurs just when the power is most wanted, and when the heaviest load is on. Trouble on the outside line from storms, falling timbers, lightning and other causes is immediately felt at the generating station, with very often disastrous results to the high potential machines and apparatus. If by machinery is implied moving mechanism, such as wheels, shafts, pulleys, belting, gearing, etc., then there is no machinery whatever involved in the Taylor system of air compression. There is not one single moving piece of mechanism in the whole compressing outfit. There is no other system of power generation in the world where these conditions exist; and of all the factors which enter into the consideration of the economic production of power at the present day, the one involved in moving machinery parts is the most important. The aim of modern machinery practice is to obtain the utmost possible simplicity of moving parts consistent with efficient operation. What does the absolute absence of moving machinery mean in a system of power generation? It means the absolute elimination of all repairs and stoppages in the system; and those who have had to do with the management of power machinery can realize what this means from an economic point of view, and can also realize the trouble and annoyance dispensed with by the breaking down of moving machinery very often at the most critical times. In the Taylor air compressing system there is not a single moving axle or shaft, not a single moving wheel or gear, and not a single rod or piston of any kind. The system is as stated, absolutely devoid of anything whatever in the way of moving mechanism; and yet it develops and delivers any quantity of compressed air in a more efficient and perfect condition than if engines and compressors turned it out.

#### UTILIZATION OF SMALL MOUNTAIN POWERS.

There is one factor in this new form of hydraulically compressing air which will prove to be of great value in the utilization of the numerous comparatively small streams found in the mountainous mining districts of the West. It often occurs that in the course of a stream extending over a distance of five miles a series of falls can be obtained, aggregating about 1,000 feet, the stream gathering to itself as it flows downward additional supplies of water from various gulches. To improve these small powers by turbines involves, if the whole head is to be taken advantage of, the loss of the drainage area below the point of diversion, which oftentimes amounts to a large percentage of the whole, or the installation of three or four operating stations, the expense and maintenance of which make the power cost prohibitive. With the Taylor system every pound of water in the whole length of the stream can be used, because compressors can be installed at every few hundred feet, and the air generated

by these compressors delivered into a common pipe line for distribution to the mining camp; or, in order to save expense in the sinking of shafts the upper compressors can make the air at a low pressure and this air can be carried to the lowest compressor, the lowest compressor being used as a "booster" to raise the pressure so that it can be economically transmitted. In this way the entire h.p. of the stream on every foot of its length can be utilized without any addition to the operating expenses and with only a comparatively small increase to the installation cost. The system in other words has all the elasticity of electricity with elimination of its operating and maintenance expenses, and the volume of air transmitted in the pipe line can be doubled even after the compressors are built, by the construction of a second compressor to "boost" up the air made by the first compressor to a higher pressure.

It will also be observed that the Taylor system is by far the more economical in the use of water in the cases we have been considering; and this is an im-

## MINING IN NEW ZEALAND.

BY W. OLIPHANT BELL, T.S.M.

(Concluded from last month).

### SCHOOLS OF MINES.

WHATEVER may be said detrimental to the present Government, founding so many Schools of Mines throughout the colony will always stand as a permanent testimony to their wisdom and foresight in relation to the mining industry. Formerly the acquiring of technical knowledge on metallurgical and mining questions was almost impossible, and certainly beyond the reach of the rising generation, who were most closely in touch with the industry on the various fields. Thanks, however, to the policy of the Government in erecting and maintaining Schools of Mines at the most prominent centres, opportunity has been given to the diligent and studious amongst the young men of the land to acquire knowledge which must be invaluable



KOOTENAY LAKE IN SUMMER.

portant item with the mountain streams of the West, whose water supply is limited, and for the use of which certain fixed charges are made by the Government according to the quantity used. Every year adds to the industrial value of the streams, and therefore any system of power development which involves the more economical use of the water is the system to which preference must be given.

Compressed air is the ideal applied power, and particularly is this the case under the Taylor system. The plant where it is installed is like a part of nature herself, the water being simply directed to flow through an iron or wooden pipe instead of through its former channel. There is practically no wear upon the system, and the power materials are drawn from nature's inexhaustible storehouse. It is incomparable in its simplicity, and is destined to bring compressed air as an applied power to its deserved and proper place—the very front rank in the mechanical world—a consummation impossible of attainment with any known system of mechanical compression at the present day.

in the following up of mining and to qualify for responsible positions throughout the world. The results all round have exceeded the most sanguine anticipations, and the value of these training colleges has been demonstrated beyond all question. The larger schools are each in charge of a competent and experienced director or professor, who is supplied with every requisite for carrying on the various classes. The curriculum is extensive, and embraces all the subjects bearing on the mining industry, while practical experience in the treatment of ores is acquired in the experimental plant, where all the appliances from a stamper battery down to a cyanide plant are located. Here bulk tests are made for companies and individuals from all parts of the colony, and the experience to be thus obtained is naturally of great importance. Examinations are held yearly, and the certificates gained by the successful candidates evidence much interest in the work. The wisdom of this step in establishing mining schools is now so generally appreciated that right throughout the colonies the matter is



receiving the careful consideration of the respective Governments.

#### NEW ZEALAND GOVERNMENT MINING POLICY.

The New Zealand Mining Act regulations may be truthfully termed a positive tangled network of regulations, by-laws, provisos, contradictions, interdictions, etc., etc., which have been rapidly accumulating for years past, and which to-day are almost unintelligible to the most experienced mining authority. Owing partly to the many little inadvertencies contained therein and the general policy of the Government as opposed, broadly speaking, to capital, the feeling of those who have invested money in New Zealand mines is that of growing insecurity. This was first influenced by the action of the Government in resuming the mineral rights on freeholds which had been acquired in some cases from the native owners and had never come under the Crown Lands Act. In many cases these freeholds had been disposed of to English companies, who had erected expensive plants, and were, in fact, induced to take up the ground on account of the freedom from the mining regulations. The Government, with more energy than wisdom, suddenly discovered two years ago that the mineral rights did not go with the actual possession of the ground, and thereupon passed a law by which to validate the claims and it became necessary to peg out and apply for claims in the ordinary way, else the ground was liable to forfeiture. This step produced a very bad effect on New Zealand enterprises, and it has not yet been forgotten. The labour regulations are also very stringent, and a company is compelled to man its ground, otherwise it is liable to forfeiture. The Act provides that one man shall be employed for every two acres composing the area of the claim. These conditions, of course, are evaded by securing protection from the Court; but six months is the limit of such indulgence. The taxation generally is very heavy, and where companies are struggling along to get into a solvent position it becomes nearly unbearable. There is a gold duty of 50 cents per ounce, a high tariff running up to 25 per cent. on mining machinery which cannot be produced in the colony, and numerous other taxes levied on the capital and profits of the companies. The whole system has provoked a feeling of disgust and disappointment, and it is a significant fact that many corporations have entirely withdrawn lately from the country. Capital is a nervous quantity, it is easily affected, encouraged or repelled, and where results are not as sensational as might have been expected, the policy of repulsion is assuredly a suicidal one.

#### GOLD DREDGING.

Before closing this somewhat superficial description of an important industry, I must not omit some account of a new scheme of gold recovery which now promises to reach great proportions and to pay handsomely. The alluvial flats and streams of Otago and the West Coast of the South Island have been more or less exhausted, and it was thought that they could not be further turned over at a profit. By the method of dredging devised and adopted, however, it has been proved that the general drift conglomerate and river beds can be raised and treated profitably at a cost not exceeding three or four cents per ton. This may seem incredible, but it is borne out by practical working, and, in consequence, the potentialities of the industry are of a far-reaching character. The dredge, which is constructed on the ordinary pontoon principle, lifts the gravel, boulders and general sludge from their bed

and dumps the whole on to a grizzly, or screen, which only allows the fine portion to pass through on to the copper tables, where the gold is amalgamated in the usual way. The refuse passes on and is conveyed away over the stern of the dredge, where it is shot into a former excavation. These dredges raise up to 50 tons per hour, and some of them have paid for themselves after a month's work, a matter of between \$15,000 and \$25,000. There are at present a large number at work all over Otago, and the results are deemed so universally encouraging that many more dredges are now in course of construction. The dredging industry, indeed, bids fair to completely revolutionize mining in these alluvial districts.

#### SMELTING IN BRITISH COLUMBIA.

SOME two months ago, it will be remembered, Mr. J. B. McArthur, of Rossland, offered for competition a prize of an hundred dollars for an essay containing the best suggestions in regard to the promotion of the smelting industry in British Columbia. Mr. McArthur's liberal action was, we opine, prompted by the commendable desire of stimulating the enquiry into the conditions militating against the profitable local treatment of the silver-lead ores of the Slocan, but it is to be presumed that the few men in the Province capable of intelligently discussing the question could not afford the necessary time to compete for Mr. McArthur's prize, and we learn with much regret that only one essay was sent in. Moreover, the writer of this paper, Mr. John A. Montgomery, of Trail, has apparently failed to obtain a proper grasp of his subject, and while the essay is, as far as it goes, fair enough, it is lamentably lacking in originality, and as an attempt at the solution of the smelting problem, can hardly be termed a remarkable production. We are indebted to Mr. McArthur for a copy of Mr. Montgomery's essay, which we print *in extenso*:

The question of smelting the ores of British Columbia is one of vital importance to the mining and commercial interests of Canada in general, and of this Province in particular.

The development thus far, in the Trail Creek and Slocan Districts, demonstrates the richness of the country.

In order to make this country prosperous, it is necessary for our mineral resources to be developed with all possible vigour, and it is impossible to obtain the highest results from out vast bodies of low grade ores, with a perfect system of cheap economic smelting.

The smelting of ores at a minimum cost means the opening up of vast mineral areas; and the employment of labour on a large scale. Fully as many, if not more men, are required in the reduction of these ores, as in the original output; therefore, it may be readily seen how the progress of the country is retarded by the lack of proper economic home treatment of the product of our mines.

Smelting like all other industries, cannot be carried on successfully without prejudicially affecting some other interest, unless it is a natural industry of the country, or district, in which it is being prosecuted on, that is to say, unless the economic, or natural conditions, are favourable to the prosecution of such an industry, and if it is a natural industry to this particular district, it must not be hampered in any way, but must have absolute free play. In a country like ours, with its system of trade restrictions and monopolized natural resources, where we are antagonizing,

or being antagonized by our (otherwise) friendly neighbours, by hostile tariffs, it necessarily follows that many industries that in their natures are suited to this country, either do not spring into existence at all, or if they do are crippled, and only live in the most sickly and stunted manner, consequently proving disappointing to the promoters, humiliating to the people in general and at the same time discouraging capital from embarking in other enterprises, for the success of one industry means the success of other industries in the same community.

Smelting is a complex industry; the mere act of separating the metals from the rock substances is not any more complicated than many other less important industries, but from the fact that it has to be carried on in such a large scale, plants of such colossal proportions have to be employed, and such immense quantities of these low grade ores have to be handled to produce a given quantity of the precious metals that it necessitates a very heavy outlay of capital, consequently the economic or natural conditions under which it is being carried on must be considered in the minutest detail, hence many things outside of the smelting plant, become important factors in the smelting process, such as fuel supply, water supply, electricity, fluxing materials, transportation, etc

Nature has certainly endowed this country with all the advantages necessary to the building up of a great smelting centre. The innumerable mountain streams furnish abundance of water supply for power purposes, and the production of electricity, the great coal fields of the Crows Nest Valley (at our very doors), the immense deposits of lime rock, silice and other fluxes that are adjacent to the mining camps and easy of access. Probably no mining country in the world has such magnificent river and lake navigation, open the whole year, and this, with the comparatively small outlay for the building of a number of short lines of railway to connect the different water routes, gives us a system of inter-communication and transportation facilities second to no mining country in the world.

#### GOVERNMENT OWNERSHIP OF RAILWAYS AND TAXATION.

In order to observe the strictest economy in smelting it would be necessary for the State to own and operate the railways, thus the State would save to the people large sums of money now paid to the railways in excessive freight rates, in order that they can pay big dividends on watered stock, and a multiplicity of expenses incident to the present system of railroading

in Canada and the United States. Thus, instead of operating the roads to make millionaires we would only pay rates in proportion to the actual cost of constructing, equipping and maintaining the roads, which would materially reduce the cost of smelting.

The public should retain the ownership and control of the water supplies so that no one company or individual could monopolize them and interfere with the establishment of competing smelters in any one district or locality.

If the coal lands have passed into the hands of private individuals or corporations they should be taxed upon the value of the lands, and not upon the output or value of improvements of the mines; in this way the owners of the coal lands could not combine and limit the production of coal or coke in order to raise the price, for it would then be unprofitable to hold valuable coal lands out of use, so they would have to produce plenty of coal in order to hold their lands profitably, and in order to make a demand for their fuel they would have to reduce the price to such a figure

that smelting and other fuel-using industries could handle it to the utmost advantage, or else they would have to let go their hold upon that portion of the bounties of nature that they could or would not use, and let others have a chance to employ themselves in the production of coal.

At transportation furnished at but a small margin above cost, with access to an abundant water supply for power, electricity and other purposes, fuel supplied up-

on natural and free competition basis, with smelters in close proximity to the mines, all the necessary fluxings easy of access, the success of the smelting industry is pretty well assured. But these considerations are not all that have to be taken into account. There is the construction, equipping and maintaining of a smelter.

#### DUTY ON SMELTING MACHINERY.

We would have free access to the access to the markets of the world for the purchase of smelting plants. Much of the mining and smelting machinery not made in Canada is admitted free of duty, but then with the machinery manufactured in this country exclusively for mining and smelting and that which is used in the business that is not exclusively mining and smelting machinery, including equipment of the assay department will make in the neighbourhood of seventy-five per cent. of the entire plant that is effected by a high tariff. If it is necessary to purchase a complete plant in Europe or the United States, costing say three



RECO AVENUE, SANDON, B. C., 1897.



hundred thousand dollars, there must be added an additional sum of \$56,250.00 besides the freight, before it is installed in its place. If it is purchased in Canada it will cost nearly as much as the imported article plus the duty. The wear and tear of a smelting plant is a very heavy expense, new machinery has to be continually brought in to replace the old; so with the addition of the interest on this \$56,250.00 and the duty on the new machinery required to supply the wear and tear of the plant, this itself cannot but add very materially to the cost of smelting and militate very seriously against the economic treatment of the ores of British Columbia; therefore the duty on mining and smelting machinery should be abolished.

It is not a wise policy to hamper the mining and smelting in this Province for the benefit of a few manufacturers of such machinery in Eastern Canada, for if in an open market we succeed in building up great smelting centres, it is certainly better for the home manufacturer to have a market than to have a protection of twenty-five per cent. and no market in which to dispose of his wares.

Another item of considerable importance is that of local taxation. Our present system of taxation is a fine upon industry. If an individual erects a house, builds a store, or erects a mill or smelter, the assessor levies a tax upon the value of such improvements. Such a tax is a tax upon industry and would be charged to the cost of the treatment of the ores and make the cost of smelting that much higher than it should be, consequently such taxes upon the product of labour should be abolished and a tax levied only on the site value of the land on which the smelter is built, as the land is not the product of labour and has a value attaching to it owing to the presence of the community, which would be a small item compared with a tax on the value of the smelter itself.

#### IMPORT DUTY ON LEAD.

In order to encourage the smelting of our lead ores, and to stimulate the manufacture of lead products in Canada, it is proposed to place an import duty on foreign lead manufactures. This would, no doubt, give an impetus to lead smelting and its kindred industries, and secure for them the home market. But with a population in Canada of but a trifle over 5,000,000 the home market would be a very limited one; and if the lead industries can be carried on in Canada only to the extent of supplying this small home market, and we have to levy a tax on all the users of lead in Canada for the sake of having one or two lead smelters and manufactories of lead products employing a few hundred hands, then it is not a natural industry of this country, and such a tariff would be an unjust tax upon the people of Canada. British Columbia has in all probability a greater area of rich silver-lead ores than any other portion of this continent, all easy of access, with all the conditions favourable to economic smelting. There is no reason why the product of our lead mines cannot be produced cheap enough to compete successfully in the markets of the world; for in order to make lead-smelting in this country a success, we have to seek the foreign markets, and if we cannot do that it will be a failure even if we do secure the home market by the process of a high tariff.

It has also been proposed to place an export duty on the gold-copper ores of this district, in order to secure the smelting of these ores in this country. This is also an unwise proposition, as it would enable the

home smelters to charge the competitive rates plus the duty, consequently only the higher grade properties in this camp could be worked at a profit; and while an export duty might be an advantage to one or two existing smelters in securing to them the ores from the higher grade mines, it would tend to discourage the development of the numerous low grade properties of which this district abounds, and upon which the future prosperity of the country must depend.

One very large smelter, with a capacity of say one thousand tons per diem, with a most efficient management, could treat ores much more economically than five smelters with a capacity each of two hundred tons daily, having equally as efficient managements. Men with the executive ability and scientific knowledge necessary to the successful management of such establishments are high salaried individuals. The cost of smelter management would not increase in a ratio proportionate to the increased capacity of the smelter, for the official staff and management of the two hundred-ton smelter would cost nearly as much as that of the one thousand-ton smelter; therefore the best results would be obtained by constructing smelters with the largest possible capacity in keeping with the requirements of the country.

#### THE QUESTION OF TRANSPORTATION.

Referring again to the question of transportation, it must be observed there are no smelters in the United States competing for the smelting of British Columbia ores, that are enjoying the advantages of Government owned and operated railroads. Therefore, from the point of view of transportation facilities, American smelters possess no advantage not possessed by those on this side of the line. But, on the contrary, we have the Canadian Pacific Railway Company, with its commendable foresight and enterprise, pushing its ramifications into the remotest parts of our mining regions, with its heavy subsidies from both the Provincial and Federal Governments, and for the very reason of economy in operating these great systems of railways and steamship lines under one competent management, it is certainly in a better position to give a lower rate of transportation than any of its American competitors.

In the case of the Government owning the railways, it would have a monopoly of the carrying trade of the country. Having all the trade, it could do it much more economically than if it had only a small portion thereof. Therefore, the benefit of the monopoly and economy in management would go to the people in the form of reduced freight rates; so it is easily seen that many different lines of railways competing for the same trade must increase the actual cost of transportation. But in the case of a private corporation controlling the carrying trade of a whole country, the danger arises from its power to exact exorbitant rates; thus, what would be a blessing in the hands of the people would be a curse in the hands of an individual or a corporation. But in the case of the Canadian Pacific Railway, through the wisdom of the Dominion Government in securing the control of the freight rates in lieu of the enormous cash subsidy to the construction of the Crow's Nest Valley Railway, this evil is to a very great extent obviated, and places the smelting industry of this Province in a better position as regards transportation facilities than any other portion of this continent.

Having access to the natural resources of the country, without the monopolization of natural oppor-

tunities; being untrammelled by export or import duties on the product of our mines, or the manufactures thereof; having all duties abolished on all machinery and appliances used in the process of smelting and mining, transportation rates in the control of the Government, natural conditions all favourable, the smelting business cannot help but prosper, and give such a stimulus to the mining industry of the Kootenays and an influx of capital and population, putting the wheels of industry in motion throughout the length and breadth of this broad Dominion at a rate unprecedented in the history of Canada.

The Canadian Pacific Railway Company, now in possession of the smelter at Trail (the largest in Canada) and doubling its capacity, are reaching out for the ores of the Slocan, the Boundary Creek, and the far-famed Rossland camps. It is, therefore, a duty incumbent upon every citizen of this country to see that all unnatural barriers that now exist to retard the development of the resources of this Province should be removed as speedily as possible, when we will not only secure the output of our mines for the home smelters, but the ores from Northern Washington will flow into the lap of the great smelter at Trail, and Trail will become not only the smelting centre, but the metropolis of the Kootenays.

## THE GREAT SILVER-LEAD MINES OF WEST KOOTENAY.

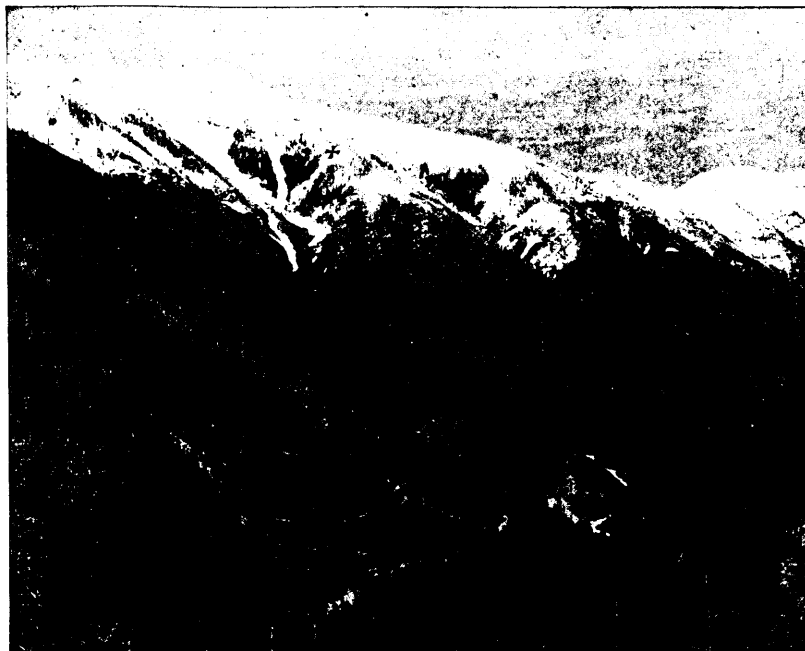
### NO. 1—THE RECO GROUP.

It is only of comparatively recent times that British capital has been invested to any considerable extent in the Slocan, but the success that has been achieved in one or two instances—notably in the case of the Ruth, owned by a Scottish syndicate—the excellent prospects of other enterprises, and to particularize again, the Whitewater, the Queen Bess and the Dundee, (although this last named property is not, strictly speaking, in the same district) owned principally by English investor, is producing the desired effect, and notwithstanding the disastrous *fiasco* attributable to the over-capitalization of and the misrepresentations made concerning the Galena Farm group, confidence in the future of the silver-lead districts of West Kootenay is rapidly growing in strength among British investors. The production of gold in the Province is increasing year by year, but the value of the silver mined is still much greater than that of the former metal, and while comparisons are proverbially odious, it is interesting to note that last year our copper and gold production was worth very little more than one-half of the silver and lead output.

In this rich Slocan district, the most valuable proved mines are situated on the mountain slopes, on either side and overlooking the town of Sandon, and of these the Reco group, to the description of which we intend to confine ourselves in this article, covers an area of rather more than 180 acres of Crown-granted mineral land on the South slope of Reco Mountain, and three

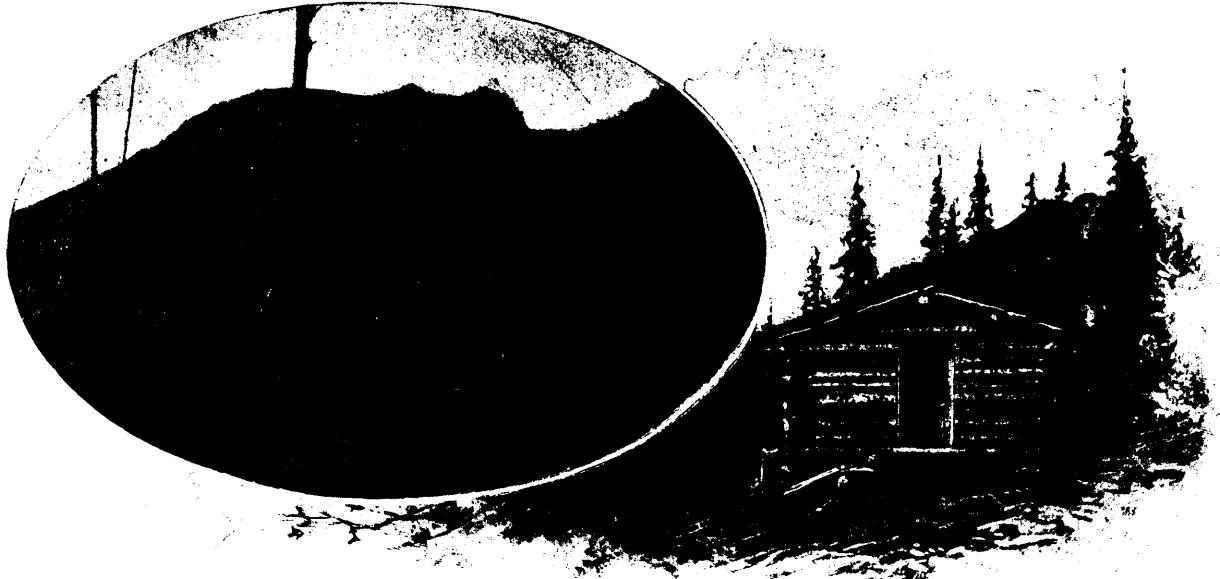
and one-half miles to the East of the town. This property, consisting of five claims, the Reucan, Texas, New Denver, Clifton and Ephraim, is owned by a joint stock company, the President and General Manager of which, Mr. John M. Harris, was not only the original locator of several of the claims, but also the founder of the town of Sandon itself. He is one of that band of plucky and enterprising American pioneer prospectors to whom Kootenay owes so much of its present prosperity, but at least in Mr. Harris' case, we are glad to know, there has been a tangible reward, for the Reco has not only paid, from the grass-roots, enough to defray all costs of its own development, but a very handsome margin of profit has been left over besides.

A characteristic of the ore veins in the Slocan belt, is that they occur as well defined fissures, cutting the slate formation at right angles. These THE VEINS. fissures are from a few inches to many feet in width, and invariably the smaller veins contain the richer material. Two of the three lodes found on the Reco are small, but the ore is of an extraordinary high-grade character. From the Good-enough vein the richest silver-bearing galena yet mined in Kootenay has been encountered, and values up to 700 ounces have been procured, the silver occurring as argentite although much pyrrargyrite with



RECO MOUNTAIN, SHOWING LOCATION OF PROPERTY.

silver is present. The large vein known as the Reucan No. 2, lies about 500 feet to the west, running in a parallel direction. This vein varies in width from five to forty feet, although the average width does not probably exceed twelve feet, and the average values are 175 ounces of silver and seventy-five per cent lead to the ton. Still 700 feet further westward is a third parallel vein known as the Texas lead from which very much higher silver values are obtained, but at the present time the other leads have been much more extensively developed, on account, perhaps, of certain natural difficulties met with in connection with the Texas lead, which will, however, be shortly overcome by the installation of suitable machinery. The Big Reucan No. 2 vein has been opened up with tunnels



RECO QUARTERS, 1892, (View looking West.)

driven in to distances of several hundred feet, the plan of these workings being shown in the accompanying drawings. A tunnel, No. 8, not shown in the plans has also been driven 200 feet below No. 6, and from here an immense quantity of ore is being stoped. From these tunnels there are several hundred feet of drifting. The vein, it is true, has not always proved productive, and in one place the ground is faulted with a lateral throw of the vein for ten feet, but in nearly all the workings the showing of a glistening wall of galena is very fine.

From the report recently issued by Mr. Harris, it is learned that the mine has shipped in the four years of its development 1,690 tons of ore, from which have been extracted as a net yield for the THE VALUES. company 16.8 tons of silver and 598½ tons of lead. The ounces of silver were 404,035 and the pounds of lead 1,196,987. The entire product of the two classes of ore treated has averaged 239 ounces silver and 42.47 per cent. lead to the ton.

The aggregate of deductions for freight and treatment (not inclusive of the cost of packing from the mine to the railroad ware houses) \$42,200, for duty \$9,884.20; for smelter losses of lead \$3,620.85 and silver \$13,131.02 brings the gross value up to \$308,806.44 or \$182.70 per ton. The net value, or profit for the ore, at the point of shipment, averaged \$141,993 per ton.

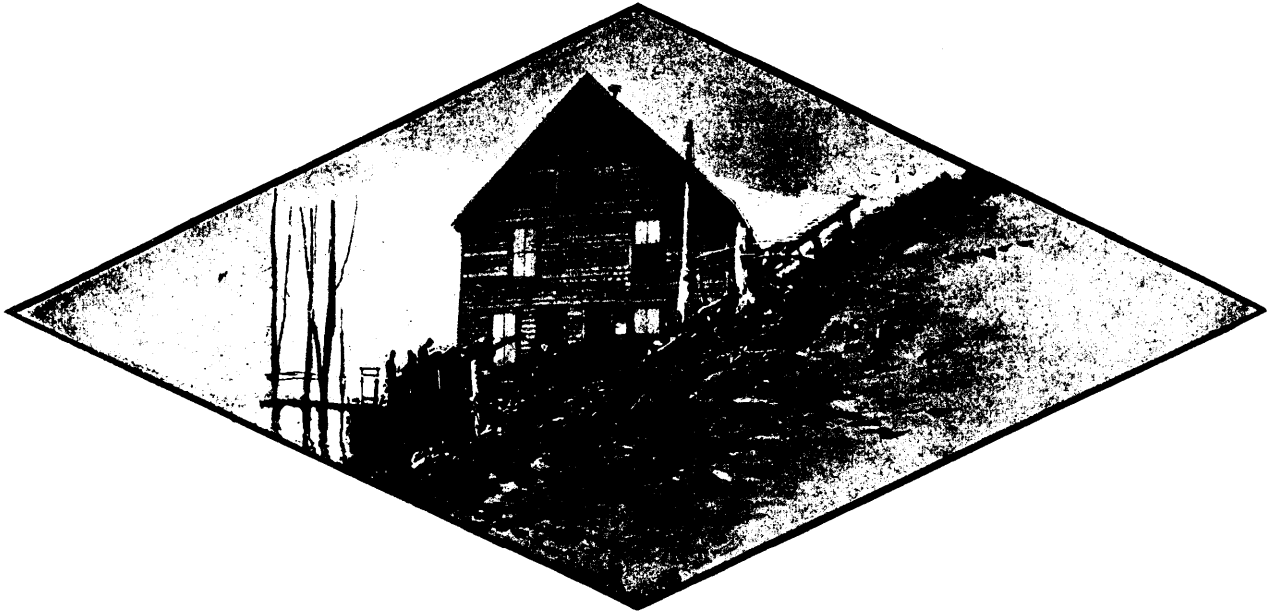
The mine has paid in all \$387,500 in dividends, \$100,000 of which was paid early this DIVIDENDS. year. It is, moreover, expected that a further dividend will be declared ere long, and it is now estimated that not far short of \$2,000,000 of ore is in sight.

The Texas was located by the organizers of the Reco Company, June 14, 1892; and the other claims of the group subsequently; save the THE RUCAN, which was purchased from its PROPERTIES discoverers for \$2,700, July 15, 1892.

The Slocan was then a wilderness, in which subsistence was precarious and work perilous. Wagon roads were unknown, the trails were of the roughest description, and supplies of every kind very scarce and expensive.



QUARTERS 1893 TO 1896.



RECO MINES QUARTERS, 1897.

Beyond the taking of necessary steps to procure the title to their claims, prospectors and purchasers did little or nothing that year; and in 1893 they were further discouraged, despite the high assay values obtained throughout the mineral belt, by the slump in silver values, consequent upon the repeal legislation in the United States and the closing of the Indian mints. Not until the late winter of 1894 did the owners of the Slocan mines begin to demonstrate the repletion and richness of the ore bodies. Capitalists had bonded the Reco property in 1892, then a mere prospect, for \$80,000. After having paid the initial instalment the silver outlook for 1893-4 disheartened them, and they allowed the property to revert.

In November, modest quarters were erected near the Reco vein, at tunnel No. 1, and from that time dates the continuous development commenced without capital.

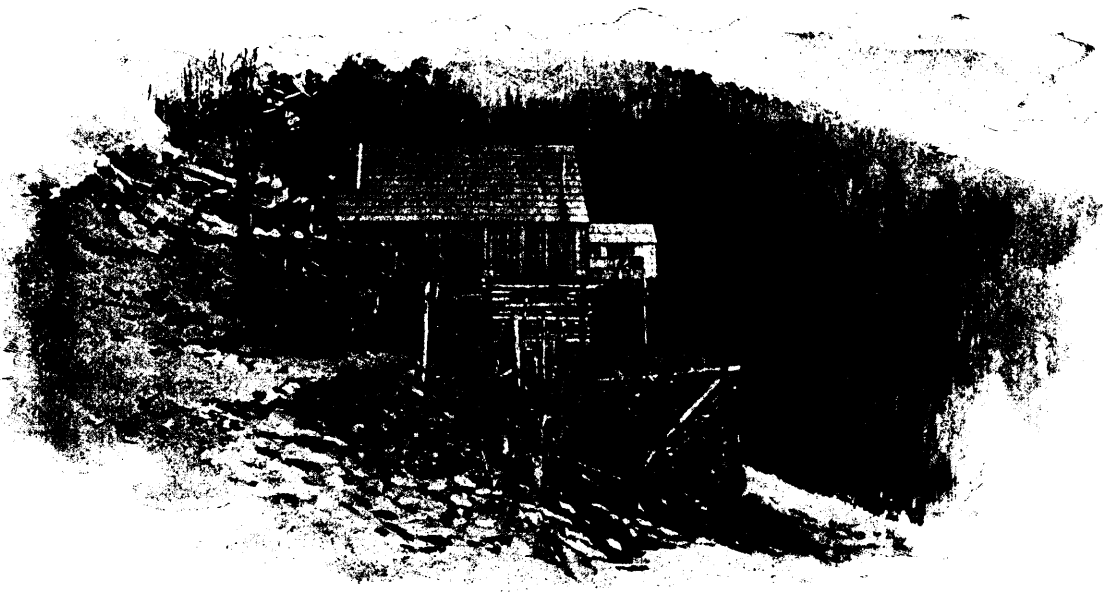
The following year the Reco-Goodenough vein was discovered accidentally, on the line between the Reco and adjoining Goodenough claims, the fissure cutting

clear through the Reco claim. Tunnel No. 2 was started that year, and tapped the ore chute at the grass-roots. The profit of mining the property has ever since increased in precise ratio to the progress made in opening the fissure.

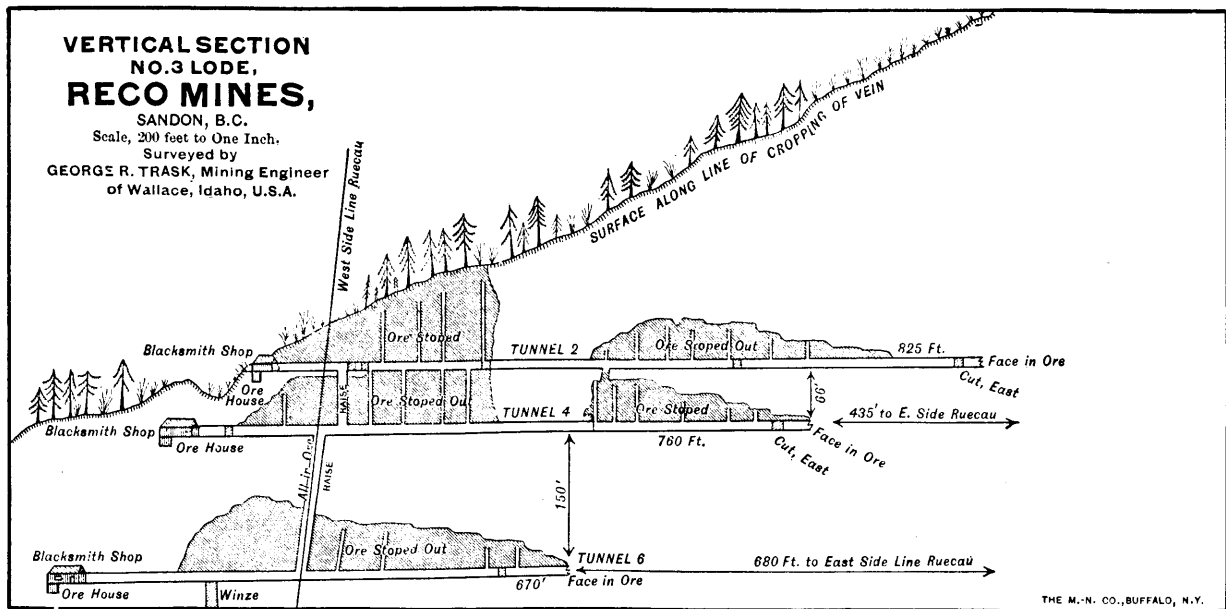
It was deemed prudent to hold the carbonate and mixed ore bodies of Reco vein No. 2 in reserve for the day when a concentrator could be added to the equipment of the mine. No abatement of work was suffered however, in the three tunnels which were planned to open the "Big Lead" for economic production.

Shipments have been steadily continued less than four months each year, making the total period during which the mine has obtained returns from the smelters, not to exceed twelve months.

Circumstances not to be readily overcome rendered it expedient to work the mine under full force and ship ore to market only while deep snow lasted in the mountains. A saving of \$5 per ton was thus made, being the difference in charge per ton for packing in the summer and "rawhiding" over the snow in



NO. 6 TUNNEL SHED AND ORE HOUSES.



VERTICAL SECTION NO. 3 LODE, RECO MINES.

winter, from the mine to the railroad station. By the latter method an average load of a ton, wrapped in a rawhide that slides down the mountain trail, rough locked with a log chain, is taken out by one horse, capable in the open months of the year of packing only an average of 300 pounds over the same course.

Prior to the incorporation of the Reco Company, September, 1896, profits to the amount of \$37,500 were divided among the owners.

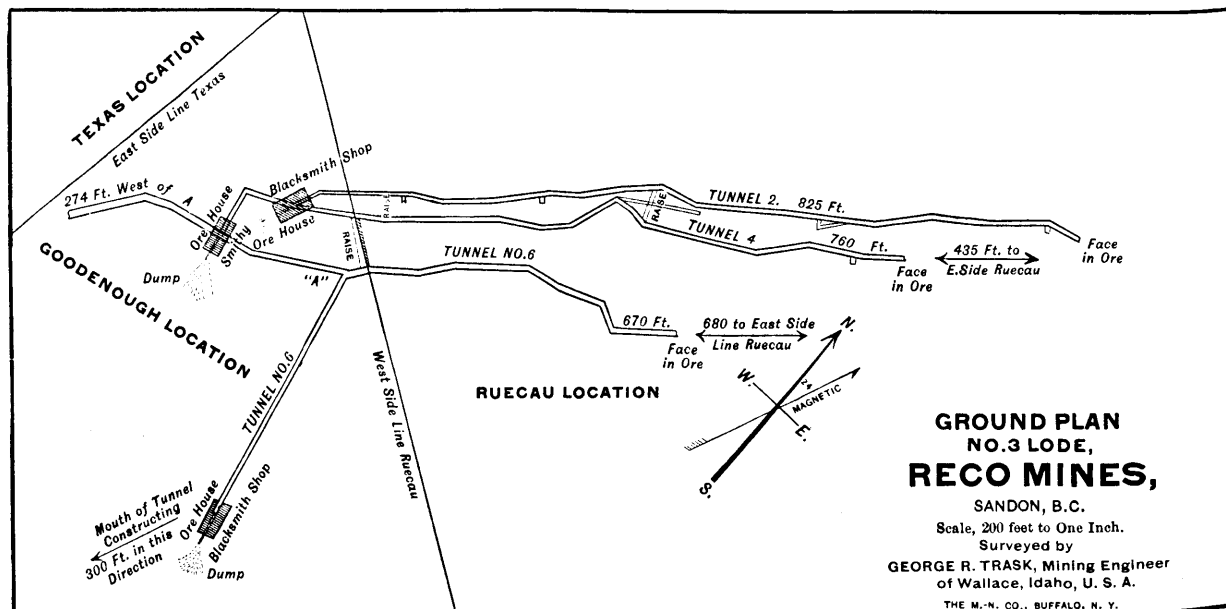
Mr. Carlyle says in his first official report: "The finding of rich veins of ore in either of the series (geological areas of granite and slate in the Slocan), such as of silver-galena ore, points strongly to the fact that as depth is obtained in mining the continuity of the pay chutes is assured. The veins may be "in and out," as the miners term it, or have perfectly barren parts along the fissure, but more or less work will disclose other ore chutes, if this work is pushed ahead along this fracture in the rock, which has per-

mitted the passage of ore-bearing solutions and the formation on ore bodies along it elsewhere." This production has already been verified, and as depth has since been attained the veins are found to be regular and cleaned walled.

A SALTED MINE.

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WE were sitting round the stove in a certain well-known Victoria hotel, one evening last winter. Outside, the night was dismal. The wind sang dirges through the telephone wires, and the rain kept time to it in a cheerful roaring down-pour, that sounded like Niagara Falls through a phonograph. Inside, all was warm and cheerful. Each man had his favourite beverage at his elbow, and yarns of all kinds were



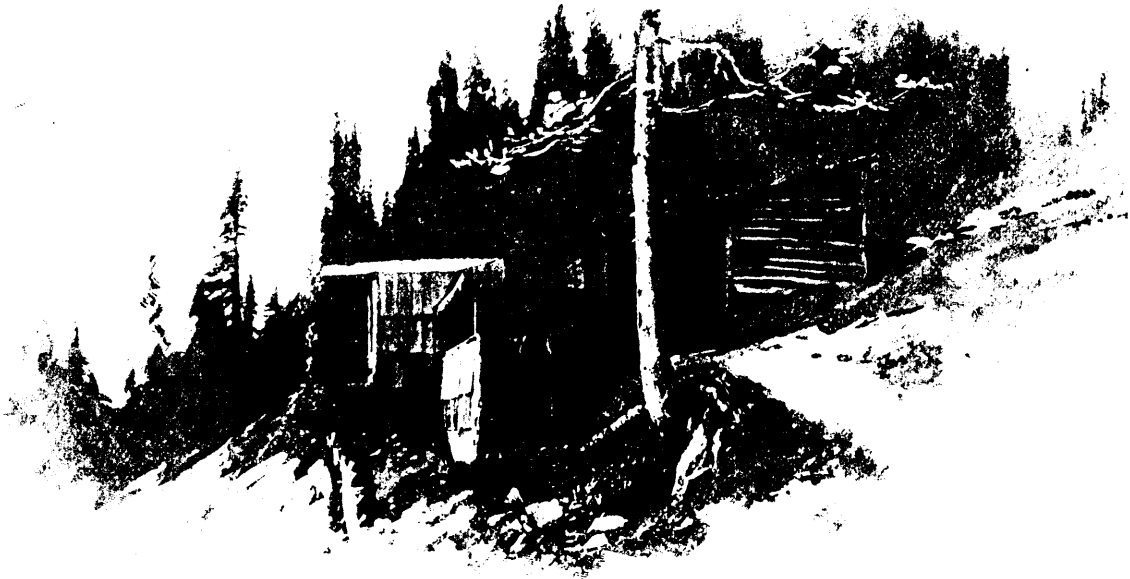
GROUND PLAN NO. 3 LODE, RECO MINES.

passing back and forth. We had discussed the Klondike, to which gold-plated refrigerator more than one of our party was bound; and the discussion had turned on mining rushes of former days. The man with the black beard streaked with gray, who had hitherto contributed but little to the conversation, suddenly straightened up in his chair, drank off his whiskey and proceeded to narrate the following tale:

"I suppose most of you chaps have heard of salted mines?" The gray-headed mining engineer nearest the stove, groaned aloud; the mining engineer with the eye-glass, and the fair mustache and yellow gaiters, and riding breeches, became so interested that he let his cigarette go out. "Well," said the veteran, in that melodious drawl which is only heard in its fullest perfection south of Mason and Dixon's line, "I can tell you one of the queerest salting cases that I reckon ever happened. It cost three men's lives, too, and the salted mines were never sold, neither of them."

"It was back in the early eighties, or late in the seventies, I disremember which, that four or five of us made up our minds to take a trip into the Cour

the saddle, and his bridle reins looks as though they had been in a bath of it. You bet we didn't lose much time, but got away right off. We rode all night, but the sun was up before we found Jim. He was lying on his face near a big rock, and in the back of him, between the shoulder blades, was a great big hole that you could have heaved a family Bible through. He must have been dead some good few hours, for the flies had got to the wound already. Mortal had we felt as we looked at him, for he had been a good man in camp, and having a knowledge of medicine, had helped more than one of us through a tight pinch. However, dead he was, and there was nothing to do but put him under ground decently, with a pile of rocks above him to keep the coyotes off. Tom McPherson, who always had an investigating turn of mind, took a look at the wound while the rest of us were digging the grave for poor Jim. All of a sudden he sings out, 'Come here, boys; what do you think of this?' We goes over, and Tom holds out to us a couple of small chunks of gold, no larger than half a pea. Right in the edge of the wound,' says Tom. 'Boys, I ain't no duly qualified coroner, but I move



d'Alene country, and see what luck we could strike. Well, we got fixed up and started, and for a matter of six months or more we prospected around without finding much. Well, one morning we were camped outside a bit of a settlement (though it called itself a city) and were feeling pretty down on our luck. Neither earth nor rock that would pay could we strike. Jim Tarrant, he hailed from Illinois, got up at last and says: 'Well, boys, guess I'll take a bit of a prospect up the creek.' We sorter joshed him, for never a colour had we panned out on that same creek, which ran right in front of our tent. However, he had made up his mind and was bound to go, and off he starts. The rest of us does a bit of chores round the camp, and prospects a bit among the rock and gravel of the district, and the results were surely most discouraging. It was getting near to dark, when Charley Longstreet says, (he was Jim's particular pal): 'Say, boys, what's come to Jim? He ain't usually this late.' We started to guy him, when right into our midst walks Jim's cayuse, with no Jim riding on top. We looks at one another, and then takes a good survey of the cayuse. Well, there was blood on his flanks and on

we holds a post-mortem examination right here.' With that he goes to work and probes the wound. Well, gents, to make a long story short, I reckon we took nigh three ounces of gold in coarse dust and little nuggets out of that awful wound in poor Jim. Then we stood up and looked at each other. Ben Hawkins, the only chap in our party who went in much for reading, says, slow-like, 'I've read of men being shot with silver bullets, because folks thought they couldn't be killed with lead, but that was hundreds of years gone, and I never heard tell of a man being sent over the divide by nigh fifty dollars worth of gold being shot into him. Let's bury Jim and mark the place well, and then we'll do a bit more prospecting round this district. Only it's men we are after now, not minerals.' Well, we buried Jim, and McPherson says the Lord's Prayer over him, leastways half of it, which was all he could remember, and we starts off. I guess in the next twenty-four hours we prospected that region pretty thorough, but never track nor sign could we find. At last we made up our mind to go into town and get a posse together and see if we could corral the murderer."

"We had got to within a mile of the settlement when we sighted four men riding up the trail. They got within twenty or thirty yards of us, when one of them calls out to Tom McPherson, 'Hullo! Tom,' he says, 'remember the Black Hills?' Tom rides over to him, and the rest of us follows. Tom and the stranger talks awhile, and then Tom explains to us that the party is a Mr. Wilkes, a mining expert going up with his assistant to look at a valuable claim which the other two fellows in his party say they have discovered, and with that he introduces us to the pair of them, a Mr. Jenks, and a Mr. Hilton. I can't say I liked the looks of either of them. Hilton was a big chap, looking as though he had Indian blood in him; while Jenks was a little fair man, with no eye-brows to speak of, who never looked you straight in the face, and seemed afraid of his shadow. However, Wilkes explains that he wants us, and Tom particular, to come along on the examination of his friends' claim, and would pay us well for our assistance, as he was out for a big 'Frisco syndicate. Well, we were pretty short of what they call the sinews of war, by this time, and we asks Tom to tell him how we stand, and about Jim's murder, which he does. Finally we makes a dicker, and goes on. We gets further along the trail, and the worse it grows. I noticed at one place we passed within a mile or so of where poor Jim was killed. We had been riding for maybe four hours, when the big half-breed says: 'Here we are, gents.' There, in front of us was a piece of open ground, with a creek running through it, and fifty yards or so from us was an open cut, by maybe twenty foot long and four deep, and the same wide."

"We pulled up, and the expert gets some water from the creek, and starts in to pan. The two discoverers were watching the horses, and acting kind of careless, like they didn't care whether we found anything or not. We watches the expert, and he washes and washes, and there's something heavy at the bottom of the pan, but it don't look like gold. Finally he gets the dirt clear, and there is nothing but a bit of black sand and half a dozen roundish lumps of some heavy gray looking metal. 'Platinum, by G—d,' says Hawkins, who was rather stuck on his knowledge of minerals. 'Platinum nothing,' says the expert, and he picks out one of the lumps and bites it, and his teeth goes half through it.

"Platinum! ye drivellin' idiot,' he says, 'its ordinary buckshot,' and with that he drops the pan and jumps up and faces the two discoverers of the claim. "What kind of a cold deck are ye ringing in on us?" he roared. 'Did ye bring us this far to show us samples of buckshot?'"

"Well, gents, if ever I saw two men taken aback all standing, it was them two. Their jaws dropped and they stared at Wilkes as if he'd been a ghost, instead of a healthy man with a taste for bad language and worse whiskey. Then the little sandy chap says, suddenlike, and as if the words were dragged out of him, 'By the Lord, Pete, you fired the wrong barrel at that—' but before he could finish the half-breed caught him a blow over the face with the back of his hand, that made the blood flow out like beer from a new-tapped barrel. 'Take that for yourself,' he says, and then he turns round and sees our faces. I guess the same thought was in all our minds, but Charley Longstreet was the first to screech out, 'Them's the devils that killed Jim. Put up your hands, d—n you!' The little man put up his hands quick enough, though

he got a bullet through his shoulder first, for we had all started firing at once. The half-breed was made of different stuff, however. He jerked his revolver out like a flash, and fired at Longstreet, who dropped with a bullet through his leg. Then the half-breed spins round and jumps for his cayuse. He'd almost got his grip on the horn of the saddle, when the cayuse keels over with two bullets in his skull, and I saw the dust fly from the breed's coat as the heavy Colt's bullets struck home. He threw up his hands all right, then, you bet, and pitched forward like a man diving, on top of the dead horse. He was dead enough when we got to him, and a hard-looking corpse he made."

"Well, we'd time to attend to the sandy man then. I guess, from the way he shook, that his sandy hair was all the sand he had in him. He was agreeable to confess all about poor Jim's death, and being in mortal fear of his own neck, he was very open to reason.

"It was like this,' he gasps out. 'Pete and I had heard there was an expert coming from 'Frisco, to look up and buy likely claims. Now me and Pete have met experts before, and did 'em up, and we knew all experts was a soft mark,' and the little devil, wounded as he was, grinned like a shark at Wilkes, who was fairly choking with rage, because he was really a good man at his business. 'Well, me and Pete gets together what gold we could, and puts two or three ounces in one barrel of an old 10-bore double-barrelled shot-gun he had. We loaded the right barrel with buckshot, for grub was none too plenty with us, and we might pick up a deer. We worked hard on that blasted ditch, and had nearly got it fixed for you, Mr. Expert,' and he grinned again at Wilkes, 'when the grub got so low we guessed we'd take a bit of a hunt for something for the pot. We got out some miles from here, when we met your friend as was wiped out. Soon as Pete sees him he grabs me and drags me behind a big rock. 'What's up, now?' says I. 'We ain't no call to fear the Sheriff in these parts, not yet.'

"Hold yer jaw,' says he. 'Confound him, I've got him dead to rights at last."

"The chap comes riding quietly by, and Pete lets him get a few yards past, and then ups and gives him a barrel of the shot-gun. The stranger falls forward on his horse's neck, clutching at the reins, and after a minute or two rolls off on his face on the ground."

"We didn't stop to look at him much. Pete never says a word as we goes back to camp, and I didn't like to ask him what he had against the stranger."

"We finished up the work next day, and shoots the barrel (the wrong barrel, as it turned out) into one spot, and loads up another place or two. You, you blessed tenderfoot, (this to Wilkes), you chanced, by bull-headed luck, to drop on the place where the buckshot was. Pete must have loaded up the stranger with gold instead of lead. That's all I know about it."

\* \* \* \* \*

The black-bearded stranger paused and knocked the ashes off his pipe against the stove.

"What became of the sandy man?" asked somebody. "Oh, we took him into the settlement to have him tried, but the Judge was away and the Sheriff was sick, and the jail wasn't strongly built, anyway, so the boys concluded to take him out and hang him, which they surely did, and they do tell me that Wilkes, the expert, was the most prominent man in the crowd that assisted in the elevating ceremony."

WANDERER.



## THE MONTH'S MINING

## ALBERNI.

The stamp mill at the Alberni-Consolidated did not commence crushing until the 25th inst., some delay having been occasioned by a difference arising between the owners of the mine and the Metallurgical Works, regarding the time when the mill was to have been running, the former contending that Mr. Cowell had not carried out his agreement, and that consequently the contract should be declared null and void. The matter, however, was at length amicably settled, and the mill started to crush rock averaging about \$30, over 2,000 tons of this class of ore being in sight, on the dumps or blocked out. The first clean-up will be made about the 4th of August, and it is confidently expected that the returns will be highly satisfactory. Mr. Cowell has engaged a very competent man from San Francisco to take charge of the mill. Work is in progress at the Regina, the reports from this property being very encouraging. In fact there is a general activity throughout the district, and one correspondent predicts that an Alberni boom is an event to be ere long looked for, numerous investors and representatives of capital having lately visited the camp. Arrangements have been made to open up the claim on Granite Creek, upon which the rich strike of thousand dollar ore was recently announced to have been made.

## QUATSINO SOUND.

(From our own Correspondent.)

SOME twenty-six years ago Mr. John J. Lonsdale, an English mining engineer, made an extensive examination of the coal and other minerals found around this Sound. In his report he mentions the many signs of copper-bearing veins and calls particular attention to the great amount of floats of copper ore in one of the larger creeks entering the South-East Arm from the west, and predicts that valuable deposits of that kind of ore would be found there if prospected for.

Until a few years ago, when a colony, mostly Scandinavian settlers, became established here, the country was an unexplored wilderness, inhabited only by a few Indians. Some of the members of the colony in prospecting the numerous rivers and creeks falling into the different arms of the Sound for placer gold noticed the peculiar "stones" in this creek mentioned by Mr. Lonsdale, but as none of them had had any experience in rock mining they did not for some time realize the meaning of these floats.

However, in due course stray prospectors from the outside came in, and rumors of valuable finds of minerals in other parts of the island were brought in, and in the early summer of last year many of the settlers made locations on the south side of the creek, which very appropriately has been named Canyon Creek, and during the summer a number of locations were made on Comstock Mountain, a precipitous and rough hill rising some 3,000 feet abruptly from the shore on the north side of the creek, and standing in front of a still higher and very rugged range of mountains running parallel with the South-East Arm. Some locations were also made on a river entering the Arm some four miles higher up, and a number on the north side of Rupert Arm.

A Scotch mining engineer, representing an English and B.C. Development Company, spent most of last summer here examining the country, and he became so well pleased with it that he made a number of locations himself, and before he left, late in the fall, he secured bonds on a number of claims on Canyon Creek and Rupert Arm, all of which, however, his company for reasons best known to themselves, failed to accept.

Some work has been done on several of the locations, but in no instance enough to demonstrate to any degree of certainty the merits or demerits of any of them. The work so far has consisted principally of stripping and in some instances shallow cross-cutting of the out-caps. A good trail has been made about two miles up the canyon. Other trails have been working up to the different claims on the mountain.

On the north side of the creek and about 6,000 feet up from the beach at an altitude of about 800 feet, starting close to the creek is a dyke or ledge of a grayish brown granular rock of high specific gravity, probably pyroxene running up the mountain, which here is very steep—in some places 60 degrees—in a nearly due north direction, till it reaches an altitude of 1,800 or 2,000 feet at the south-east corner of the mountain; it then continues along the north-east face of the mountain for about 1,000 or 1,200 feet.

This dyke is in some places as much as 175 feet wide and shows copper in nearly every spot exposed. Down at the creek at its starting point is a big exposure of ore along its east side, from which representative samples have given 10 to 12 per cent. copper, 4 to 6 oz. silver and trace of gold; higher

up the mountain at several places the same character of ore is found along the dyke.

Parallel with this dyke and about 150 feet lower down the mountain, but starting higher up from the creek is a ledge cropping nearly continuously for a distance of about 1,000 feet, and appearing to vary from two to four feet and apparently of very uniform grade; average samples from the outcrop has given 12 per cent. copper, 9 oz. silver, and a trace of gold.

Some stripping and shallow cuts have been made on the big dyke, but on the ledge below no work whatever has been done so far.

There are numerous other outcrops of copper and iron besides these just described, on the north side of the creek, and some of these outcrops assay well in gold. The copper is in the form of chalcopyrite, and the iron, which usually carries some copper, pyrrhotite.

On the south side of the creek, commencing close by the creek canyon, running up the mountain in a nearly north and south direction, is a succession, or nearly continuous, outcrop of copper-bearing rock for a distance of about 2,500 feet. This has at one place been stripped and cross-cut to a depth of 8 to 10 feet, showing decided improvement. From this outcrop spurs in the form of well defined ledges run to the east; one of these has been cross-cut to a depth of 10 feet, showing a well defined ledge of quartz and pyrrhotite carrying a good percentage of copper at the bottom of the cut. The outcrop at the surface is a solid pyrrhotite.

On Marble Creek, some distance up from the beach, locations have recently been made on outcrops of bornite. How much there is of it the writer does not know, not having been there.

Some of the locations on Rupert Arm show well in copper considering the little work done.

The West Vancouver Commercial Company are pushing the exploration work on their coal seams, and they expect to be able to make shipments of their product before fall.

It is the writer's honest belief that here is a profitable field for mining men or for investment, and especially for corporations looking for copper properties. Men who are supposed to know something about ores say that, judging by appearances, the ores found here compare very favorably with those found farther south on the Island, and on the coast of the Mainland. W.

## SHOAL BAY.

The Morrison Mill being erected on the Dorothy Moreton at Phillip's Arm will, it is expected, be in operation in about six week's time. The building of the wire tramway is being proceeded with. The total cost of the plant now being finished is about \$50,000. The whole plant is on the mountain side and is arranged conveniently. At the top will be the crusher fed from a wire rope aerial tram from the mine; below the crusher will be the ten stamp mill, and below the mill the cyanide plant, consisting of twelve tanks or vats, in three series of four each, one below the other. Power will be supplied from three sixty h.p. boilers. Sixty-five per cent. of the gold is free-milling. As soon as the power drills are got to work the lead will be proved to a much greater depth. There is sufficient pay ore in sight, it is said, to justify the erection of the plant now being installed.

The ore of the Dorothy Moreton is of a hard bluish quartz, filled with fine iron pyrites. The gold, it is claimed, yields readily to treatment.

The ledge is about 100 feet wide and there is a pay streak of some 5 feet in width.

## LILLOOET.

A newspaper entitled the *Prospector* has been established in this camp during the month, and is a very creditable publication, the second number containing an interesting descriptive article of the Golden Cache mine. The property is now being equipped with a mill built by the Wm. Hamilton Manufacturing Co. Ltd., Peterboro, Ont., and having two batteries of five stamps each; a Reliance Blake Crusher, and two Frue Vanners run by a 5 h.p. engine. A powerful 26-inch turbine is also to be installed and water-power substituted for steam. When the installation is complete, 400 horse power will be available. The new mill is to start crushing early in August.

Our correspondent, Mr. W. M. Brewer, sends us the following description of the Lillooet Districts:

"Except by the Indians, that section of country drained by the Upper Lillooet River has been prospected but very little, and portions of it not at all. In some of the streams a little placer gold has been found, but at present the water in all of them is too high to sink to bed rock.



I very much doubt if such work would result profitably, because all of the tributaries of the river have their sources in extensive glaciers. Owing to this the beds of these streams are full of immense granite boulders, deposited from slides, and undoubtedly the bed rock is very deep. Some of the Indians obtain placer gold in limited quantities from Green River and its tributaries, which also empties into Lillooet Lake, near the mouth of the Upper Lillooet River, and runs parallel to that river for about 10 miles, but heads at Green Lake, running nearly north from there to Pemberton Meadows.

If ever this section of British Columbia becomes a mining centre of any prominence the falls on Green River, about 3 miles from the valley of the Lillooet, will be very valuable because they will furnish at least 2,500 or 3,000 h p. if improved. The river above the main falls, when visited by the writer recently, was about 300 feet wide, and carried an immense volume of water. This enters a rocky defile, not over 50 feet wide, into which the entire volume of water is forced, over a granite precipice, falling at least 100 feet at one plunge.

The writer has found some immense ledges of partially oxidized quartz carrying large quantities of iron pyrites, but so far as he has tested, yielding no free gold by panning. Some of these are between 700 and 800 feet in thickness, as exposed where cross cut by the waters of one of the tributaries of Green River. As no assays have been made or work done to determine the character of the ledges away from the action of the waters, of course it is impossible to express any opinion as to value, beyond the mere statement that owing to the great extent and favourable surroundings as to water power the fact of being within 60 miles of tide water, close to the rich agricultural land of the Pemberton Meadows, they should prove of value, even though the ore should be of low grade.

The granites which have been referred to, in previous letters, as being the prevailing country rock on the Lower Lillooet River, continue along both shores of the upper river. Indeed, the course of the river follows the trend of the mountains, and is from northwest to southeast.

Occasionally trap dikes have intruded, and wherever this is the case there are good indications of mineralization. But so far as the observation extended, but few ledges or veins of quartz occurred on either side of the river.

So far as could be observed of the geology of the Chilcote Pass, which is nearly all hidden by soil and heavy covering of moss, the formation changed from granite to quartz, diorite and diabase rocks about two miles north of the Lillooet River, and these with occasional occurrences of serpentine, were apparently the prevailing country rock of the section. The iron oxides, and gossan occurring in the mountains surrounding the pass, have given them a brownish red color, which can be seen for miles with the naked eye, and specimens of quartz secured from precipitous mountain sides free from snow, were heavily impregnated with iron pyrites, only partially oxidized. The absence of stakes demonstrated that the prospector had not yet reached the pass, although 20 miles to the north it is reported that there are a great many working on Bridge River and its tributaries.

#### CARIBOO.

A large amount of gold dust, valued at \$73,700, the greater part of which was from the Cariboo Hydraulic Mine, and the result of the first run of the season, was brought down by the B X. stage to Ashcroft, this month. It is believed that the next wash-up at this famous hydraulic property will give even better results, but really large returns cannot be anticipated until the completion of the Moorhead ditch, which is now well under way, but will not be finished till next season. At Horsefly, \$5,000 in dust was obtained from a three days' run, and it is said that the cemented gravel is yielding nearly double the values obtained last year.

#### KAMLOOPS.

(From our own Correspondent.)

**T**HERE have been practically no changes in mining matters here during the past month. Work, which was temporarily suspended owing to broken machinery, has been resumed upon the Pothook. Some fourteen men are employed on this claim, and ore is being sacked daily ready for shipment. Work has also been resumed on the Ajax, in the Jacko Lake section of the camp.

The owners of the Erin are still hard at work cross-cutting. The ore body is very large, though of low grade.

The Kamloops *Mining Record* for June has made its appearance. It is a useful little publication.

The bond on the Copper King was not taken up, but this does not affect the owner's faith in the claim.

A number of claims have been re-staked recently, but no new discoveries of moment have yet been made.

#### VERNON AND VICINITY.

(From our own Correspondent.)

There has been little activity in mining in the immediate vicinity of Vernon of late. Fairview camp seems to be very active, and several companies are getting in more machinery, notably the Smuggler, which expects a 20-stamp mill in a few days. Machinery is also being taken to and installed at Camp McKinney, the Cariboo mine, while several other properties are preparing for plants of various power. Coming nearer home again I may mention a visit to the Kathleen mine, belonging to the Canadian American Gold Mining Company. This is a very good looking proposition lying in a syenite and porphyry formation. The ledge on the surface is a rose-coloured decomposed quartz, which can be traced for the length of three claims, standing out like a wall. Three shifts of men are now at work here, and a tunnel has been driven in about fifty feet. The face of the tunnel shows a rich appearing honeycombed quartz, and from forty to fifty colours can be washed from the drillings, free gold being plainly visible. This property lies about twenty-five miles west of the new town of Peachland.

Work is also being steadily pushed ahead on the Alma Mater, another promising claim belonging to the same company, and some good looking chalcopryite, carrying gold, has been struck at a distance of thirty feet in the tunnel.

Some very fine specimens of galena ore were recently brought into Vernon from the Prince of Wales claim, situated near the Silver Star Mining Company's claims. The Silver Star Company are for the present blocked by water, and nothing can be done until the necessary pumping machinery arrives.

There is likely to be some activity shortly in the vicinity of the Denzy claim, as we hear that the owners of that property intend acquiring some of the adjacent claims.

The owners of the various good looking properties have at last come to the conclusion that in order to test the value of the claims it is absolutely necessary to sink to greater depths than those yet reached in Vernon claims.

#### FAIRVIEW.

(From our own Correspondent.)

At last the Smuggler's directors have arrived in camp, and report that they passed the machinery for the Company's 20-stamp mill on the road. A new strike of rich ore has just been made in this mine, and the property looks first-class.

The drift from the bottom of the shaft in the central ledge of the Stenwinder claim, has just been put through, cutting the North ledge at the depth of ninety feet. This ledge looks very well at the point of connection, showing a little free gold visible, and galena.

#### BOUNDARY CREEK.

There is much activity in this district, and at several properties, chiefly in Greenwood Camp, work is being carried on upon a large scale. Thirty men are now employed at the Old Ironsides—a very promising claim with an enormous showing, owned by a company, the shares in which are principally held in Spokane and Eastern Canada. A ten drill compressor plant has been installed, and the new tunnel has been driven a distance of over one hundred feet, eighty feet in ore. A sad and fatal accident is reported to have occurred at the Snowshoe, in the same camp, a bucket, while being hoisted from a shaft, becoming detached from the rope, and falling on the head of a miner below, death resulting a few hours afterwards. This is the second fatal accident of the same description that has taken place in South Yale within the last few weeks. The machinery for the Mother Lode has, after a somewhat tedious delay, arrived at its destination, and the development of this promising prospect will be prosecuted vigorously henceforward. Work is also proceeding on several properties in White's, Wellington, Summit and Long Lake camps, and all reports are very encouraging.

#### ROSSLAND.

For the first two weeks of the month no shipments were made from the Le Roi, development work being in progress. The mine, however, commenced shipments on the 11th,

and 900 tons of ore were sent to the Northport smelter during the five succeeding days. The War Eagle in one week, made the record shipment of 1,328 tons, and the Centre Star has also largely increased its shipments. The final payment of \$214,000 was made this month on the Josie by the British America corporation, the former shares holders thus receiving 30.27 cents per share. A good strike is reported to have been made in the Summit No. 2, in the west drift, at the 300-foot level. The New Gold Fields of British Columbia presented this month the annual report on the Velvet, on Sophie Mountain. The total development work on this property amounts to 1,011 feet, and it is estimated that there are 15,000 tons of first and second-class ore in sight. About eighty-five per cent, of the ore is second class and concentrating, concentrates averaging \$20 per ton, net profit. Development work is proceeding on the Big Four, Grant, Evening Star, Mascot, Gertrude & Coxey, No. 1, Southern Belle, Abe Lincoln, Victory and Triumph, and other mines of less prominence.

## NELSON.

(From our own Correspondent.)

There appears to be very little news to chronicle in this district in connection with mining matters. The spring was late and prospectors have hardly had time to look round the country, so far. Those claims that were pretty well developed, such as the Athabasca, the Fern, the Poorman and a few others, have been steadily at work getting out ore, even if not shipping all of it; while the less developed properties have also been steadily working and improving their value.

On the Poorman a very rich strike was recently made in the 600 foot tunnel, at a depth of 300 feet where the ledge was crosscut. At this point the ledge shows five feet of milling ore, a fair sample from which assayed a little over \$100 to the ton. The importance of this strike can scarcely be overestimated, since it is a practical demonstration of the fact that the ledges in the gold belt to the southwest of Nelson go down. The Poorman has been worked in a small way for several years, returning handsome profits to the owners for the work expended upon it. About a year ago the company was reorganized and extensive development work was taken in hand, resulting in the recent lucky strike, which is sufficiently encouraging to warrant doubling the present price of stock.

On the Granite claim, adjoining the Poorman group, on which the ledge was discovered several months ago by ground sluicing, extensive work is now going on. The ledge on the Granite is identical with that on the Poorman, and the company operating the mine have made arrangements for putting in an extensive plant.

A car load of machinery for the mill at the Athabasca mine has arrived at Nelson and is being hauled to the site. A wagon road has been completed to the mine with an easy grade from the Silver King road, and a tramway is being built from the mill to the mine. The Company intends to take the water from Give Out Creek by flume 2,400 feet long to supply power for the works. The mine has ceased shipping for the present, the ore being stored awaiting the completion of the mill. Development work is being pushed ahead, and several new ledges of good ore are being opened up on the property.

Excellent reports have been received from the Tern and another dividend may be looked for shortly. The vats to be used in connection with the treatment of the slimes by the Pletan-Clerc process will shortly be completed. This will mean a considerable saving of the product. The Company, it is stated, intends putting in two Pelton water wheels for the purpose of furnishing power which will minimize the cost of operations. A force of forty men is at work and in addition to development work, about three tons of good ore are being taken out daily. No. 4 tunnel has been pushed to within 50 feet of the main chute and another ledge has been discovered on the property.

## SLOCAN.

The Payne is now shipping very heavily, and during one week of July, twenty-four cars were laden with ore from the mine. A recent strike of six feet of clear ore is reported. The Ruth and Slocan Star are also making large weekly shipments, and altogether the output for the month is decidedly gratifying. Ten Mile is coming very rapidly to the front, and probably the most marvelous chute of ore known in the northwest is that being worked on the Enterprise group on this creek. From the top showings on the group to the tunnel on the Iron Horse, there is a bona fide vertical depth of ore of 1130 feet, with a width in No. 2

tunnel of 800 feet. In some places the ore is 2½ feet in width and of uniform richness. There is at present \$2,000,000 worth of ore blocked out. Three separate parties are seeking to purchase the property, and its sale is expected shortly. Eleven hundred tons of ore at the lake is being shipped in bulk to Omaha, and this will realize \$200,000.

On the Ohio, situated on the summit above the Enterprise, is another large showing. The Mollie Hughes, recently acquired on a \$40,000 bond by the Northwest Mining Syndicate has a promising future before it and development work is proceeding satisfactorily. The ore is found in a continuous strong ledge that outcrops for fully three miles, but the value of the ore varies greatly. A trial shipment lately made netted the owners \$96 per ton, but other ore that runs over \$100 in gold alone has since been taken out.

Our New Denver correspondent writes: "The most important feature of the month here was the sale of the Tyro & Bosun claims, adjoining the Fidelity, to the Northwest Mining Syndicate, for \$7,500 cash. The Mollie Hughes continues to look well, and the California is making a shipment. The Enterprise has begun heavy shipments also, and intends to ship over 1,000 tons altogether." He adds that the whole Slocan is now somewhat depressed.

## EAST KOOTENAY.

(From our own Correspondent.)

**WILD HORSE CREEK.**—Mr. Young, the manager of the Invicta Placer Co., whose properties are situated on Wild Horse Creek, five miles east of Fort Steele, has just returned from England, where he has reorganized the Invicta Co., which will be known in the future as the "East Kootenay Consols, Limited."

It is Mr. Young's intention to put in a \$40,000.00 plant for the economic working of the Old Invicta placer grounds. A force of 30 men will be employed until late this present year on the placer claims. It is also the intention of the Company to operate a group of six claims in the near vicinity of the placer claims.

**ST MARY'S.**—Engineers are at work running try lines to the North Star line. Railroad construction will be commenced at an early date by Messrs. Mann & McKenzie, in order to get the branch in operation, when shipments from this great mine will be continuously made.

The town site of Kimberly, which is situated at the foot of the North Star Hill, and is between it and the Sullivan Group, has been recently purchased by an English syndicate, who are arranging for 500,000 feet of lumber, to be placed on the ground at an early date. A large store and hotel will be erected immediately to meet the demands of the district.

**THE SULLIVAN GROUP.**—On this property, distant two miles from Kimberly, recently in cross-cutting a heavy iron capping a large ledge of iron and galena was opened up and upon continuing the cut across the ledge, which is still some fourteen feet wide, it was indicated that the galena would extend clean across the ledge. The hanging wall is free and shows a good tale gauge. The Sullivan Group is a low grade proposition, assaying from traces to 40 oz. silver, and 60 per cent lead.

**ST. MARY'S DISTRICT.**—The Goody Claim, situated some 5,000 feet distant from the Sullivan Group, shows up 1 to 2 feet of copper and copper carbonates. The strike of the vein is toward the contact of syenite and diorite and indications of the existence of a large body of copper in the vicinity are very promising.

**MORGAI RIVER.**—The Ben d'Or claim on Weaver Creek, a tributary of Morgai River, upon recent development, has shown up two ledges of free milling gold quartz, and the fact that the ledges have been uncovered 1,000 feet west of the original workings and shows similar value of character of ore seem to promise that this will prove to be a very valuable property.

## PUBLICATIONS.

**"THE Blasting of Rock."** By A. W. Daw and Z. W. Daw. Published by E. & F. N. Spon, London, England, and Spon & Chamberlain, 12 Cortlandt Street, New York.

Rock blasting, the authors say, is the science of splitting or loosening rock, etc. We should rather call it an art. This notwithstanding, the book contains a very clear enunciation of the principles underlying one of the most important operations of mining and quarrying.

The chapters dealing with fuses and explosives also contain much valuable information, but we do not agree with the authors' remarks on metallic fuses. They say "these fuses

have many objectionable features, and cannot be recommended." Metallic fuses have advantages possessed by no other fire-fuses, they cannot hang fire and they give out much less smoke than any tape or guttapercha fuses. The latter are all liable to hang fire, and further, they give out great volumes of smoke. The former is everywhere dangerous, whilst the latter is most objectionable in mines, especially if the ventilation is not very good.

Altogether the book is one which anyone connected with mining and quarrying may read and consult with profit.

"The Mineral Industry: Its Statistics, Technology and Trade in the United States and other countries, to the end of 1897," Vol. vi, edited by Richard C. Rothwell. The Scientific Publishing Company, New York and London, 1898. Price, \$5.00; 983 pages.

The dimensions to which this wonderful annual have now grown render any attempt upon our part at a comprehensive review out of the question, even if such an undertaking were required. But the sales of the "Mineral Industry" can no longer be affected by journalistic praise or censure, for since the first volume appeared six years ago this literary "concentrator" of mining statistics and information has been regarded by professional men and technologists, the world over, as the greatest authority on all matters respecting the great industry with which it deals so comprehensively. Indeed, no higher testimony to this fact could have been accorded than the recent award by the Societe d' Encouragement pour l' Industrie Nationale of France, of its gold medal to Mr. Rothwell the eminent editor, in consideration of the services rendered to industry through the publication of this great work.

In the present volume the article on "Fatal Accidents in Coal Mining in the United States and Canada," by the eminent authority, Professor Hoffman, is of particular interest to British Columbians although the statistical returns were only procurable for the two years, 1895-96. The tables meanwhile, show that the average of mortality per thousand was for this space of time 3.35, but that the Chinese were subject to a very much higher rate than the whites, for while the mortality among the former reached 4.81 per 1,000, the mortality of the latter was 3.14 per 1,000. In a summary statement of fatal accidents in bituminous coal mining in the principal coal fields of North America from 1887 to 1896, British Columbia is classed with the State of Washington, and this field is described as showing the highest rate of mortality with an average of 8.65 per 1,000, while the lowest, the Pennsylvania, Ohio & Maryland field is only 1.78 per 1,000. It is stated, moreover, that roughly speaking, the further west the coal mines are located the higher the mortality from fatal accidents, but no reason is given to account for the fact, which is certainly borne out by the figures given, if this province be excepted. The average mortality of Washington for instance, is stated to have been for the five-year period for which the returns are available—1892-96, the highest on record, or 10.7 per thousand, but it is well worth noting that while in 1892 the rate was 18.58, in 1896 it was only 2.98 per 1,000. Meanwhile, it will be interesting to learn how far the occurrence of fatal accidents in coal mines is to be attributed to local conditions inherent in the coal formations, to race, nationality or condition of servitude, to a more or less efficient system of state inspection, to a more or less rigid enforcement of the local liability law, to improved methods in mining operations, or to the numerous other factors in connection with coal mining in North America, and probably in the next volume of the *The Mining Industry* these matters will be fully treated upon.

#### SHIPPING MINES.

Following are the ore shipments from the mines adjacent to Rossland from January 1, to July 16, 1898:

	Tons.
Le Roi .....	23,870
War Eagle .....	14 914
Centre Star .....	1,596
Poorman .....	453
Iron Mask .....	1,963
Cliff .....	140
Velvet .....	350
Monte Cristo .....	416
Sunset No. 2 .....	15
Deer Park .....	6
<b>Total</b> .....	<b>42,936</b>

The Rossland ore output is increasing rapidly, and it is expected that the Columbia & Kootenay, the Centre Star and the Josie will before long be added to the list of shipping mines. The War Eagle is now shipping over 1,000 tons per week, and it is announced that the Le Roi will increase its daily output to 300 tons.

#### SLOCAN.

Total shipments for half-year ending June 30th, from Sandon:

	Tons.
Payne .....	5,060
Ruth .....	2,009
Slocan Star .....	978
Last Chance .....	879
Reco .....	420
Queen Bess .....	175
Sovereign .....	40
Ajax .....	33
Goodenough .....	20
Wonderful Bird .....	7
Fountain Fraction .....	5
Argo .....	2½
<b>Total</b> .....	<b>9,623½</b>

Although the winter and spring have been anything but favourable to mining operations in these parts on account of the heavy snow fall, numerous slides and consequently bad roads till lately, the shipments from this section are very favourable.

The Queen Bess in addition to the above shipped 610½ tons at Three Forks; the Idaho 1,880 at the same place. At McGuigan there have been shipped in the same period 385 tons by the Cariboo-Rambler; 50 tons by the Antoine, and 45 by the Dardanelles.

The Collector of Customs at Kaslo kindly sends us the following returns of ore exports for June:—

	Pounds.
Ruth .....	450,000
Slocan Star .....	400,000
Whitewater .....	350,000
Black Diamond (Ainsworth) .....	60,000
Antoine .....	31,400
Wonderful Bird .....	4,970
<b>Total</b> .....	<b>1,306,370</b>

This ore was divided amongst the different smelters as follows:—

Everett .....	660,000
Pueblo .....	550,000
Kootenay Ore Co., Kaslo .....	96,270
<b>Total</b> .....	<b>1,306,370</b>

#### KASLO CLEARANCES.

During the month of June the ore clearances (ore shipped via Kaslo) at the Kaslo customs house were as follows:—

Gross Pounds Ore .....	1,174,100
Value .....	\$38,826
Pounds Lead, Contents .....	536,550
Ounces Silver, Contents .....	46,695

#### SHIPPED VIA NAKUSP.

Gross Pounds Ore .....	1,200,000
Value .....	\$43,604
Pounds Lead .....	541,200
Ounces Silver .....	54,960

#### TOTAL.

Nakusp clearances are reported to the Port of Kaslo. The total clearances at Kaslo and Nakusp of June ore are given in the following table:

Pounds ore .....	2,374,100
Value .....	\$82,430
Pounds lead .....	1,077,750
Ounces silver .....	101,655

The shipments of ore over the Kaslo & Slocan Railway from July 9th to July 12th inclusive, were as follows:

Mine.	Destination.	Pounds.
Payne .....	Puebla	400,000
Ruth .....	Everett	40,000
Whitewater .....	Everett	32,000

**Total** .....

472,000 pounds, or 136 tons.

KASLO CUSTOMS COLLECTIONS.

At the port of Kaslo during the month of June the collections were:—

Kaslo .....	\$2,819 66
Nakusp .....	2,592 94
Ryckards .....	34 00
Total .....	\$5,446 60

COAL SHIPMENTS.

The New Vancouver Coal Mining & Land Co., Limited.

FOREIGN SHIPMENTS, JUNE, 1898.

	Tons.
2—Str. Wanderer..... Port Townsend.....	40
2—Str. Tyee .....	70
4—S.S. Titania..... San Francisco.....	5,379
6—Str. Pauline Warner..... Alaska.....	10
6—Str. Dorothy.....	7
8—Bark Seminole..... Honolulu.....	2,024
9—Str. Wanderer..... Port Townsend.....	50
10—S.S. Burma..... San Francisco.....	4,523
12—S.S. Manauense..... Alaska.....	219
13—Str. Columbian.....	102
15—S.S. Titania..... San Francisco.....	5,394
15—Str. Amur..... Alaska.....	178
15—Str. Canadian.....	150
15—Str. Tordenskjold.....	581
16—Str. Ernest A. Hamill.....	94
17—Ship Tacoma..... San Francisco.....	2,600
22—Str. Wanderer..... Port Townsend.....	46
22—S.S. Burma..... San Francisco.....	4,445
24—Str. Sea Lion..... Port Townsend.....	30
25—Str. Tyee.....	50
25—Bark Top Gallant..... Honolulu.....	1,721
26—S.S. Titania..... San Francisco.....	5,444
28—Bark Carrollton..... Dutch Harbour, Alaska.....	2,326
29—Str. Sea Lion..... Port Townsend.....	27
Total .....	35,510

FOREIGN SHIPMENT ENDING 20TH JULY, 1898.

1—S.S. Pak Shan..... Tacoma, Wash.....	542
3—Str. Tyee..... Port Townsend.....	45
6—Str. Tyee.....	33
7—S.S. Burma..... San Francisco.....	4,453
8—Bark Sea King..... Honolulu.....	2,383
9—S.S. Titania..... San Francisco.....	5,584
9—Str. Pioneer..... Port Townsend.....	33
12—Ship C. F. Sargent..... Honolulu.....	2,704
13—Str. Wanderer..... Port Townsend.....	35
15—S.S. Fastnet..... St. Michael's, Alaska.....	224
18—S.S. Burma..... San Diego, Cal.....	4,560
20—S.S. Titania..... San Francisco.....	5,580
Total .....	26,176

THE UNION COAL COMPANY.

The total shipment of coal from Union to foreign ports, from the 20th of June to the 13th of July, was 16,736 tons.

THE METAL MARKET—JULY.

Compiled from Special Telegraphic Quotations to the B.C. MINING RECORD from the *Engineering & Mining Journal*, New York.

SILVER.

Business this month has been, relatively speaking, good, taking into account the usual dullness of the season. For the last week of June the price of silver continued steady at 59½, but dropped on the 1st of July to 58¾. This was the lowest point reached during the month, the highest being 59¾, recorded by telegraphic message received on the 24th. The average price for July will be several points higher than that for June, which was 58.61, and it is gratifying to note the improvement since March, when the average price was 54.90. The war has undoubtedly influenced the market. Spanish purchases having been heavy, but there is every indication that in August the price of silver will continue to steadily rise.

COPPER.

There has been a slight downward movement in copper, the commencement of the month being decidedly dull. The lower prices, however, later had the effect of creating more interest and during the past two weeks a considerable amount of business has been done, consumers' orders coming in freely. The price of lake copper to the 24th of July was 11⅞ and 11¾, with little variation. Our latest reports being 11⅞, 11¾ and 11½ for the three days ending July 23rd. The average price for June 11.89, for May, 12.00, and for April 12.14, showing a bad falling off for June and July.

LEAD.

A fairly large business has been done. Consumers of late have entered the market to a considerable extent and prices have been higher than for any time this year, the closing quotations for the first week in July being 3.95c. New York and 3.82½ @ 3.85c. St. Louis. During the second week there was a further rise to 3.97½ @ 4c. New York and 3.97½ @ 3.90c. St. Louis, but prices somewhat eased off subsequently, quotations for the week ending July 24th being according to our telegram 3.95 @ 3.92½c. The average price of lead for June was 3.82 as against 3.64 for May.

SPELTER.

Spelter has ruled somewhat irregularly, with a slight fall in prices since the beginning of the month. Our latest quotations are 4.50 @ 4.55 New York, and these figures can be shaded for August and September delivery.

The imports of specie at San Francisco from British Columbia for the five months ending May 31st were \$107,163.

THE ALBERNI MINERS' PROTECTIVE ASSOCIATION.

MR. Chas. L. Selz, Secretary and Treasurer of the Alberni Miners' Protective Association, writes: "A meeting of this Association was held at Alberni on the 16th inst., the principal business being the election of a director to fill the vacancy caused by the lamented death of Mr. F. P. Saunders, the pioneer mine-owner and settler of the district. A ballot resulted in the election of Mr. Waterhouse, who is in every way qualified to act in the capacity of a director. The Association's membership was increased by the enrollment of fifteen applicants, making a total of thirty-nine on the list of active members. It was decided to distribute in the coast cities and elsewhere, printed pamphlets and circulars descriptive of and drawing attention to the mineral resources of Alberni, Messrs. Colley and Dickinson, of the West Coast assay office being asked to take charge of the Bureau of Information. The organization of this Bureau was placed in the hands of Messrs. Ran, Waterhouse, Cowell, Garrard and Brown. Before the meeting terminated a resolution was unanimously passed, expressive of condolence and sympathy with the widow of the late Mr. Saunders, whose work and activity had accomplished so much in advancing the interests of the district. The Association will meet again early in August." We are asked to state that Mr. Selz will be happy to give enquirers any information in his power with regard to Alberni and its mining potentialities.

IMPROVEMENTS IN THE TRUAX ORE CAR.

OUR attention has been called to some recent improvements that have been made in the Truax ore car, and which have been patented in Canada. These improvements consist in placing the fulcrum lower on the car sides than shown in the former patent, and extending the arms backward to the rear of the turntable center, and making the connecting arm or upturned arms very short, whereby there is no chance for them to become bent or disarranged. In the previous construction the parts corresponding to the arms were of considerable length, and it sometimes happened that in raising the car after dumping, the hooks would catch on the top of the cross-bar across the door, with sufficient force to bind the upright arms by the downward thrust, thus bending the upright arms backward so the hooks would not fasten the door properly. The improvements have overcome all these difficulties, and the Truax ore car, 1898 pattern, is now undoubtedly the best car on the market.

## JULY DIVIDENDS.

**C**ARIBOO Mining & Smelting Co., Camp McKinney, July 2nd, 2 cents per share, \$16,000. This is the nineteenth dividend paid by this Company and the second this year, a like amount having been paid to shareholders in May. The property has now, therefore, yielded \$220,965 in profits since 1894, or at the present price of shares about one-half of the capital invested. With the additional machinery that has lately been installed, yet more satisfactory results may be anticipated.

## CORRESPONDENCE.

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

## THE DUNCAN MINES, LTD., AND THE QUEEN BESS.

**T**O THE EDITOR:—In your July issue a list is given of those British Columbian Mining Companies brought out in London during the past year, together with the names of those Companies under whose auspices they were formed.

In this list I notice an inaccuracy which I shall be glad if you will correct in your next number. I allude to the statement that the Queen Bess Proprietary Company, Ltd., was floated by the Duncan Mines, Ltd. As, however, that Company had but a secondary position in connection with the matter in question, this statement, being only partially true, is misleading.

The option on the Queen Bess Mine was obtained by me, solely on behalf of the Dominion Mining Development & Agency Co., Ltd. It was only subsequently, and purely as a matter of courtesy (in return for the past services of their Captain Duncan), that my Company agreed to allow the Duncan Mines, Ltd., to participate in the transaction; and, while it is true that the latter Company are equally interested with ourselves in other respects, the whole of the arrangements in the first instance were made by the Dominion Mining Development & Agency Co., Ltd., who are, therefore, responsible for the flotation.

Further, as it has been stated elsewhere that Mr. Drummond and Captain Duncan are respectively Managing Director and Engineer for the Queen Bess Proprietary Co., Ltd., I take this opportunity of informing you that neither the one nor the other has any official connection whatsoever with either the Queen Bess Proprietary Co., Ltd., or the Dominion Mining Co., Ltd., unless, it may be, as any ordinary shareholder.

Yours very truly,

C. KINGSLEY MILBOURNE,

Managing Director for the Dominion Mining Development & Agency Co., Ltd., and the Queen Bess Proprietary Co., Ltd.

## MORE WILD CATS.

**T**O THE EDITOR:—In the *Financial Guide*—a journal for investors? (to avoid)—of the 1st of June, is an extended notice of the British Columbian Mineral Properties, Ltd., *inter alia* the following occurs:

"An opportunity has presented itself of acquiring a third property, situated in the Nelson Mining Division, which would appear to be of the greatest promise and value. It has been reported upon by Mr. P. R. Ritchie, M.E., and by Colonel E. S. Topping, M.E., the locator of the now world-renowned Le Roi Mine." Again "Mr. P. R. Ritchie, the Consulting Engineer to the Klondike and North West Territories Exploration Company, Ltd., left London in the early part of this year for British Columbia, with a view to forming and thoroughly equipping an expedition to explore the celebrated Klondike and Yukon Gold Fields." In another part of the notice the following is found: "Colonel Topping, who has a reputation second to none in British Columbia as a shrewd and clever Mining Engineer."

It would be interesting to know if the P. R. Ritchie here referred to as an M.E., is the same person who until recently was a Provision Merchant in Vancouver. The investing public might also like to hear from the *Financial Guide* whether Colonel Topping, M.E., is the person of that name who recently supplied the Columbia River steamers with cord wood and who kept a boarding house and hotel at Trail.

For my part I should like to ask both these gentlemen whether they know the first thing about a mine and whether either of them ever had five minutes' training as a miner, much less as a Mining Engineer.

Colonel Topping was not the locator of the Le Roi. The claim was given to him by a French-Canadian on condition that he (Topping) would pay the recording fee.

TRAPPER.

Vancouver, B.C., July 1st.

## A LONDON BUREAU OF MINES.

**T**O THE EDITOR:—I notice in your last issue, amongst other interesting matters, a suggestion that "a Bureau of Mining Information in London (England) should be established in place of the present (useless) Agent-General's Office." This would undoubtedly prove, in competent hands, a source of the greatest good to this Province. In fact I doubt if any other move could be suggested of equal benefit, or likely to produce such direct results in inducing investment in the great mineral resources of British Columbia—carried out on the lines of the similar bureau recently established for a like purpose by the Government of Victoria (Australia). As you suggest, an active, well informed Director could divert attention in many ways to the advantages we offer investors, and to that end one point should be looked after, namely, that the appointee should be a Canadian and a thoroughly competent man of business, with a sound personal knowledge of the mines, methods and all pertaining thereto in British Columbia, able to answer all questions intelligently and furnish advice of value when required. He should also be able to lecture on the subject occasionally, as opportunity affords, in a manner calculated to reach the average audience and educate those desirable as "new chums" with means. Trusting this subject may be thoroughly agitated in your columns to a definite end.

W. THOS. NEWMAN.

## ANSWERS TO CORRESPONDENTS.

**T.** N. (St. John's, Nfld.) You can safely rely upon the accuracy of the reports of our Fairview correspondent "Ricardo." He will be glad to learn that you appreciate his articles in the *MINING RECORD*.

L. A. (Brighton, Eng.) Yes; quite correct so far as we can learn; but, of course, it has not yet been proved what the "strike" means. The Galena is far too heavily capitalized and shareholders prospects will never be very brilliant we fear.

T. E. B. (Toronto.) War Eagle shares are a safe, but possibly not an extraordinarily remunerative buy at the price now quoted. At the present price the mine is valued higher than the Le Roi.

W. A. (Toronto, Ont.) We refer you to A. W. More & Co., Victoria.

Enquired (Norwood). Write to the Minister of Mines and you will get what you want.

V. (Vancouver). The figures are very misleading. We consider it better to not publish your letter. Mr. Pellew-Harvey has, as no doubt you have since learned, severed his connection with the concern.

## INDUSTRIAL NOTES.

A compressor plant is being placed in position on the Old Ironsides, a promising camp in Greenwood camp, Boundary Creek. A like plant is also likely to be shortly ordered for the Paris and Lincoln claims, in White's camp, on which extensive development work is now in progress.

The 40-stamp mill ordered for the Ymir mine in the Nelson Division, arrived at its destination this month, and will, ere long, be in running order. The Ymir is undoubtedly an exceedingly promising property, and has been systematically developed to the extent of some 3,000 feet of workings.

Messrs. Macfarlane & Co., of Vancouver, are extending their business very largely throughout the Province, and are finding an excellent market for assay and mine supplies not only on the coast but in the Kootenays. The firm recently supplied a large assay outfit to the Van Anda Mining Company of Texada Island, and a like complete equipment which has been sent up to Dawson City. The Bank of North America also bought from Messrs. MacFarlane & Co., the other day, two assay outfits, including scales and weights for weighing Klondike gold dust and bullion. These outfits were shipped by different steamers, to make as sure as possible the arrival of one outfit at its destination.

Mining Stocks.

Prepared by A. W. More & Co., Mining Brokers, Victoria, B.C., July 27, '98

Company.	Capital.	Par Value.	Price.
<b>TRAIL CREEK.</b>			
Alberta.....	\$1,000,000	\$1	\$ 5
Big Three.....	3,500,000	1	9
Bruce.....	1,000,000	1	10
Butte.....	1,000,000	1	02
Caledonia Con.....	1,000,000	1	5½
California.....	2,500,000	1	15
Camp Bird.....	1,000,000	1	05
Celtic Queen.....	750,000	1	03
Centre Star.....	500,000	1	3 50
Commander.....	500,000	1	9
Deer Park.....	1,000,000	1	20
Enterprise.....	1,000,000	1	20
Evening Star.....	1,000,000	1	06
Georgia.....	1,000,000	1	10
Gertrude.....	500,000	1	11
Golden Drip.....	500,000	1	15
Hattie Brown.....	1,000,000	1	03
High Ore.....	500,000	1	04
Imperial.....	1,000,000	1	10
Iron Horse.....	1,000,000	1	20
Iron Mask.....	500,000	1	66
I.X.L.....	1,000,000	5	10
Jumbo.....	500,000	1	50
Le Roi.....	2,500,000	1	6 50
Lilly May.....	1,000,000	1	20
Mabel.....	1,000,000	1	15
Mayflower.....	1,000,000	1	10
Monita.....	750,000	1	19
Monte Cristo.....	1,000,000	1	30
Morning Star.....	1,000,000	1	08
Nest Egg-Firefly.....	1,000,000	1	10
Northern Belle.....	1,000,000	1	10
Novelty.....	1,000,000	1	05
Palo Alto.....	1,000,000	1	05
Phoenix.....	500,000	1	12
Poorman.....	500,000	1	12
Red Mountain View.....	1,000,000	1	11
Rossland, Red Mountain.....	1,000,000	1	22
St. Elmo.....	1,000,000	1	06
St. Paul.....	1,000,000	1	12½
Silverine.....	500,000	1	06
Virginia.....	500,000	1	50
War Eagle Consolidated.....	2,000,000	1	2 60
West Le Roi.....	500,000	1	28
White Bear.....	2,000,000	1	19
<b>AINSWORTH, NELSON AND SLOCAN.</b>			
American Boy.....	1,000,000	1	15
Arlington.....	1,000,000	1	10
Argo.....	100,000	0 10	10
Athabasca.....	1,000,000	1	30
Black Hills.....	100,000	0 10	10
Buffalo of Slocan.....	150,000	0 25	—
Canadian M. M. and S. Co.....	2,000,000	1	07½
Cumberland.....	500,000	10	—
Dundee.....	1,000,000	1	75
Dardanelles.....	1,000,000	1	05½
Dellie.....	750,000	1	12
Eldon.....	1,000,000	1	05
Ellen.....	1,000,000	1	07½
Elkhorn.....	1,000,000	1	10
Exchequer.....	1,000,000	1	10
Fern Gold.....	200,000	0 25	75
Goodenough.....	800,000	1	25
Gibson.....	650,000	1	17½
Grey Eagle.....	750,000	1	—
Hall Mines.....	300,000	£1	—
Idler.....	1,000,000	1	12½
Kasio-Montezuma.....	1,250,000	1	12
London.....	150,000	25	25
Minnesota.....	1,000,000	1	—
Nelson-Poorman.....	250,000	0 25	25
Northern Light.....	250,000	1	16½
Noble Five Con.....	1,200,000	1	18
Ottawa and Ivanhoe.....	1,000,000	1	12½
Payne.....	2,500,000	2 50	—
Phoenix Consolidated.....	1,000,000	1	07
Rambler Con.....	1,000,000	1	23
Reco.....	1,000,000	1	1 30
Slocan-Reciprocity.....	1,000,000	1	06
Slocan Star.....	250,000	50	1 50
Santa Marie.....	\$1,000,000	\$1	05
Silver Band.....	250,000	0 25	12½
Slocan Queen.....	1,000,000	1	10
Star.....	1,000,000	1	07
St. Keverne.....	1,000,000	1	03½
Sunshine.....	500,000	10	—
Two Friends.....	240,000	30	17
Washington.....	1,000,000	1	25
Wonderful.....	1,000,000	1	05
<b>LARDEAU.</b>			
Consolidated Sable Creek Mining Co.....	1,500,000	1	10
<b>TEXADA ISLAND.</b>			
Texada Proprietary.....	250,000	25	25
Van Anda.....	5,000,000	1	05½
Victoria-Texada.....	150,000	0 25	5
Texada Kirk Lake.....	600,000	1	1 00
Raven.....	1,000,000	1	10
Gold Bar.....	100,000	0 10	10

<b>VANCOUVER ISLAND.</b>			
Alberni Mountain Rose.....	250,000	1	05½
Consolidated Alberni.....	500,000	1	25
Mineral Creek.....	500,000	1	05½
Mineral Hill.....	750,000	1	05
Quadra.....	500,000	1	10
<b>CARIBOO.</b>			
Cariboo Gold Fields Ld.....	£100,000		
Cariboo Hydraulic Consolidated.....	\$5,000,000	1	85
Horsefly Hydraulic.....	200,000		
Horsefly Gold Mining Co.....	1,000,000	10	1 50
Cariboo M. & D. Co.....	300,000	1	25
Golden River Quesnelle.....	£350,000	£1	
Victoria Hydraulic.....	300,000	1	85
<b>LILLOOET DISTRICT.</b>			
Golden Cache.....	500,000	1	60
Alpha Bell.....	500,000	1	50
Cayoosh Creek Mines.....	500,000	1	50
Lillooet Gold Reefs.....	200,000	25	25
Excelstor.....	500,000	1	50
<b>FAIRVIEW CAMP.</b>			
Tin Horn.....	200,000	0 25	15
Winchester.....	250,000	0 25	12
<b>BOUNDARY.</b>			
Old Ironsides.....	1,000,000	1	23
Golden Crown.....	1,500,000	1	25
<b>CAMP MCKINNEY.</b>			
Cariboo.....	800,000	1	70
Minnehaha.....			17

† Dividends paid to date are as follows: War Eagle, (new company) \$60,000; Trail Creek District—Le Roi, \$825,000; War Eagle (old company), \$217,000; Camp McKinney—Cariboo, \$221,000; Nelson District—Hall Mines, \$28,750; Fern, \$10,000; Slocan District—Payne, about \$1,000,000; Slocan Star, \$400,000; Reco, \$287,000; Idaho, \$240,000; Whitewater, \$154,000; Rambler-Cariboo, \$40,000; Last Chance, \$40,000; Two Friends, \$6,000. Dividends paid since last month's list was made up, War Eagle, \$30,000. Cariboo of Camp McKinney, \$16,000.

STOCK MARKET.

STOCKS have been very active during the month of July and brokers have found it difficult, in many cases, to fill orders at prices bid. Since the opening of the Mining Exchange in Toronto, the market for British Columbia mining stocks has wonderfully improved.

In the Rossland camp the favorite stocks have been Virginia, Deer Park, War Eagle, Monte Cristo, Good Hope, Giant and Canadian Goldfields Syndicate. Since our last report Deer Park has advanced from 17 cents to 20 cents, and it is reported that the company has sold the balance of the treasury stock in Toronto at 20 cents, which will give the company ample funds to fully develop the property. Monte Cristo has fallen from 37 cents to 30 cents. War Eagle went as high as \$2.97½, but has fallen back to \$2.60. Iron Mask went up to 80c., but has fallen to 66c. Virginia has been in great request and it has advanced as high as 50 cents and it looks as if it would go much higher.

In Boundary and Camp McKinney, Cariboo shares have been in great demand and it has been impossible for brokers to fill orders at prices bid. Since our last report this stock has advanced from 54 to 70. The company is putting in ten more stamps and it is expected that the additional stamps will be working in August so that the shareholders ought to receive increased dividends in the near future. This company paid another dividend of 2 cents per share during the month of July. Old Ironsides have been in great request and have advanced to 23.

In the Slocan mines there has not been very much demand for shares excepting Noble Five; and several blocks of Dardanelles have changed hands in the neighborhood of 5½ cents. A meeting of the Dardanelles was held recently, when financial arrangements were made to resume work on the mine, which ought to create some enquiry for Dardanelles at the present low figure. A few shares of Slocan Star are being offered very low which has sent the quotation down to \$1.50.

In Coast mines the most active stock has been Van Anda, which was recently quoted as low as 2½, but none can be had now under 5½. Excellent reports come from this property. The shaft is down 170 feet where the vein is said to be 16 feet wide and assays have been made across the 7-foot ledge averaging \$50 per ton. The quotation for Alberni Consolidated has advanced from 12c. to 25c., although we learn of no sales having been made at the advanced price. The property never looked better and an excellent strike has been made during July, which gives the management great hope as to the future of the mine. A four stamp mill is being erected at the mine and it is expected to be in operation before the end of July.

British Columbia mines have a great future in store and they will not only astonish Canadians, but they will surprise the world.



## CARIBOO PIPING.

A VERY large quantity of piping for Cariboo hydraulic mines is being manufactured by Messrs. Armstrong & Morrison, of Vancouver, and with this article we give an illustration from a photograph of a corner in this well-known firm's foundry, showing some of the completed pipe, which is made in sizes of 18, 16 and 14 ins, and intended for use at the Big Slide Hydraulic Claim, Pavilion. This corner of Messrs. Armstrong & Morrison's shop is an exceedingly busy one, although judging from the comfortable and do-nothing appearance of the somewhat indistinct figures in the photograph standing and sitting about, one might be inclined to doubt the accuracy of this statement. It may, therefore, be explained that owing to the conditions of light at the time the photo was taken permission was granted by Mr. Armstrong to the employees to remain quiet a sufficient time to admit of a successful negative being obtained from the long exposure of nearly two minutes. In further reference to Messrs. Armstrong & Morrison's works it may be remarked that the firm



MANUFACTURING PIPING FOR HYDRAULIC MINES, CARIBOO.  
A corner in Messrs Armstrong & Morrison's Works, Vancouver.

possess the only rivet machine on the Coast. This machine, known as the National, has a capacity of 90 rivets per minute, of sizes ranging from  $\frac{1}{4}$  inch to 2 inches, and could very well supply the entire provincial demand. The firm now make a speciality of automatic self-dumping, ore cars, which are fitted with steel wheels imported direct from England. A large

number of these ore cars in various stages of completion may now be seen at the foundry.

## MACHINERY INSTALLATIONS

THREE large patent derricks of six tons lifting capacity each, are being manufactured for the Golden River Quesnelle Company, at the B.C. Iron Works, Vancouver. When possible the power for this machinery will be supplied by water from the lake, under a pressure of 125 feet, but during the dry season steam will be employed. The derricks will be used for lifting

heavy boulders away from the sluice pipes.

New boilers in connection with the compressor plant, have been installed this month by the British America Corporation on the Nickel Plate mine at Rossland, and the property is being steadily developed.

# The Royal Electric Company

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## Electrical Mining Machinery

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FOR ALL CLASSES OF MINING WORK.

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# COAL! COAL!

## The New Vancouver Coal Mining & Land Co.

(LIMITED.)

(FORMERLY THE VANCOUVER COAL COMPANY.)

Are the Largest Coal Producers on the Pacific Coast.

### NANAIMO COAL

(Used principally for Gas and Domestic purposes.)



### SOUTHFIELD COAL

(Steam Fuel.)

### Protection Island Coal & New Wellington Coal

(House and Steam Coal), are mined by this Company exclusively.

**THE NANAIMO COAL** gives a large percentage of gas, a high illuminating power, unequalled by any other bituminous coal in the world, and a superior quality of coke.

**THE SOUTHFIELD COAL** is now used by all the leading steamship lines on the Pacific.

**THE NEW WELLINGTON COAL**, which was introduced in 1890, has already become a favourite fuel for domestic purposes. It is a clean, hard coal, makes a bright and cheerful fire, and its lasting qualities make it the most economical fuel in the market.

**THE PROTECTION ISLAND COAL** is similar to the New Wellington Coal. This coal is raised from the submarine workings under the Gulf of Georgia and is shipped from wharves both at Protection Island and Nanaimo.

The several mines of the Company are connected with their wharves at Nanaimo, Departure Bay and Protection Island, where ships of the largest tonnage are loaded at all stages of the tide. Special despatch given to mail and ocean steamers.

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for reference.



**WEST COAST, VANCOUVER ISLAND MINING  
DIVISION.**

**NOTICE** is hereby given that the land comprised within  
the undermentioned boundaries, and hitherto forming  
a portion of the Alberni and Nanaimo Mining Divisions,  
has been created a Mining Division, to be known as the  
West Coast, Vancouver Island Mining Division, namely:—  
Commencing at the mouth of Maggie Creek, Barclay  
Sound; thence following the said creek to the height of  
land dividing the waters flowing into the Strait of Georgia  
and Johnson Strait from the waters flowing into the North  
Pacific Ocean; thence following the said height of land to  
Cape Scoti; thence southerly and easterly, following the  
sinuosities of the coast line, including all islands, to the  
point of commencement.

By Command.

**A. CAMPBELL REDDIE,**  
Deputy Provincial Secretary.

Provincial Secretary's Office,  
25th June, 1898.



**PROVINCIAL SECRETARY'S OFFICE.**

**HIS HONOUR,** the Lieutenant Governor, has been  
pleased to make the following appointment:—

25th June, 1898.

**WALTER THOMAS DAWLEY,** of the settlement of Clay-  
quot, Esquire, J. P., to be a Mining Recorder within and  
for the West Coast, Vancouver Island Mining Division.

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Columbia Mining Record.** Sample copies can  
also be had at this office.

**\$5**

**Canadian Pacific Navigation Co., Ltd.**

**TIME TABLE NO. 33.**

(Taking effect March 1st, 1898.)

**VANCOUVER ROUTE.**

**VICTORIA TO VANCOUVER** daily except Monday at 1 o'clock.  
**VANCOUVER TO VICTORIA** daily except Monday at 13 o'clock or on arrival C.P.  
Railway No. 1 Train.

**NEW WESTMINSTER ROUTE.**

**LEAVE VICTORIA**—For New Westminster, Ladner's Landing and Lulu Island  
Sunday at 23 o'clock; Wednesday and Friday at 7 o'clock. Sunday's  
steamer to New Westminster connects with C.P.R. Train No. 2 going east,  
Monday.  
**FOR PLUMPER PASS**—Wednesdays and Fridays at 7 o'clock.  
**FOR MORESBY AND PENDER ISLANDS**—Fridays at 7 o'clock.  
**LEAVE NEW WESTMINSTER**—For Victoria Monday at 13:15 o'clock. Thursday  
and Saturday at 7 o'clock.  
**FOR PLUMPER PASS**—Saturday at 7 o'clock.  
**FOR PENDER AND MORESBY ISLANDS**—Thursday at 7 o'clock.

**FRASER RIVER ROUTE.**

Steamer leaves **NEW WESTMINSTER** for **CHILLIWACK** and way landings  
every Tuesday, Thursday and Saturday at 8 o'clock during river navigation.

**NORTHERN ROUTE.**

Steamships of this Company leave Victoria for Fort Simpson via Vancouver  
and intermediate ports on the 10th, 20th and 30th of each month, and for  
Queen Charlotte Islands on the 10th of each month.

**KLONDIKE ROUTE.**

Steamers of this Company leave weekly for Wrangel, Juneau, Skagway  
and Dyea.

**BARCLAY SOUND ROUTE.**

Steamer "Willapa" leaves Victoria for Alberni and Sound ports the 10th  
20th and 30th of each month, and for Quatsino and Cape Scott on 30th.  
The Company reserve the right of changing this Time Table at any time  
without notification.

**G. A. CARLETON,**  
General Agent.

**JOHN IRVING,**  
Manager.

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July 19, 1896.  
Patented in Canada, June 21, 1896.



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