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Established 1882

Vol. XVII--No. 10.

OCTOBER 31st, 1898.

Vol. XVII--No. 10.

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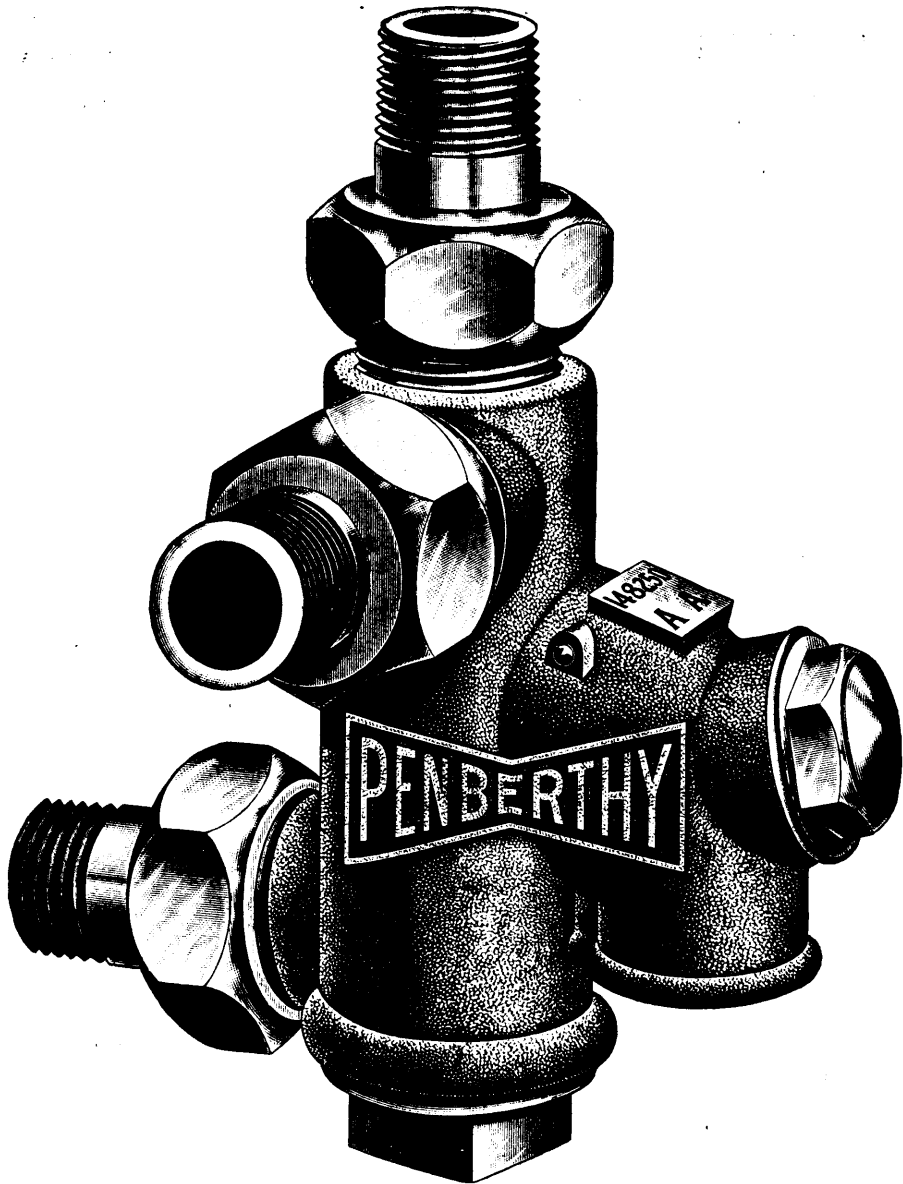
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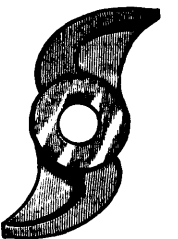
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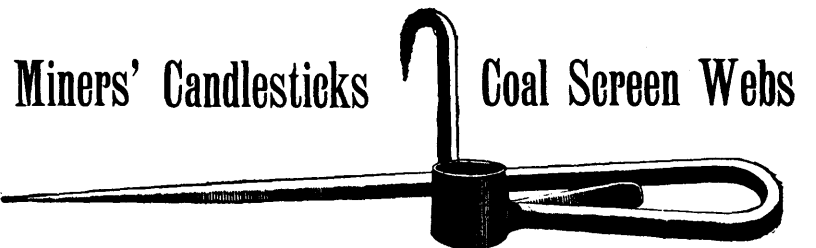
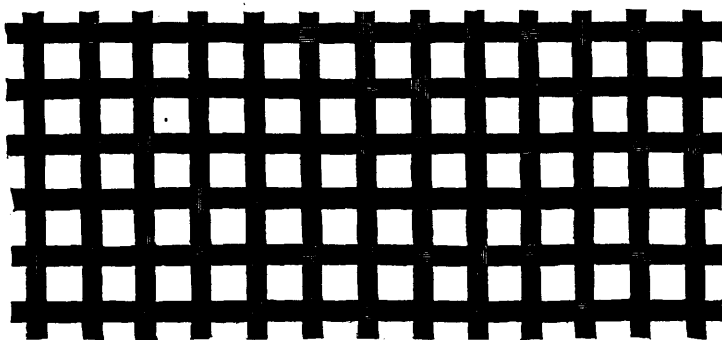
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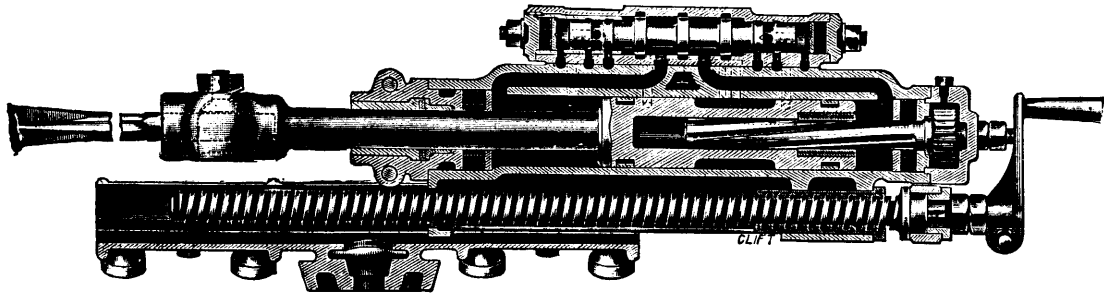
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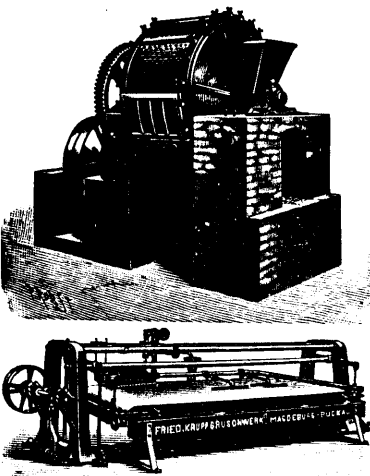
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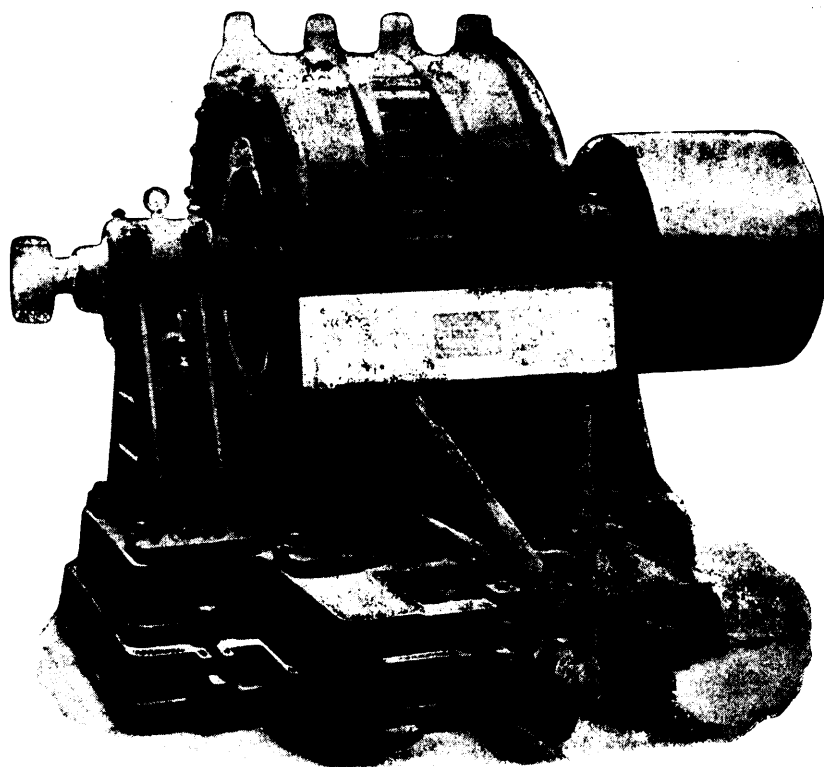
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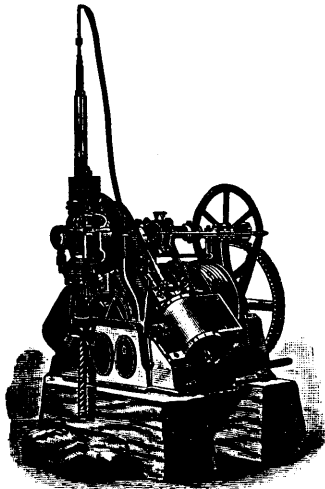
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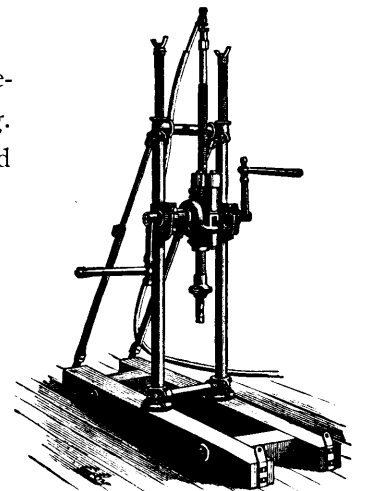
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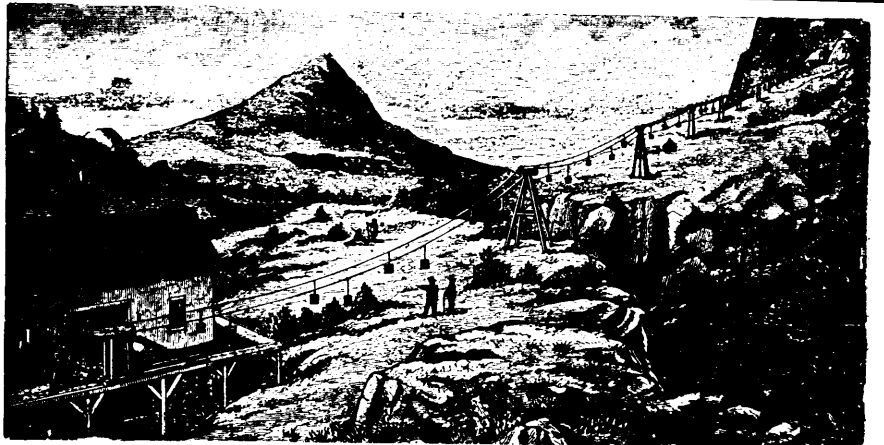
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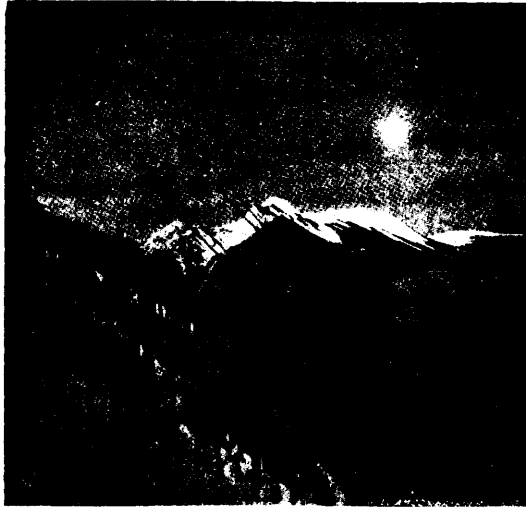
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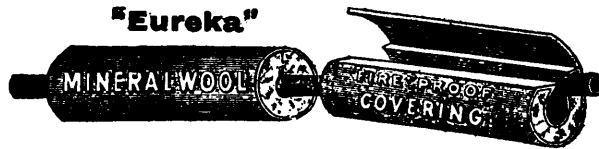
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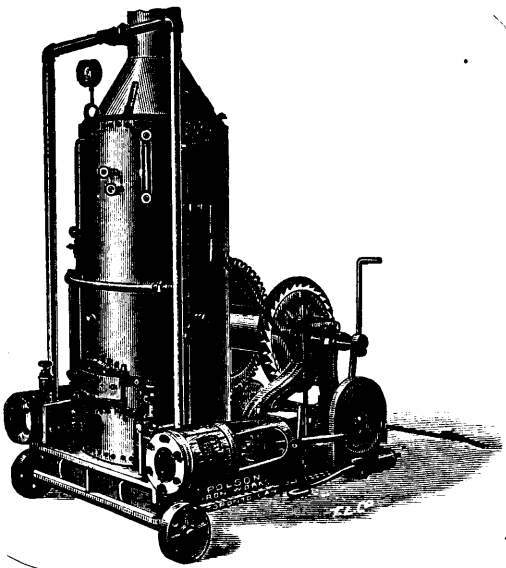
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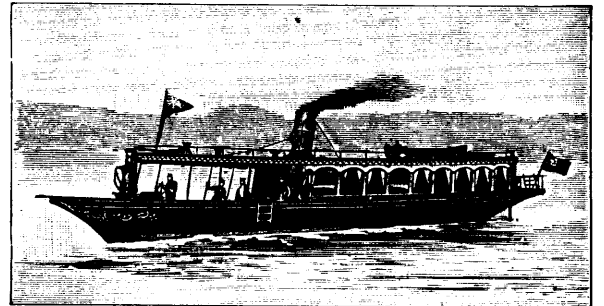
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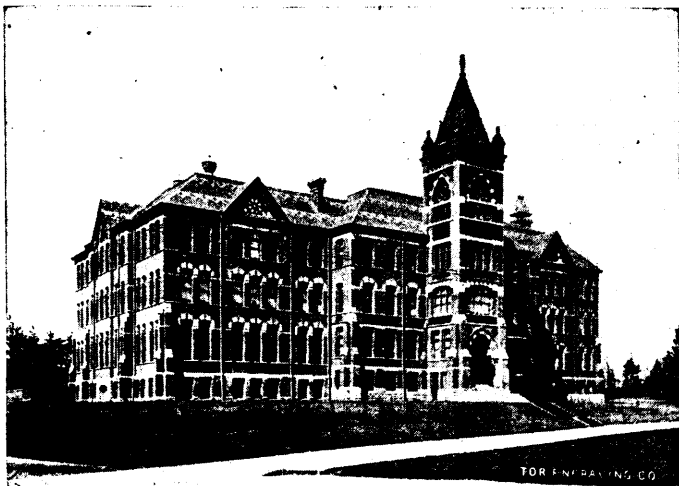
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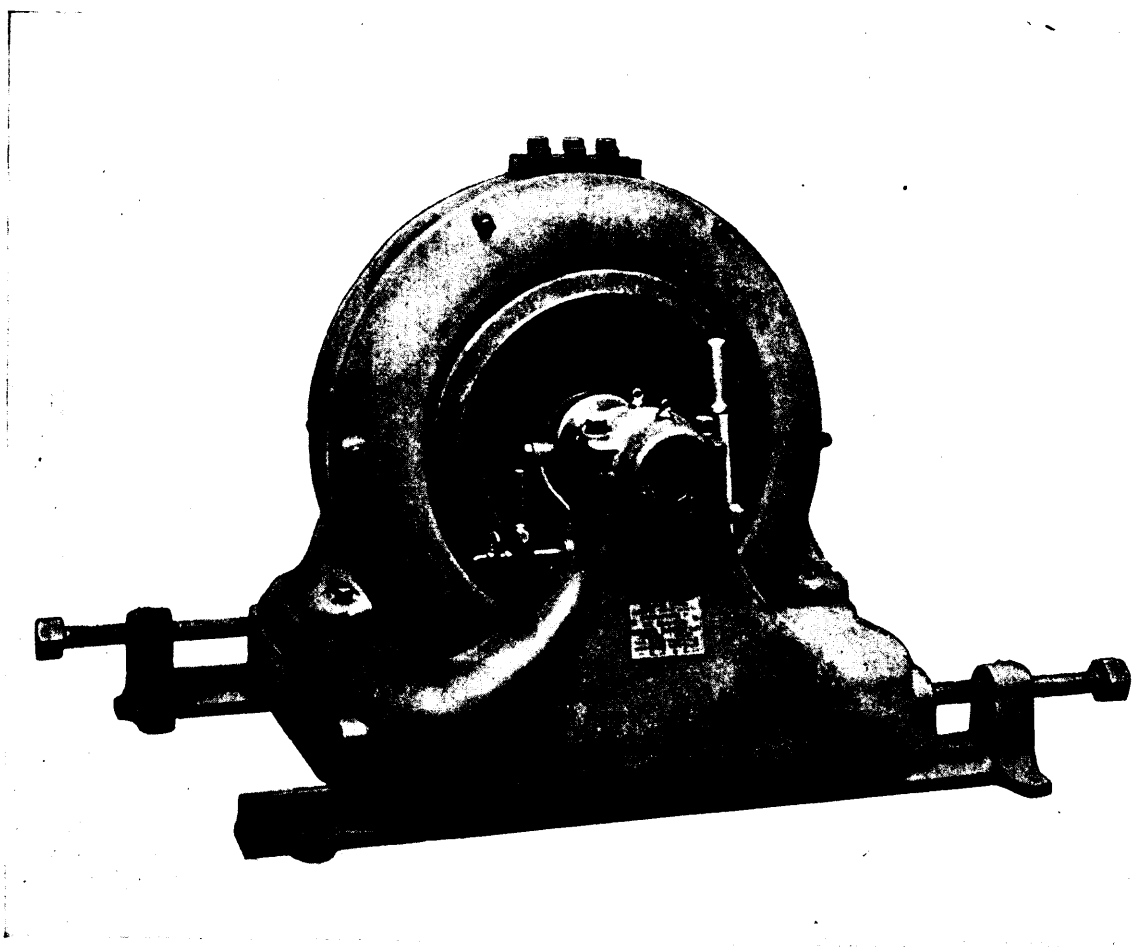
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Gold, Silver, Lead, Copper, Coal, Coke, Oil, Iron, Mercury, Platinum, Etc., Etc.

THE MINES OF BRITISH COLUMBIA
HAVE PRODUCED OVER \$112,000,000.

AMOUNT AND VALUE OF MATERIALS PRODUCED 1896 AND 1897.

	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	894,882	2,688,666	882,854	2,648,562
Coke	Tons	615	3,075	17,832	89,155
Other materials.....			15,000		151,600
			\$7,507,946		\$10,455,268

Production for 1890, \$2,608,608; for 1896, \$7,146,425; for 1897, \$10,452,268.

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 now 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 MCKINLEY, 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 is also in progress in EAST KOOTENAY and in LILL-OOET, 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 gravel deposit of exceptional richness, while other parts of this district now offer every inducement to capital.

Into CASSIAR, OMENICA, and the great area to the north, as well as Cariboo, there now promises to be a great exodus of explorers, incited by rich diggings now being mined in the YUKON, as on the KLONDYKE, to the north, and river 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 higher price of lead more than compensating for the lower silver values. 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 is shipping constantly a large amount of silver-copper ore, and the LARDEAU, TROUT TAKE, ILLECILLEWAET districts, on further exploration, promise to become rich districts. 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 as it does, and will, the employment of much capital and many 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 interfluxing ores will make possible the treatment of all British Columbia ores at home.

CAPITAL.

Capital can now find here excellent and many opportunities for investment, if proper business care and the experience of qualified men are utilized, as the values placed on mines and undeveloped properties have reached a reasonable basis.

MINERAL LANDS.

Mineral lands are open to location to any person over eighteen years of age, who has obtained a free miner's certificate, and perfect titles to lode claims can be easily secured after \$500 worth of work has been done per claim. A great extent of territory has yet to be prospected.

YUKON GOLD FIELDS.

As the KLONDYKE and other gold fields in the Yukon in British territory is reached mostly via British Columbia, all SUPPLIES and OUT-FITS obtained at VICTORIA, VANCOUVER, ASHCROFT, KAMLOOPS, etc., can be taken in FREE OF DUTY, which otherwise WILL HAVE TO BE PAID if not purchased in CANADA.

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Department of Mines, Minister of Mines,
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GOLD AND SILVER.

Under the provisions of chap. 1, Acts of 1892, of Mines and Minerals, Licenses are issued for prospecting Gold and Silver for a term of twelve months. Mines of Gold and Silver are laid off in areas of 150 by 250 feet, any number of which up to one hundred can be included in one License, provided that the length of the block does not exceed twice its width. The cost is 50 cents per area. Leases of any number of areas are granted for a term of 40 years at \$2.00 per area. These leases are forfeitable if not worked, but advantage can be taken of a recent Act by which on payment of 50 cents annually for each area contained in the lease it becomes non-forfeitable if the labor be not performed.

Licenses are issued to owners of quartz crushing mills who are required to pay

Royalty on all the Gold they extract at the rate of two per cent. on smelted Gold valued at \$19 an ounce, and on smelted gold valued at \$18 an ounce.

Applications for Licenses or Leases are receivable at the office of the Commissioner of Public Works and Mines each week day from 10 a.m. to 4 p.m., except Saturday, when the hours are from 10 to 1. Licenses are issued in the order of application according to priority. If a person discovers Gold in any part of the Province, he may stake out the boundaries of the areas he desires to obtain, and this gives him one week and twenty-four hours for every 15 miles from Halifax in which to make application at the Department for his ground.

MINES OTHER THAN GOLD AND SILVER.

Licenses to search for eighteen months are issued, at a cost of thirty dollars, for minerals other than Gold and Silver, out of which areas can be selected for mining under lease. These leases are for four renewable terms of twenty years each. The cost for the first year is fifty dollars, and an annual rental of thirty dollars secures each lease from liability to forfeiture for non-working.

All rentals are refunded if afterwards the areas are worked and pay royalties. All titles, transfers, etc., of minerals are registered by the Mines Department for a nominal fee, and provision is made for lessees and licensees whereby they can acquire promptly either by arrangement with the owner or by arbitration all land required for their mining works.

The Government as a security for the payment of royalties, makes the royalties first lien on the plant and fixtures of the mine.

The unusually generous conditions under which the Government of Nova Scotia grants its minerals have introduced many outside capitalists, who have always stated that the Mining laws of the Province were the best they had had experience of.

The royalties on the remaining minerals are: Copper, four cents on every unit; Lead, two cents upon every unit; Iron, five cents on every ton; Tin and Precious Stones; five per cent.; Coal, 10 cents on every ton sold.

The Gold district of the Province extends along its entire Atlantic coast, and varies in width from 10 to 40 miles, and embraces an area of over three thousand miles, and is traversed by good roads and accessible at all points by water. Coal is known in the Counties of Cumberland, Colchester, Pictou and Antigonish, and at numerous points in the Island of Cape Breton. The ores of Iron, Copper, etc., are met at numerous points, and are being rapidly secured by miners and investors.

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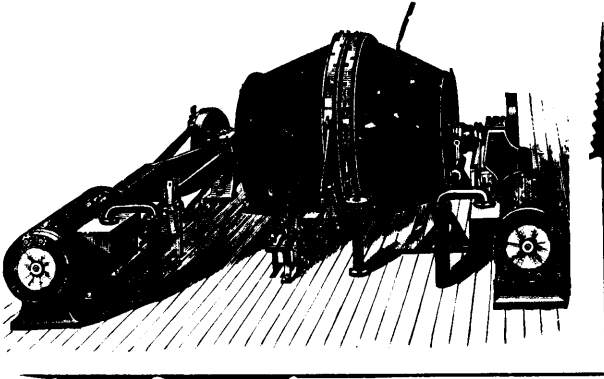
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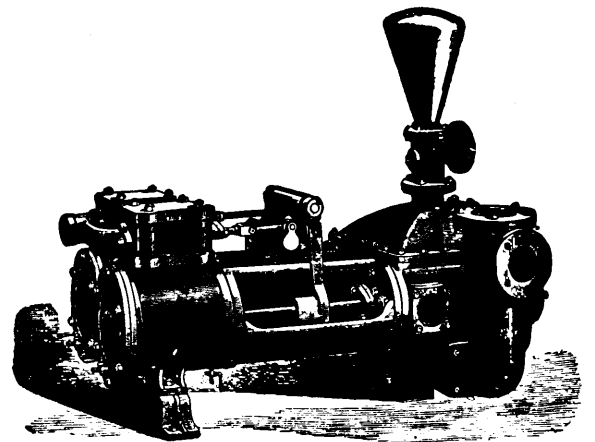
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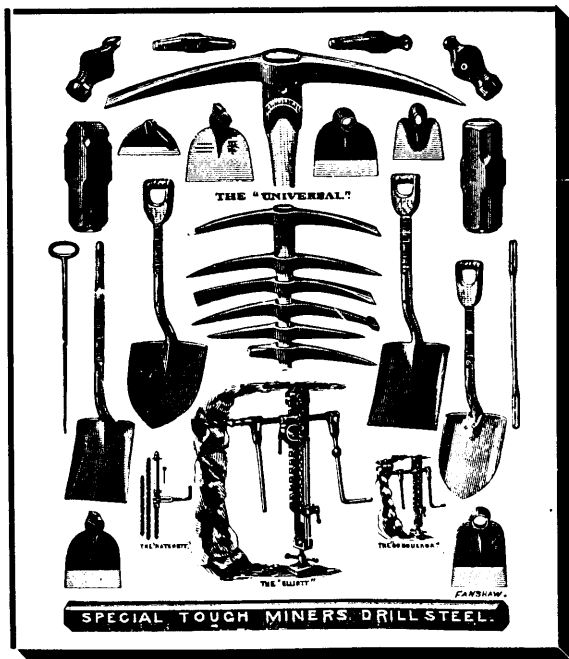
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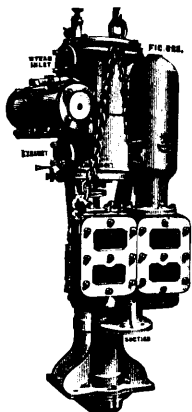


Fig. 620—"Griff"
Sinking Pump.

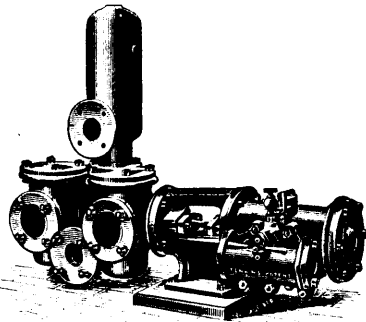


Fig. 598—"Cornish" Steam Pump
for Boiler Feeding, etc.

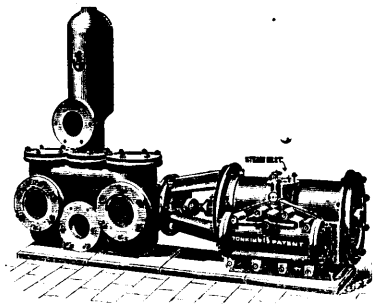


Fig. 600—"Cornish" Steam Pump
for General Purposes.

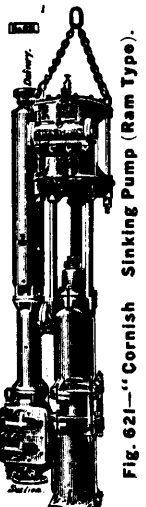


Fig. 621—"Cornish" Sinking Pump (Ram Type).

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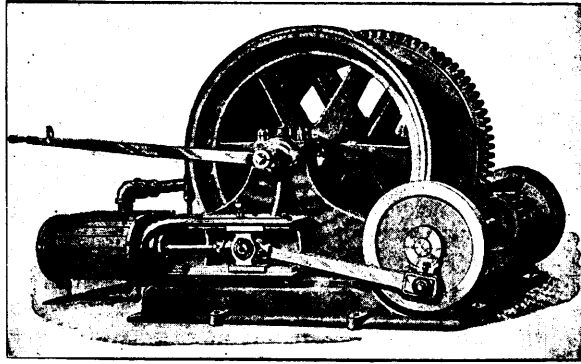
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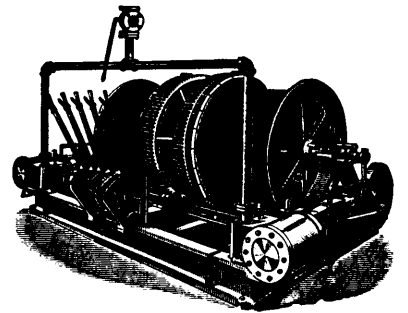
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16th YEAR OF PUBLICATION.

THE MINING REVIEW

Canadian
Established 1882

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OCTOBER, 1898.

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Deep Mining for Gold.

A few years ago the opinion was well-nigh universal, at least among practical mine operators, that the gold-bearing quartz veins of the Pacific Coast "gave out" in depth. In many instances, perhaps in most, the report was, that the vein continued to be well defined, but that its value in gold had shrunk to insignificance. Where rich veins outcropping high on the flanks of the Sierras had been discovered also, many hundreds of feet lower, in the sides of deep canons cutting across them, it was declared by prospectors that these lower exposures were invariably poor. In short, the general verdict of experience on this continent supported the proposition, already promulgated upon high authority abroad, that vein deposits, especially of the precious metals, were confined to a zone of limited depth.

Against this inference from general experience, the arguments which could be urged were largely theoretical. For example:

1. It was asked, what was meant by "depth?" In view of the fact that in mountainous regions, like that of the Sierra Nevada and its foothills, the surface had doubtless been lowered by denudation, subsequent to the formation of the ore veins, to the extent of thousands of feet, it seemed absurd to talk about one thousand, or even two thousand feet below the *present* surface, as establishing a limit of special geological significance.

2. The explanation suggested, nearly half a century ago, by the profound and acute Cotta, was theoretically complete; but it lacked experimental confirmation extensive enough to make it more than a plausible hypothesis. It was, in substance, that, since veins carry ore in bodies, zones or "chimneys" of comparative concentration, and these bodies are limited in vertical as well as horizontal dimensions, and are separated by comparatively barren intervals or by "pinches" of the vein, it must be that a vein rich at the surface would be poor at some point beneath, just as it would be poor at some point on the surface, further along on its strike. In either case, the barren space, whether encountered in horizontal or in vertical exploration, might be merely the interval between two ore shoots or concentrations of value. Moreover, it is likely that many well defined veins, too poor at the surface to encourage exploitation, carry ore-bodies somewhere beneath the points where they thus appear to be barren. In other words, the present surface is, so far as ore distribution is concerned, largely an accidental section across the veins, some of which it cuts at richer, and others at poorer zones. Those which are rich or promising at the surface are developed; while those which are barren at the surface are usually not developed. It scarcely need be added, that this procedure on the part of miners is entirely reasonable. Now and then, it has happened that some persistent "crank," sticking to a desperate prospect,

has come upon a bonanza; but even upon Cotta's hypothesis, there is no way of knowing how deep the barren zone may be; and it is doubtless wise to leave such blind explorations for posterity to attack, when more obviously inviting adventures shall have become few. Wise or unwise, however, the fact remains that the vast majority of veins actually worked have shown value at or near the surface, and consequently the change most frequently noted with increasing depth has been an impoverishment, rather than an enrichment. This has given rise to the erroneous impression that some natural law establishes a relation between depth and value.

Of course, this statement of the case has no reference to the acknowledged effect of surface agencies in oxidizing, leaching, etc., which sometimes enriches and sometimes impoverishes the upper zone of a vein. The question under consideration concerns only the behaviour of veins below water level, and in their unoxidized portions—that is to say, the original distribution of the ore.

3. In the maxim, current among practical miners, though not frequent in mining prospectuses, that "veins give out in depth," the conception of "giving out" is as indefinite as the conception of "depth." The practical test is a commercial one; and its verdict, therefore, varies according to a varying standard—namely, the cost of mining and reduction. What is meant, in the majority of instances, by "giving out" is simply ceasing to "pay"; and this phenomenon may or may not be a geological one, expressing a local or general natural law. It may be, for instance, that in a given district, all fissure veins become barren when they enter, in depth, a different country rock, or it may be that, at a certain depth, the nature of the vein-filling changes entirely, or that the fissure itself is cut off or dies out. These phenomena are of geological significance; but a change in the value of vein-material from two-thousandths of one per cent. to one-thousandth of one per cent. of gold—all other conditions remaining unaltered—is not significant, except of the fact that Nature pays no attention to the difference between ten-dollar and five-dollar rock. Man, on the other hand, if he cannot handle five-dollar rock with profit, deems himself, when he encounters it, as truly blocked by Nature, as if she had absolutely put an end to her deposit of treasure. A large part—probably the majority—of the veins reported to have "given out" in depth have simply become too poor to "pay," or even to be further explored without intolerable expenditure. Posepny, in his classic treatise on "The Genesis of Ore Deposits," recognizes this fact, and urges that whenever a mine is abandoned, by reason of the "giving out" of the vein in depth, a careful record of all the conditions and phenomena should be preserved, so that it may be subsequently ascertainable, whether the abandonment was dictated by conclusively adverse geological evidence, or merely by the local and temporary cost of exploitation or exploration.

For the commercial standard set by man is continually changing. And this is especially true of our own continent and our own time. The mining districts of the Pacific Slope have been developed, one after another, by a pioneer industry, at maximum cost of labor, supplies, machinery, transportation and metallurgical reduction. The change in these items of expenditure which has been wrought in many districts by the simple lapse of time, the establishment of communications and the organization of society is enormous. But to this must be added the effect of new inventions, such as the use of high explosives, compressed air, electrical power, and improved metallurgical methods. The result of all these factors is, that what was formerly regarded as worthless material is now the favorite basis of investment. "Low-grade propositions," offering large quantities of rock which can be treated at a small, steady profit, are the favorite enterprises of today. Such mining operations as the Homestake, in South Dakota, the Treadwell, in Alaska, and the Richardson, in our own Nova Scotia, are typical of this new departure.

But these are vast shallow workings; and the corresponding change in deep mining is less generally known. Such an event as the resumption of mining in the long-flooded levels on the Comstock lode (involving as it does an immense preliminary outlay in pumping) is a striking proof of the difference made by modern means and conditions of expense—all the more striking, since it does not depend upon a reduction of wages, and is undertaken in spite of the low market value of silver.

Equally significant is the present activity of deep mining along the "Mother Lode" in California. In a recent instance, in which an amicable settlement of damages by trespass was made between two adjacent mines on that belt, the amount allowed to the trespasser as a deduction from the gross yield of the ore taken, was \$2.37 per ton for mining, timbering, hoisting (over 2,000 feet) transporting to stamp-mill, milling, concentration and treatment of sulphurets. This allowance was a compromise, one party asking \$2.50 and the other claiming that \$2.00 was sufficient. It should be added that the sum named did not cover any items of dead-work (sinking of shaft, mining of new levels, maintenance of old levels, etc.), repairs to plant and machinery, surface improvements, or salaries and general expenses. Moreover, the mine and mill were operated by water-power. These figures, therefore, do not furnish a direct measure of the total cost of mining. But they do show that, under favorable circumstances, even in a mine over 2,000 feet deep, gold-bearing quartz containing, say, \$3.00 per ton, need not be left standing, but may be taken out—not in the expectation of profit, it is true, but as a step of exploration without ruinous loss.

The question of deep mining for gold thus takes a new aspect. The limit of depth has been enlarged; the limit of profitable value has been reduced; and practice has found a means of testing theory, previously not within its reach.

The results, of course, are not, and will not be, all one way. Indeed, the only thing to be expected is a negative conclusion—namely, that there is no general law forbidding the occurrence of valuable ore at any particular depth below the present surface, to which mining can go.

Considerable interest is being taken in the development of a nickel property recently discovered on Lots 11 and 12, Concession 9, of Calumet, Pontiac County, Que., the property of a Mr. Cowan. A surface cut shows a solid body of ore, chalcopyrite, nicolite and pyrrhotite carrying about 3 per cent. cobalt. Officers of the Geological Survey are understood to be making a thorough analyses of the samples. The indications would point to the discovery being exceedingly valuable. The Pontiac Development and Mining Company is being organized to exploit the property.

EN PASSANT.

Mr. Bell, the editor of the REVIEW, having been called unexpectedly to England, communications for publication should be addressed direct to our office of publication, 177 Sparks Street, Ottawa.

A very handsome Certificate of membership has been engraved for the Canadian Mining Institute. These will be mailed to members on Mr. Bell's return, early in December.

Mr. Charles Fergie, President of the Mining Society of Nova Scotia, is the subject of an appreciative sketch in the last issue of the *Science and Art of Mining*, from the pen of Dr. C. M. Percy. The following extract will be of interest to Mr. Fergie's many friends in Canada. "Few mining engineers have had more experience in mining, both coal and metalliferous, than my distinguished friend Mr. William Kellett, and Charles Fergie was fortunate in being in his service for some years. Some young men do not succeed, and are not to be blamed, because the chief reason is that opportunity does not come to them; others do not succeed and they are to be blamed, because the reason is that they did not avail themselves of their opportunities, and Dame Fortune does not knock repeatedly at the same man's door if the first summons calls forth no response. Charles Fergie's chance came in 1887, and he was ready. I had been entrusted with some business matters for the Intercolonial Coal Mining Company of Nova Scotia, and that firm was good enough to ask me to recommend a young man as assistant manager, capable of succeeding to the management. I recommended Charles Fergie, and his acceptance of my recommendation relieved me of a great anxiety. In sending a young man to a new world there is a responsibility to him and to his new employers, and the intermediary may not always give satisfaction to either. In this case everything went as pleasantly as wedding bells, and Charles Fergie is now Vice-President of the Intercolonial Coal Co.—which I suppose corresponds with a Managing Directorship at home—is President of the Mining Society of Nova Scotia, and a Vice-President of the Mining Institute of the Dominion. That is about all I care to say here as to Charles Fergie; he was always a frank and level-headed young Englishman, with no high falutin notions, and not enamoured of palaver."

At a meeting of the shareholders of the London and Globe Financial Corporation, held in London last month, Lord Dufferin, the chairman, referred in the following terms to the operations of the company in British Columbia:—

"As you are aware, we have a very large interest in the British America Corporation. It was announced in the prospectus of that Company that we would co-operate with them, and, as a matter of fact, we have taken a joint and equal interest in the East and West Le Roi and Columbia-Kootenay groups, as well as the Le Roi itself. Numerous cables from the resident director and the chief engineer announcing one rich strike after another in these groups, and the discovery of reefs as much as 35 feet wide, have been received, and the latest of them says:

"On the present appearance and prospects of development work we will have four Le Roi's. In reference to the Le Roi mine you as well as ourselves have no doubt heard many rumours, some of them of the most fanciful character. This is a matter that intimately concerns the British America Corporation as well as ourselves. The British America Corporation and ourselves control about 400,000 out of a total of 500,000 shares, and some three-fourths of these are already actually paid for. We expect to acquire other shares shortly and our chief engineer, Mr. Carlyle, is already in possession of the property, and is actively developing the same on a large scale."

CORRESPONDENCE.

The Silver Queen Mining Company, Limited.

ROSSLAND, B.C., Sept. 24th, 1898.

Editor Canadian Mining Review:

My attention has just been called to what purports to be a description of the "doings of the Silver Queen Mining Company," which appears on page 202 of the August number of your publication, in which you cause "A correspondent in the west" to put some very severe strictures upon the management and methods in general of our Company. As you have thus voluntarily called into question or allowed to be questioned not only the character and value of our property, but also the competency and (or) good faith of its management, you will doubtless in fairness to us permit "our side of the case" to have a hearing in the REVIEW, in space at least as prominent as that given to the arraignment.

I understand it to be the duty of the conscientious, well meaning and responsible journal, before giving printed publicity to statements calculated to influence the public mind in its estimate of enterprises or individuals, to be very certain of the ground upon which it stands. Correspondence or verbal communications having this tendency are published without signature or other equally definite identification of their author only when the journal giving space to them is prepared to assume all responsibility for their correctness. Are not both of these propositions correct? Assuming them to be so, and admitting of course that the REVIEW is a 'conscientious, well meaning and responsible journal,' then the only reasonable conclusion must be that it has been exceedingly lax in its duty in the one particular, and in the other has allowed its self to be grossly imposed upon.

Let us see: Summed up, the allegations of your "correspondent from the west" are, in his own words, as follows:

1. "The Silver Queen Mining Co. have a mine up Snow Creek, about twelve miles from Burton."
2. "They have a tunnel about 270 feet long and a shorter one, the one almost tapping the other."
3. "There is very little ore to be seen on the dump, and still less to be found in the tunnels."
4. "For about twelve feet at the end of tunnel No. 1 it has been built up carefully with rather good looking rock."
5. "A new Government trail is being built to the mine, at a cost of \$2,000."
6. "A compressor plant is being erected on Snow Creek, 3,000 feet below the mine to supply it with power"
7. "Elaborate buildings are to be immediately constructed, handsomely furnished, for that's what catches the Easterners."
8. "They are trying to rush these improvements through."
9. "People round Burton say that the Company has scarcely any funds in its treasury."
10. "The Company may be working in good faith."
11. "They may not be preparing to unload their stock on the public, but to me it looks as if they were."
12. "Instead of testing their property where work already done if it proves anything proves the prospect not to be a mine, they use their funds in expensive buildings and plants."

In the above twelve sentences are found, in the exact words of your "correspondent from the west," what is evidently intended to cast all manner of discredit upon the Silver Queen properties and their management.

Now as to the facts, taking your "correspondent's" statements seriatim:

1. We believe this to be true.

2. True as to our lower workings, except as to a very considerable discrepancy in the length of these tunnels. But, I will ask any person of even the most ordinary experience, what of it, and what bearing does such a condition have upon the deduction which your "correspondent from the west" attempts later on to make? Beside the tunnel referred to in 2, we have three shorter tunnels and one heavy open cut with ore in every one of them, also a considerable amount of lesser work on the surface.

3. True as to quantity of ore on dump—our ore is not principally in the form of a "dump"; nevertheless, in the ordinary course of development, and without a foot of stoping, a considerable quantity of valuable ore has been taken out, some of which has been shipped and a great deal of which is stored at the mine. Untrue as to the rest, for there is such a showing of ore in our tunnels and elsewhere on the property as to excite the admiration and enthusiasm of every experienced mining man who has ever seen it.

4. Absolutely untrue. There are a few tons of good unsorted ore at one side of the entrance to No. 1 tunnel, taken from near its mouth where the ore body was first broken into by this tunnel, and dumped into a rough heap as it was brought out.

5. For two years there have been two first class horse trails to the property. This year, the British Columbia Government, after the Gold Commissioner had personally inspected the trail and advised the expenditure, appropriated \$2,000 towards the improvement of one of these trails. The money has been expended. Result: a good wagon road half way, and a greatly improved trail on an easy grade the balance of the distance to our property.

6. True, except that our compressor plant is not that close to the mine.

7. Absolutely untrue. Our buildings have consisted of a cook house, a bunk house and a blacksmith shop, each constructed of logs, with shake roofs, and with only such equipment as is expected by a crew of men accustomed to roughing it. Our group of log buildings has now been added to by a substantial log building 24 x 36 feet in size, with a double shake roof and a puncheon floor, which covers our compressor plant—a power house. No other buildings are needed at present and none are to be built. Our office at Rossland, has in it exactly \$82 worth of furniture.

8. We are.

9. Will your "correspondent from the west" kindly state what means he supposes the people of Burton City have for obtaining accurate information as to condition of our treasury? Our office and books are at Rossland, not at Burton City, and both are open to the inspection of our shareholders and the inspector of stock companies for British Columbia, at all hours, (neither of these reside at Burton City) and to any respectable member of the general public during regular office hours. The fact is that our treasury is in a very good condition and many older and more widely known companies would undoubtedly be very glad to swap treasuries with us. I don't mind telling you (it is not a secret) that we have always paid spot cash for every thing we have purchased, that we are paying for our machinery as fast as it arrives, that after it is installed and completely paid for we will still have about \$9,000 cash on hand for development purposes, no debts, and over 100,000 shares of stock left in our treasury.

10. Is there any evidence, so far, to the contrary?

11. Your "correspondent from the west" looks through a badly discolored glass, very darkly. Our company has a list of shareholders very limited in number, comfortably fixed for money, with sufficient confidence in the Silver Queen, formed either from personal observation or careful inquiry, so that when more funds are needed at any time we do not find it necessary to increase our list of shareholders to get it.

12. The matter of "expensive buildings" is explained in my answer to allegation 7. As to whether our property has been sufficiently tested to justify the installation of a compressor plant: The best obtainable opinion says, "Yes." That such a move was in the interest of economical and rapid development of the property and was in every way justified by what we had in sight, was the unanimous opinion of the Silver Queen management and directorate. But we did not rely alone upon this. Our engineer advised it, our superintendent advised it, and so did our directors; but before making the move we called to counsel us Mr. G. F. Kellogg, a mining man of 35 years practical experience, who has had charge of the development and working of such properties as the Hale and Norcross, the Yellow Jacket and the Crown Point on the great Comstock lead, of the Lexington at Butte City, of the Silver King (Hall Mines) at Nelson, (properties which have paid in the aggregate dividends amounting to probably \$50,000,000), and who is now superintendent for Mann and McKenzie in East Kootenay,—a position which includes the superintendency of the great North Star mine. No mining man in the West questions Mr. Kellogg's experience, practical knowledge, conservatism and good judgement. Having a little time at his disposal, he consented to visit our property and give his ideas as to it and as to the best manner of continuing development. His inspection was made in June of this year. He took five days to the task and his conclusions were based upon a most thorough examination. His report is before me. Owing to its length, I cannot ask you to print it in full, but I will make a few quotations from it. After describing location of property, etc., he says: "Two distinct and parallel veins about 300 feet separated and running in a northeast by southwest direction are here shown, one of which has been traced to near the summit of the range by short tunnels, and a heavy open cut. From this cut, which is but about 500 feet from the summit of the range, a large quantity of high grade ore has been taken and is now piled near by."

After detailing other work done and describing the topographical and other characteristics of the property, he expresses his firm belief as to the continuity of this lead and says: "A tunnel on a level with the present lower tunnel will open stopes of ore of great extent and value." He then describes the other vein which he concludes is "very promising and shows good values at the surface," and outlines further plans for future working of property. Then follows this statement: "The properties are so situated that they can be worked at a minimum cost. An abundant water power within easy reach is afforded by Snow Creek, and the company has water rights and mill sites at a point which can be easily and economically connected with the mine by an aerial tram, which can be operated without interruption at all seasons of the year." Then he says: "I have no hesitation in saying that the showings of mineral on Silver Queen properties are among the best I have ever seen on any property at a corresponding stage of development; and from these showings I can see no reason why, with the judicious expenditure of a few thousand dollars, the property should not be made self-sustaining and very profitable within a very short time."

And now to the bugaboo of the "expensive plant" which your "correspondent from the west" raises. Here is what Mr. Kellogg says: "I should advise the immediate installation of an air compressor plant with two machine drills. Such a plant can be operated there by water power at an exceedingly small cost, and through it rapid and economical development can be secured."

Following this advice, emanating from a source whose reliability cannot be questioned, and with the hearty and unanimous concurrence of our engineer, our management are installing the left side of a 12 x 18 duplex Rand air compressor, power for which is being taken from the waters of Snow Creek harnessed through the medium of a 26 inch pipe connected with a five foot double nozzle Pelton water wheel. Air will

be pumped to the mine through a four inch iron pipe, where it will operate the machine drills. We are starting with two 3¼ inch Rand drills. With this plant we can develop our property in just about one quarter the time that it could be done with practically the same number of men by hand, and the cost per foot of work will not exceed one half the cost of hand work. Remember that our plant is to be operated by water power. Were it a steam plant the saving would be very much less in cost of work, but it is not a steam plant. Any mining man of experience will indorse the assertion I am ready to stand back of, viz., that such a plant as ours, operated by water power, will pay for itself in one year's work, in the saving that will be made through its use in the cost per foot of work done by it as against the same number of feet of work done by hand drilling.

This communication is much more lengthy than I would have preferred to have it, but the attack upon our company which it is intended to refute is one which could not in justice to ourselves be left unanswered, and, unfortunately, the answer could not be made in a few words. So, in accordance with the doctrine of "British fair play," in which I am sure you are a believer, kindly overlook length and other imperfections, and allow the assailed full opportunity to protect itself and themselves against an unjust attack for which you are, in a degree at least, responsible.

Respectfully,

EDWARD C. FINCH,

Secy. and Gen. Mgr. Silver Queen Mining Co.

[We are very pleased to give Mr. Finch's letter prominence, as it is very far from our desire to prejudice his company unfairly. The item in question was furnished by a gentleman whose knowledge and experience of ore deposits we value, and whose statements we accepted and published in good faith.—EDITOR.]

Notes on a Laboratory Amalgamating Device and Comparisons with Actual Mill Results.

H. A. GUESS, M.A., Keewatin, Ont.

It is with the idea that they may prove of interest to those engaged in milling, that the following notes are offered.

The method outlined grew out of the necessities of the case in connection with the operating of the Ottawa Gold Milling and Mining Company's Reduction Works at Keewatin, Ont.

At this plant, which is a customs mill, there is in connection with the mill a well arranged sampling works.

The plan pursued by the company makes it optional with shippers of lots of over 50 tons, to either sell the ore on the results of the sampler, or to have it actually milled and cleaned up by itself. With lots under 50 tons, no separate run and clean-up is made, but the ore-lot is sampled, and the percentage of the assay value which can be saved by amalgamation and concentration is determined on the sample thus taken, and the lot paid for on that basis.

In making the laboratory amalgamation tests on each sample, to determine the percentage of saving, agitation with mercury, of the pulp, in stoppered bottles, was decided on as the most rapid and satisfactory method.

Various motions for this agitation were at first tried, among others the side shake of the Gates vanners; clamping the bottles to a revolving counter-shaft, fastening the bottles (in a suitable receptacle) to the stem of a dropping stamp, etc. None of these gave entirely satisfactory results, however.

The device which was finally arranged, and has been in use here continuously for the last six months, giving perfect satisfaction, will be readily understood by a glance at the accompanying photographs. The vertical agitation is given to the little table, on which the bottles sit, by a 2 in. eccentric run at 350 revolutions per minute.

Series of experiments were made, using the same pulps and same proportion of mercury, but giving different periods of time for the agitation, in order to see the period beyond which no further amalgamation would take place. Twenty minutes was found to be quite sufficient, but in practice thirty is used.

The method used in determining the milling value may be outlined thus:—

The pulp from the sampling works at the mesh of the mill (usually 40) is carefully sampled in the regular way, a portion taken through 120 mesh, on which from one-half dozen to three dozen assays (depending on the size of the lot, richness, condition of the free gold, etc.) are made, to determine the total gold contents.

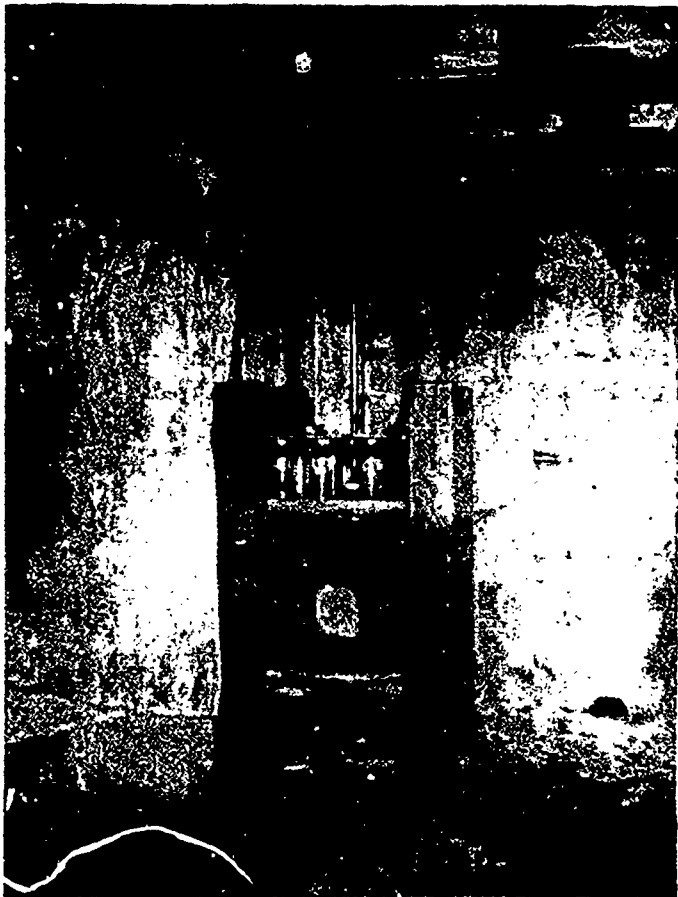
From the 40-mesh lot, from three to twelve charges of 100 grammes each are weighed into wide-mouthed bottles, water, and mercury (about 10 grammes) added, and put on the agitator, for 30 minutes. The contents of each bottle, panned separately, the mercury panned out and discarded, the sulphide concentrates panned out, dried, weighed to determine percentage, and dumped into an assay crucible, the resultant gold being calculated on the basis of 100 gm. charge; the value per ton of concentrates being obtained by calculation back; the tailings evaporated, put through 120-mesh, and assay value determined.

The means of the values thus found for the concentrates, and for the tailings, are then taken, and the amalgamable gold determined by difference from the total gold contents value.

The comparatively small quantity of 100 grms. taken, and doing a sufficient number of "checks," has been found to be more satisfactory than using a kilogram, as was first tried, as in the after separation of the

determined in the laboratory. This proved so satisfactory that, after a time, the small lots were allowed to accumulate, and several run through the mill together. The results were found equally satisfactory, so that now the small lots are all dumped together in the storage bins, and no separate clean-ups made.

In the concentration of sulphides, a factor has to be used in determining mill results, as closer concentration can be made in panning in



mercury, concentrates, and tails, the smaller quantity is susceptible of much more delicate manipulation, and the operations can be carried out with the nicety of a chemical analysis. In panning, 10 in. diam. aluminum pans are used, with rather steep sides.

In order to test the accuracy of the method thoroughly, the different small lots, after being sampled, and purchased on the determinations thus made, were stored, and run through the mill separately and cleaned up; the bullion assayed by itself, and results compared with that previously

this way, in the laboratory, than can be made by any mechanical concentrators.

The method here outlined has enabled the company to handle small ore shipments at a milling rate otherwise impossible, should a separate clean-up be made, and is valuable in laboratory mill-tests on small samples of a few pounds, up to a few tons, in determining with exactness the saving that can be made in free gold and concentrates, in a good mill properly conducted. It is also extremely valuable to a mill manager in determining whether his mill-men are saving all the free gold possible in the ore at that mesh.

Some little difficulty was encountered at first in determining the mesh in the laboratory, equivalent to the mesh of the mill, with the height of discharge there used; but a series of screen analyses of the pulps from both gave the desired means of adjustment.

Under are given the results on a few of the ore-lots, which were afterwards checked by separate clean-ups in the mill; and also one of seven different lots, dumped together, and milled, with results of laboratory determinations and mill results, side by side.

ORE LOT.	NET WEIGHT.	LABORATORY RESULTS.			MILL CLEAN-UP.	LABORATORY VARIATIONS.	
		Assay Value.	Free Gold.	Total Free Gold.	Bullion Clean-up.		
No.	Tons.	\$ p. ton.	\$ p. ton.	\$ p. ore lot.	\$ p. ore lot.	% of total value.	
A.....	18.8	24 70	20 50	385 40	390 29	....	1%
B.....	22.8	24 08	20 90	476 50	468 60	1.5%	....
C.....	38.0	4 12	3 51	133 38	131 61	0.9%	....
D.....	49.5	2 53	1 65	81 67	84 80	....	2.5%
*E.....	195.97	14 42	11 29	2,212 50	2,226 97	....	0.5%

*Seven lots combined.

A Proposed New Method of Smelting Lead Concentrates.

By HENRY F. COLLINS.*

The commonest associate of galena is blende; and almost all lead ores have to be "dressed" or concentrated in order to separate as much as possible of this objectionable material, as well as of the gangue. The usual products of dressing-works handling argentiferous zinc-lead sulphides are the following:

1. Concentrates of various degree of fineness ranging from 6-mesh first jig hutchwork down to 100-mesh "headings" from the slime-tables, and in composition from 80 per cent. lead down to perhaps 55 or 60 per cent., which is a common figure at Broken Hill.

2. Middlings of varying composition ranging, according to the adaptability of the ore to concentration, from an almost clean blende down to the intimate mixture of blende, galena, and heavy gangue minerals, with perhaps 30 per cent. zinc and 20 to 30 per cent. lead, which forms such a troublesome product at Broken Hill.

3. Tailings ranging from almost clean gangue-stuff up to a material with 10 per cent. zinc, and perhaps 6 per cent. lead, which, under some conditions, will not pay for further grinding and treatment.

4. Slimes of very variable composition, carrying from 15 to 25 per cent. zinc, and from 25 to 35 per cent. lead, the remainder being gangue.

Of the above the tailings are thrown away, the middlings must be treated either by the zinc-works, or, when at all rich in lead, by special processes like that of Ashcroft. The slimes also are too rich in valuable metals, and especially in silver, to be thrown away, and must be either treated by a special process or roasted and "worried through" with other ores in the blast furnace, where the very unsuitable mechanical condition and high zinc contents give rise to unusually foul slags and to an abnormal production of accretions and flue dust.

The concentrates are always smelted; but as regards Broken Hill concentrates, there are two distinct methods of procedure:

(a) They are shipped to England and smelted in reverberatory lead furnaces—usually in a modified Flintshire furnace.

(b) They are roasted more or less perfectly and run down together with the ores in blast furnaces, where their fine state gives rise to the same inconveniences as are to be noted in the treatment of slimes, though in less pronounced form. This method is that adopted at Port Pirie (Broken Hill Proprietary) and Port Adelaide (Block 14) works. Its comparative unsuitability for the treatment of the richer argentiferous lead concentrates is, however, evidenced by the fact that the first quality concentrates from Block 10, the Central and other Broken Hill mines, are exported to England at a greater advantage than if treated at the seaboard.

The advantages of the ordinary English process are:

1. Small dust, and volatilization loss.
2. High recovery after re-smelting slags in a cupola.
3. Adaptability to the use of inferior small coal or slack.

Its disadvantages, which put it out of court as regards Australian conditions, are:

1. Small capacity, and consequent high labor cost.
2. High fuel consumption—40 to 50 per cent.

The advantages of the blast furnace process are:

1. Large capacity, and consequent low labor cost.
2. Small fuel consumption.

Its disadvantages being:

1. Necessity of using coked fuel of good quality, which is always expensive.
2. Inconvenient mechanical condition of the charge causing slow running, increased labor cost, and high losses in slags and flue dust.

A method which would to a great extent combine the principal advantages of the blast furnace (large capacity) with those of the reverberatory (use of cheap raw fuel and suitability to fine charges) would therefore have much to commend it, especially for the treatment of Broken Hill concentrates and slimes at points in New South Wales, where cheap coal could be obtained.

After some study of the problem, the author ventures to suggest that a roast-reaction process, conducted in two separate stages, somewhat on the following lines, offers, if not a complete solution of the problem, at least the probability of effecting a large saving when carried out under the conditions of cheap coal and dear labor which prevail at the coal ports of New South Wales.

Leaving out of consideration the various grades of middlings, the material to be treated consists of jig concentrates, vanner and table ditto, and slimes. The proportions of these will vary according to the fineness of the grain of the ore under treatment, and to the perfection of the mineralogical intermixture, but may be assumed to be roughly in the ratio of 3, 1 and 1. The first may contain 60 per cent. lead; the second, perhaps 50 per cent.; the last, perhaps 25 to 35 per cent.

The suggested process consists in roasting somewhat more than one-half—say three-fifths—of the material to be treated, and smelting it while still hot with the unroasted remainder in a large reverberatory working continuously, and so arranged that heat carried away by the products of combustion could be utilized to increase the temperature in the fire-box and diminish the consumption of fuel. For roasting, the finer sizes of jig concentrates should be employed as well as the headings from vanners and tables and the final slimes, since not only does the finer material roast much quicker, but its zinc contents thereby become oxidized, and so give much less trouble in smelting than if they remained in the condition of sulphide.

The Roasting Furnace.—The slimes containing not over 25 to 35 per cent. lead might perhaps be handled to advantage in one of the mechanical furnaces like the "Ropp," which has been introduced lately at Port Pirie, and is reported to have behaved very well at Selby (California), and at Pueblo (Colorado). Neither this, however, nor any other mechanical furnace has yet been able to do anything like satisfactory work on lead concentrates containing upwards of 40 per cent. lead, and therefore, for all the fine concentrates which are to be roasted, a long, hand-rabbed reverberatory should be employed.

In the absence of any material admixture of iron or copper pyrites, there is no advantage in having more than three hearths. The best dimensions for the roasting reverberatory will therefore be about 50 ft. long by 16 ft. wide, a fairly high temperature being employed, and the draft kept low in order to convert as much as possible of the lead into sulphate. The hearth nearest the fire bridge might be partially covered with a curtain arch to moderate the temperature there and prevent sintering. Under such conditions the capacity of such a furnace on a mixture of two parts fine concentrates, and one part slimes, would average about 10 tons per 24 hours down to about 4 per cent. of sulphur as sulphides. The fuel consumption, using small coal of fair quality, should not exceed 20 per cent. by weight of the ore treated, and even this might probably be reduced by closing up the ash pits and supplying under the grates only air heated by passing through iron pipes heated by the products of combustion in the exit flue. The roasted ore should be raked into large hopper cars, trammed over the hopper of the smelting furnaces, tipped there in the required quantity for a charge and immediately covered with a corresponding amount of raw concentrates to wait until the furnace is ready for another charge.

By this method of calcining, the charge would probably increase in weight about 10 per cent., *i.e.* 10 tons of crude becoming 11 tons of roasted concentrates.

*Australasian Institute of Mining Engineers.

The Smelting Furnace: This should be a reverberatory at least 24 feet long by 12 feet inside, with rounded corners and a fire-box about 6 x 4 or 5 x 5, and provided above with a three-necked hopper like the furnaces of the Ananconda and some other Butte companies, which are used for smelting hot calcined copper concentrates and ore to matte. In construction, however, the furnace should be built like a softening furnace inside a wrought-iron tank resting upon I beams, and a narrow water-jacket should project nearly through the lining at about the level of the top of the bath to prevent corrosion. The taphole should be at least 6 inches above the bottom so as to keep a pool of some 45 to 50 tons of molten lead always inside the furnace upon which the charges would be dropped exactly as they are dropped upon a bath of matte in modern copper reverberatory practice. The same object might perhaps be conveniently attained by fixing a syphon-tap lead well at the flue end of the furnace from which the lead could be continuously dipped, exactly as from a blast furnace well.

Instead of a coal-burning fire-box it might very likely prove more economical to use separate gas-producers burning almost worthless slack, by which means the heat would be more easily regulated and the flame kept neutral. In any case the air admitted to the fire-box should be heated. This would be most conveniently done by drawing it first through a system of large iron pipes passing through the furnace flue, or as at Ananconda through an outer casing into which the latter would radiate its heat and then under the furnace vault to keep the bottom of the tank cool.

Mode of Operating: After skimming off the slag from a previous charge through, say, 4 skimming doors a charge of say three tons five cwt. of hot roasted concentrates and slimes, corresponding to three tons of raw, covered by the charge of say two tons of raw jig concentrates should be dropped from the hoppers upon the lead bath over which it would spread almost immediately with but little assistance. The two classes of material, should, however, be mixed as thoroughly as possible by vigorous and continuous rabbling with closed dampers for say 10 or 15 minutes, after which the dampers should be opened. Upon closing the doors and raising the heat the classic reactions of $PbSO_4$ and PbO upon PbS would set in almost immediately, and probably one or perhaps two more rabblings at half-hour intervals followed by a short sharp heating would suffice to bring fully 80 per cent. of the total lead in the charge into the form of metal, the remainder, except the small portions driven off with the fumes, being found as usual together with the silica, zinc, and other constituents of the ore floating on the surface of the bath as a "grey slag," which could be easily raked out through the skimming doors. This grey slag would be treated together with less leady and more ferruginous ores, and concentrates in blast-furnaces for which its mechanical condition would render it eminently suitable.

It is probable that a furnace of the kind indicated, if provided with a fire-box and stack of sufficient dimensions, would be capable of easily working off 5 ton charges of mixed raw and roasted concentrates in less than 2 hours, or a total daily capacity of over 60 tons.

Owing to the cooling of the products of combustion, the pre-heating of the air admitted to the fire-box, and especially to the low specific heat of the liquid products, lead and slag, coupled with the small quantity of the latter, the consumption of fuel would be very low. At Butte from 20 to 24 per cent. of coal is found sufficient to smelt a charge consisting about half of hot calcined copper ore which produces 50 per cent. of matte and over 50 per cent. of ferruginous slag of high specific heat. There can, therefore, be little doubt that a smaller percentage, say 18 per cent. would suffice for the smelting of a mixture which, besides fusing at a lower temperature, yields in addition to say 45 per cent. of lead, the specific heat of which is only one-fifth that of matte, only some 35 per cent. of slag of a very much lower specific heat than the copper slag.

The total consumption of coal, therefore, would be for roasting 20 per cent. on three-fifths of the charge—equivalent to 12 per cent. on the total—plus for smelting, say 18 per cent. on the whole charge; making a grand total of 30 per cent. as against 40 to 50 per cent. in the ordinary English and Silesian reverberatory practice. The "grey slag" would, of course, have to be re-smelted; but this takes comparatively little fuel, as ferruginous ores would be used for fluxing, and its mechanical condition would render it a most desirable furnace material. Allowing that it required for re-smelting 12 per cent. of coke, the total weight being only 35 per cent., the amount of coke required would be only 42 per cent. on the ore treated, and the cost of the 8 per cent. of coke saved would, in any of the colliery districts, be fully as great as that of the 18 per cent. extra of small coal used—greater indeed in most cases. The extra cost of labour in the smelting reverberatory would be trifling, and more than off-set by the increased capacity gained in the blast-furnace. The volatilization—loss of lead—would be practically no greater than in the blast-furnace. The greatest advantage of the combined method would, however, be seen in the blast furnace department, where much cleaner slags would be produced and the losses of lead and silver would be much diminished.

The combined reverberatory blast-furnace method would be admirably adapted to the treatment of all kinds of rich silver residues and refinery products, e. g., silver-lead residues from the Ashcroft process. These being already oxidized and free from zinc could be melted down comparatively quickly together with the raw concentrates, yielding a very clean bullion and a small quantity of grey slag for the blast-furnaces. Similarly small quantities of very rich refinery products could be added direct to the reverberatory lead bath to avoid dusting; while all coppery, antimonial, arsenical and ferruginous ores would be smelted in the blast-furnaces with the grey slags yielding impure base bullion and copper matte as usual.

The reverberatory furnace would also afford the best possible means of working up all flue-dusts produced, which are so objectionable in a blast-furnace charge, and so liable to cause additional heavy loss by dusting.

Safety Explosives.

In the transactions of the Federated Institution of Mining Engineers for June, 1898, Mr. W. Cullen says:

Some doubt still remains among the best known authorities as to what really constitutes a safety explosive, and wherein lies the real margin of safety. It seems, however, to be agreed, that the old and original claim of "flameless" must be dropped, and "safety" substituted for it; but even this latter term is looked upon with skepticism by manufacturers and users of black powder. In any case the mass of opinion seems agreed on the following points: (1) In certain coal mines, black powder is extremely dangerous; (2) under certain fairly well defined conditions it would be criminal to use black powder; (3) under the same conditions, certain explosives show a greater margin of safety; and (4) under certain conditions, the use of ordinary fuse is liable to lead to serious accidents.

The writer does not assert that any one of the so-called "safety explosives" is perfect; indeed, he is of the opinion that the great amount of scientific research which is at present attacking this most important problem will ultimately result in benefits both to the coal miner and to the coal master, and, it may be, even to the manufacturer of explosives; but with fresh editions of the "permitted list" appearing every month this latter statement may be doubted.

A perusal of recent literature on the subject of safety explosives and their trials has revealed to the writer the fact that many statements have been made which are altogether contrary to scientific truth, and

not only so, but authorities themselves are divided regarding the merits of one or two of the safety explosives which have emerged most successfully from these trials. This being the case, the writer is inclined the more to take up the subject from the practical standpoint, and to avoid theory and the discussion of previous work. As an example of what is meant, he may mention the application of photography to ascertain the nature and size of the flash produced by various explosives. Many interesting and very commendable experiments have been made by investigators, but the subject is not one to be lightly tackled by the tyro; and many questions must be considered before we can positively assert that, because the flash as indicated on a photographic plate is very great and very bright, therefore the explosive producing it is unsafe. The actinic properties of flame must not be forgotten, and it is quite conceivable that an explosive giving a very large flash might produce a very faint impression on the plate. It is undoubted that almost every explosive has a characteristic flame-color (red, blue, purple, or even whiteish), and all these have different actinic properties. But nearly all of these experiments have been carried out by detonating cartridges in the open air, which to his mind was a most unsatisfactory method. Dynamite will explode easily and completely without confinement, but it is quite another thing when we deal with gelatinous explosives and those of the ammonium-nitrate type. It is difficult to detonate these explosives even in confinement, and it is not reasonable to expect that they will detonate when unconfined. This explanation no doubt accounts for the fact that photographic results show some explosives to be flameless simply because very little, if any, was detonated.

The general impression of the man-in-the-street is that an explosive for use in coal mines must produce comparatively little flame, and that this flame should have a very low temperature. To those who hold this view, the publication of the two last editions of the "permitted list" must have come as a great surprise, for they contain several brands of gelignite, an explosive which, according to photograph records, gives abundance of flame of a high temperature.

Of course, the writer does not mean to assert that the preceding definition of a safety explosive is strictly correct, but it is common sense, and he would not be surprised if he heard of more stringent conditions being adopted by the Home Office in their tests of the safety of explosives.

The principle of these tests is that a weight of an explosive is taken which is capable of performing a certain standard amount of mechanical work, in other words this means that of the high explosives a small weight is taken, and *vice versa* with low explosives, pointing to the fact that there are certain ratios between the volume, the temperature, and the specific heat of the gases. If these ratios be overstepped the explosive ceases to be safe; that is, if the test were carried out with double the required amount of, say, gelignite, probably it (the gelignite) would not pass.

Until a few years ago, explosives were roughly divided into high and low, but recently new explosives have appeared which it is impossible to place in either of those classes, and we may call them "medium" for simplicity. Nowadays, it is very difficult to draw a hard-and-fast line between high, medium and low.

The last edition of the "permitted list" contains the names of 18 explosives, and of these 11 have ammonium nitrate, and 7 have nitro-glycerine as their base. Both of these bodies contain an excess of oxygen, and advantage is taken of the fact in applying them to coal-getting, and, indeed, to making use of them as explosives generally. Perhaps a better illustration of the principle adopted in their manufacture could not be found than in the case of cordite. This explosive contains 5 per cent. of vaseline, which cools the gases, and at the same time increases their volume. Precisely the same effect is generally obtained in toning nitro-glycerine for coal-getting, save only that the amount of carbonaceous matter added is very much higher than 5 per cent., and, naturally, the temperature of the resulting gases is still further reduced.

Former Cost of Comstock Mining.

(From the *Mining and Scientific Press*.)

As illustrating the present decreased cost of mining, compared with that of former years, it is interesting to note the prices paid on the Comstock, Nev., lode for labor and supplies in early days. One mine the Hale and Norcross—is typical of the entire lode. During the year ending March 1, 1867, there was a product of 29,404 tons ore. The managerial expenses were \$9,331.25, the hoisting and engine department \$70,199.25, prospecting and dead work \$39,769.23, extracting ore \$101,167.94, improvements \$19,376.30, "relative expenses" \$27,321.21. The entire cost of production was \$266,679.18. It is worthy of note that the 15,639 tons of ore treated during the first six months of the year under consideration in the history of the mine specified, assayed \$1,288,132.79, and produced \$816,977.62, the loss, according to the assays, being \$471,155.17; that is, the 15,639 tons assayed \$465,190.14 in gold, and \$822,942.65 in silver, and produced \$397,157.99 in gold and \$419,819.63 in silver—a tremendous waste.

In those days the cost of supplies was necessarily great. Compared with present prices it seems exorbitant. In the details of expenses in the hoisting department occur a myriad of such items as the following:

2,665 lbs. tallow.....	\$296 78
36 lbs. sulphur.....	18 00
133 lbs. white lead.....	35 35
300 gals. kerosene.....	366 75
61 lbs. borax.....	27 80
1,828 lbs. car iron.....	227 50
2,046 lbs. coal.....	132 11
7,500 ft. lumber.....	210 00

In the engine department among the items are:

1,916½ cords wood.....	\$26,770 16
93 gals. lard oil.....	295 15
1 gal. varnish.....	8 00

In the "prospecting" department:

268 boxes candles.....	\$1,474 00
8 kegs powder.....	49 00
875 ft. fuse.....	25 50
280 lbs. steel.....	80 00

The labor was at the same general rate as at present, being the one item that has remained unchanged through the years. In the summary of prospecting is the item:

Miners, 3,204 days.....	\$12,816
Carpenters, 281 days.....	1,405
Carmen, 981 days.....	3,924
Blacksmiths, 285 days.....	1,710

The average cost of ore reduction for the year was \$14.26 per ton. The cost of materials at the Gould & Curry mill for that year is given below, with the quantity and average price:

ARTICLES.	QUANTITY.	COST.	AV. PRICE.
Wood, cords.....	11,442	\$168,830	\$14 72
Lumber, ft.....	172,857	3,725	42 40 (per M.)
Shingles.....	21,500	185	8 60
Charcoal, bushels.....	5,848	1,659	28
Iron, lbs.....	12,639	1,698	13½
Gas pipe, lbs.....	450	258	57½
Castings, lbs.....	395,099	33,880	8½
Rivets, nuts, etc., lbs.....	853	175	20
Steel, lbs.....	1,253	315	25
Copper, lbs.....	178	142	80
Babbit metal, lbs.....	262	120	46
Nails, lbs.....	3,832	417	11
Zinc, lbs.....	172	42	25
Turpentine, gals.....	25	72	3 00
Beltting, lbs.....	2,888	2,192	.....
Packing, lbs.....	494	497	1 00
Rope, lbs.....	393	96	25
Hose, lbs.....	136	97	.....
Sulphate of copper, lbs.....	87,353	17,588	20
Salt, lbs.....	345,668	10,943	3
Lard oil, gals.....	1,360	2,487	1 83
Kerosene oil, gals.....	985	1,615	1 64
Linseed oil, gals.....	40	99	2 47
Quicksilver, flasks.....	675	35,013	51 89
Cut bolts, lbs.....	923	214	23
Screens, lbs.....	743	633	1 to 75
Candles, lbs.....	2,980	819	27½
Axes and handles.....	71	67	.....
Picks.....	42	20	50

Shovels	239	231	1 39
Feet, sacks	487	2,087	.....
Hay, bales	196	1,120	.....
Axle grease	116	58	50
Copper rivets, lbs.	280	280	1 00
Tallow, lbs.	10,863	1,361	12½
Alcohol, gals.	15	60	4 00
Brooms	189	147	77
Oakum, lbs.	126	46	32
Sledge handles	157	77	50
Lamp chimneys	531	174	32
Hoes	76	71	1 00
White and red lead.	1,241	242	20
Blankets	43	347	8 00
Leather	575	246	42½
Stone coal	9,751	714	150 00 (per ton)

And yet, despite all, the business, even at such apparently ruinous figures, and carried on under such a wasteful system, showed a profit. For the year indicated the assessments were \$1,232,380, the dividends \$1,794,400.

So far as the stock market was concerned few knew and fewer cared what anything around the mines cost. To the street it mattered little that coal cost \$150 per ton or skilled labor \$6 per day. And the strangest part of it all was that though the system was lavish and the methods destructive, yet it was the speculative element that furnished the opportunity for the first example of deep metal mining on this continent. In those old Comstock days there was no cautious sinking from level to level, as the ore found paid for the work of going down another 100 feet. It was bold, daring development made possible by unlimited funds furnished by the speculative public, not with that intent but with that result.

The Nova Scotia Mining Laws.

The writer has carefully considered Mr. Wilson's article, printed in the May number of the REVIEW, as well as the editorial remarks in the June number. He has had considerable experience in, and practice under the mining laws, and their working and effect upon mining enterprise, so that he may fairly venture to offer these remarks and conclusions to the fraternity and the Government for consideration as a basis for amendment.

To begin with, he is not one of those who condemn the present law *in toto*. While recognizing the need for certain changes, and for codification, it is quite apparent, and not to be contradicted, that the mining business, under our system of law, has grown to fair dimensions, relatively to other branches of industry, in this Province. The Government for the time being has always shown readiness to adapt the law to the requirements of the miners, whenever it has been clearly pointed out *what those requirements were*; and whenever the committee on amendments could be made to see that miners were *unanimous* in favor of proposed changes, such changes have invariably been granted.

Where ambiguities gave rise to contentions as to the meaning of clauses in the law, the decisions of the Courts have resolved doubts, and the ambiguous clauses have been interpreted so as to form tolerably certain guides for future conduct.

Suppose an entirely new act to be substituted for our present law, this stage will not again be reached until numerous decisions, with all their attendant consequences, shall have resulted.

Let us beware of violent and radical changes.

Granting that there is yet much more to be done, can it be maintained that the course of mining legislation, for the past ten years especially, or since the last revision of the statutes, has not been very markedly in the direction of improvement? Take up, for instance, the Fifth Series of the Revised Statutes of Nova Scotia, and look at Section 18 of the Mines and Minerals Act, as it stood twelve years ago. There you will see that entry and work on private lands by a lessee of gold areas under the Crown, unless after agreement with the owner of the soil, or assessment of damages by arbitrators as there provided, subjected the lessee to the penalty of forfeiture of his mine. This certainly involved a great hardship, and was a most unequal law, as many can testify (*vide* the Palgrave cases), but when the injustice was pointed out, the Legislature amended it, and substituted a remedy more harmonious with equity and good conscience, by making lessees in such cases liable only for trespass as in ordinary cases.

"All leases hereafter granted shall be for the term of forty years," is one of the chief amending clauses passed since the last revision, and is of the very chiefest importance, inasmuch as the amended law allowed but twenty-one years, and by this change the life of a lease was practically doubled, and the title very much strengthened.

The barrier clause, and those relating to base lines, surveys and boundaries have also been passed or improved within the same period.

That there are certain features still in need of amendment is, however, only too patent; and chief among these seems to be *the danger of lapse threatening an equipped mine, e.g., for non-payment of rental.*

While this provision is (Acts, 1892, chap. 1, sec. 18, sub-sec. (a)) all right and fair as to ground that is lying idle and held for speculative purposes only, it does seem vitally inequitable to apply the clause to a mine *on which expensive and valuable plant has been erected and money spent in prospecting and development.* It has happened from oversight or misunderstanding that a mine has been lost through this cause, and the danger always lurks to beset the title of the timid capitalist. There should be a distinction made between absolutely unequipped mining areas, unworked and held for speculation, on the one hand, and a more or less developed mine, on the other hand, into which the owners, besides paying rental, have put hard cold cash

for development or plant. Such outlay should secure to a mine owner a good and valid title for a time certain, dependent on the amount of his expenditure.

That such expenditure should confirm his title indefeasibly for a fixed and certain term, ought to be an indisputable proposition, and such clauses as will carry this principle into effect ought to be promptly enacted.

Let the rentals be collected, if not paid, by process, and let the penalty of forfeiture *in such a case* be abolished.

That one man should, by paying rental, be permitted to hold and tie up *unlimited areas*, is an evil. The provisions of the Quebec Code, which prohibit any holding over the prescribed size, unless the holder can show capital and ability to exploit the same, to the satisfaction of the Governor-in-Council, when the size may be increased, is an example worthy of imitation. This provision, in Nova Scotia, should be drawn so as to apply to the aggregate holdings of an individual or corporation throughout all the districts of the Province.

It is a hardship for a mine owner to be bound to pay a royalty or bonus on a losing business. No one would object to paying a royalty when the mine is yielding a profit; but when, as is too often the case, the mine is running at a loss, perhaps, in the reasonable hope and expectation of striking something better, it would be a help and encouragement to the miner, and a benefit as well to the Government by helping to establish the permanence of the undertaking, to have the royalty remitted for the time being. This would delay many a shut-down, and perhaps avert it altogether. Let the royalty be paid on the value of the brick, after deducting the cost of extraction, if no better can be done.

The faults above outlined may more often be the subjects of grumbling to local men, but there is one practice in this province that above all others strikes practical miners from abroad with extreme disgust and alarm, and which they hate "worse than the devil hates holy water," and that is the custom by law established of going to the Departmental offices to take up a mine before going on the ground to stake it off. Personally I have known prospectors from abroad who turned their backs on the country and went away again without sharpening a pick for that reason alone, and on account of this being, as they considered, a most dangerous enactment, in contrast with their experience in other countries. Their invariable contention was that the only safe way to take up a claim is first to "stake it off" and locate it on the ground, and then to go and record it. To you, mine managers and practical men I appeal, and ask, in view of your experience in our mining districts and in our mining office, "are they right or wrong?" Is the custom of staking off and then entering and recording mining claims a better mode than that which is followed here? and would a change in that direction be a desirable one, and help to close the door on many of the grievances that now afflict you? and would the district office of the Deputy Commissioner, in or near the district, serve your interests better than the centralization of everything in the office at Halifax?

Codification is to be looked for when the present revision is complete. If the mining men organize for practical results in the meantime, there is little difficulty to be apprehended in securing a good, workable and well understood law. The Government will no doubt accede to your requests if only you are agreed, and express yourselves so.

If I have touched vital points, and if the present Act with the indicated amendments would effect the needed improvements and give you what you want, I would ask you to give expression to your views through some of the open public channels, available to you all.

Oct. 18th, 1898.

WORKING MINER.

COMPANY NOTES.

Athabasca Gold Mine, Limited.—The first general (statutory) meeting of the shareholders of the Athabasca Gold Mine, Limited, was held on 30th ultimo at the Cannon Street Hotel, London, E.C., Mr. Arthur Fell in the chair.

The Secretary (Mr. J. A. Turner) having read the notice convening the meeting, The Chairman said: Gentlemen,—This is the statutory meeting of the company, at which, as a rule, there is not very much to be said, but I think I shall be able to explain to you today a really remarkable progress that we have made since this mine was taken over by the English company. The Athabasca Gold Mine Company was formed some two or three years ago with the usual capital of an American company—a million dollars—and it was worked in a small way, I believe, almost paying expenses from the beginning, the ore being very rich. Last year, when I was in British Columbia, I heard of this mine, and I found the opinion on all sides was very favorable regarding it. But at that time no business resulted. In the spring of this year, however, it came before the British New Find Goldfields, with which I am connected, and it was put to us that this valuable mine was lying idle, and that with proper capital it could be made into one of the best mines in British Columbia. After looking into it, the British Columbia New Find Goldfields entered into an agreement under which they provided the capital to open up this mine, and, what is more, they gave the mine the advantages of the services of their manager in British Columbia. He took possession of the mine in May last. The company was not publicly issued, but on the 17th of May the first allotment of shares was made. The manager, directly the snow was off the surface, put on as large an amount of labor as he could, because our anxiety was—knowing the mine was a rich one—to get a battery up before the winter came on, so that the crushing could then continue steadily throughout the winter. In British Columbia, in these high latitudes, you can only do outdoor work during the summer, but when you get the machinery covered in you can continue to crush throughout the winter. Our manager took possession of this mine in June last. He was told that there was £10,000 working capital available, and that out of this he was to do his best to erect a battery of ten stamps, to put up five vanners, and, of course, the necessary houses, electric plant for lighting the mine and flumes, because it was driven by water power, and a Pelton wheel. In addition to that we had to make a road of about two and a-half miles to the mine, in order to make it accessible. This road was rather an extra expense. It cost £1,200; but of that the Government of British Columbia have refunded us £600, which we consider a very fair arrangement on their part. The manager had this £10,000 to do the work with, and he was told to do it, if possible, before the snow came in the autumn. You will hear, from the telegrams and letters which I will read to you, how this work has been carried out. From the latest telegram we have to hand the whole of it has been done, and the battery is running, I believe, as from to-day. This is a result which, I believe, has never been communicated at a statutory meeting of any mining company, at least that I have heard of. That you should start a mine, and at the time of the statutory meeting be able to announce to the shareholders that your battery is up, that your water-race is completed, that the water-power and the battery are running—that is a result which,

I believe, has never been accomplished yet by any mining company. Having said that much, I will now turn to the mine itself. The mine is situated about three miles from Nelson, in the Kootenay district, which is the very centre of the mining country of British Columbia. The Hall Mine is only three miles away. That is a very large mine, with a big smelter at Nelson, where this company's ore has been smelted, and seven miles away is the Fern Mine, paying regular dividends, the shares of which stand at 200 per cent. premium in the market. The great Ymir Mine, on the southwest, eight miles away, is now acknowledged to be one of the very biggest mines in British Columbia, and has a future certainly second to none. In the heart of this district is situated this Athabasca Mine. It consists of four claims and three or four fractional claims, and on these claims there are from fourteen to sixteen reefs that have been proved; but of course it is manifest that we cannot work on all these reefs at once, so we have devoted our attention to two principal reefs. I have here a map showing the workings of the mine, and I hope at the annual meeting to have a proper one exhibited on the wall; but we have not got that yet. The workings at present consist of two drives or tunnels into the mountain, an upper and a lower one; in both of these the last news is that we are in extremely rich ore. I will now read a few passages from some of the letters of the manager, beginning from the 12th of August last. On that day he says: "Mme. - I sent you on the 6th a cablegram saying we had struck a new vein on the Athabasca of the richest ore yet found. I am very pleased to be able to confirm this message, and to report that the work we have since done on the vein has been very satisfactory. The vein lies in the schist formation to the west of the upper workings, and may possibly prove to be an extension of the old rich vein from the point where it was faulted. Anyhow, the rock is of surprising richness; small samples of 3 or 4 oz., when panned, give a salt spoonful of fine gold. Moreover, the vein is of good size, though on this point we must do more work before making any statement. Mr. Riley says it is richer than anything he has ever found hitherto, and he thinks this may be due to its being further from the contact. I have been, as you know, for some time convinced that we should make our best discoveries in this formation. We have also found another vein close by of rich ore, but lumpy and not to be counted upon yet. I brought down from the new vein a beautiful sample of ore, weighing about 50 lbs., the cavities of which are encrusted with gold; if you wish to have it in the London office I can send it to you. We took the following assays from this new vein in the schist: One sample from spot where rich pannings were obtained, but with no gold visible, showed \$369.20 in gold." A dollar is practically a pennyweight, so that is practically 369 dwt. "One sample taken across 4 ft. (including the ledge) gave \$74.40. These results are wonderful." They certainly are wonderful if they are anything like that. That we can quite understand. It is from this new lode that the manager, to test it, extracted 15 tons of ore, and sent it down to the Hall smelter at Nelson, and he cabled us on the 12th of September last we have not got a letter later than the 9th of September—"15 tons smelted have netted \$1,730." That is equal to \$115 per ton, or 5 oz. 15 dwt. I am not sure whether that amount is after the expense of smelting has been paid. If it is, the results will have run considerably higher; but his telegram states that "15 tons have yielded a net sum of \$1,730." If after paying the smelting charges he got a cheque for that amount, the yield per ton will, of course, be a great deal more; at any rate it must have been at least \$115 to the ton, or 5 oz. 15 dwt. At the time the manager said that the only thing that caused him anxiety was that the main shaft had not struck the reef. But a cable arrived on the 17th of September last from the manager: "Have struck vein in main shaft fully 2 ft. 6 in. wide of very fine quality." The latest letter we have to hand is dated the 9th of September, and in this letter he says: "I came into town yesterday, and was present at the sampling of a shipment of ore to the Hall Mines smelter. The shipment was of 15½ tons, and I made it partly as an experimental test on the extension of the No. 2 vein beyond the slip, and partly because the proceeds will be welcome. In the case of such rich ore, as we believe this to be, the extra cost involved is largely compensated for by the complete recovery in the smelter. I shall not have the returns for a day or two, but will send you a cable when I receive them." Then he says: "The developments in the mine on No. 2 vein continue to be highly satisfactory. In the main tunnel we have now drifted about 30 ft. along this vein, which is about 2 ft. wide, swelling out at times to about 3 ft., which is larger than it was ever found to be at the shallow depth. Its value should be satisfactory, judging from its appearance and the gold which is freely visible in the stone. The ore which was shipped to the smelter was obtained from this vein from a tunnel starting from the surface. Nothing could look better than the ore at this point, and I am confidently expecting handsome returns from the smelter. Besides this development work on No. 2 vein, we are opening out the old slope on No. 1 and cross-cutting from the bottom of the shaft. I am not able to report anything satisfactory at this point." Then we cabled him that the meeting would take place to-day, and asked for the latest news. In response to that the following cablegram was received yesterday: "The development of the mine fully justifies expectations which have been formed. I have sufficient quantity of high-grade ore for six months. New stamps will be at work the day after to-morrow." This was dated the 27th of September, and was received on the 29th, so I gather that by to-day our 10-stamp battery is running, and running on rich ore, but whether it means 2 or 3 oz. to the ton we cannot say. Also, we must bear in mind that the ore has hitherto been all smelted, and by smelting you get out the whole of the gold, whether refractory or anything else. It is, however, a very expensive process, and we shall not get anything like the whole of the gold from a battery over plates; we may get 60 per cent. or 70 per cent. By the frue vanners we shall make a further extract, and then the concentrates from this will be sent to the Hall smelter and smelted there. Of course it is impossible to tell yet what percentage we shall have recovered at the end of all this, but we hope it will be something like 80 per cent. This mine is, of course, much more like the rich West Australian mines than any of the South African group; you must bear that in mind. There is very rich ore, but it is in narrow seams, and the ore runs more or less in shoots which you must follow, and the ore is of extreme richness. Whether this mine will turn out to be another Brownhill, or anything approaching the rich mines of Western Australia, time only will show. We have this large number of reefs, but we are only using two out of the sixteen at the present time. These two have turned out better and better as we have gone further down. It is always hoped and said that a true fissure vein grows richer as you go down, but I have known of no country where that is the case except in British Columbia. I know of many mines which started at 3 dwt. or 4 dwt. on the surface, with 6 in. ore, and by the time they have gone to 20 ft. or 30 ft. down they have a vein 10 ft. broad yielding 10 dwt. to 12 dwt. It is most encouraging in British Columbia to follow a lead from the surface, and many of the best mines, including the Ymir, had very poor ore on the surface, which steadily improved as depth was attained. I do not know that I have anything more to add, but I should be glad to answer any enquiry that a shareholder may wish to make. Reports as to the result of the monthly crushings will be supplied to the newspapers as they arrive. No formal resolution can be proposed at this meeting, but I think there is one proposition that I should like to make, and that is that we should carry a vote of thanks to our

manager and staff out there for having done their work so expeditiously and well without exceeding either the time given them or the amount of capital placed at their disposal. We told them that £10,000 was available, and they have not expended up to the present more than £8,000. This is such an exceptional thing that I think we ought to pass a vote of thanks for the way they have carried the work through. As to the result of their work, that depends on the mine; it is not their responsibility; what they had to do they have done well. There is nothing, as I have said, to do at this meeting, but I think after what I have said we ought to propose a vote of thanks to our manager and staff in British Columbia, and I have great pleasure in making that proposition to the meeting.

Mr. Neame: I should like to second that. I understand the manager to say that he has six months of rich ore in sight to go ahead with?

The Chairman: That is so, according to the last telegram we have received.

A Shareholder: What is the amount of capital already subscribed?

The Chairman: The British Columbia New Find Company guaranteed the £10,000 working capital. There was a little prospectus issued, but the shares have never been offered to the public.

The Shareholder: £10,000 you say was guaranteed?

The Chairman: Yes, £10,000 was guaranteed, of which £8,000 has been expended so far upon the erection of machinery, etc.

The Shareholder: Of course there have been subscriptions, I presume?

The Chairman: Yes, the shareholders of the British Columbian New Find took up a considerable portion of this capital.

The Shareholder: And the other has been privately subscribed.

The Chairman: The Company has subscribed itself, and a few people took a few shares, but practically it is all in the Company's hands. A little was subscribed in Glasgow through Mr. Brown, one of our directors down there, and one or two of his friends. If there are no more questions of any kind, I will put the vote of thanks to manager and staff to the meeting. I may say that our manager is at work at five o'clock in the morning and seldom gives up before nine at night. There is no question of an eight hours' day out there.

The resolution was then carried unanimously.

A vote of thanks to the Chairman closed the proceedings.

MINING NOTES.

Nova Scotia.

(For the REVIEW.)

STORMONT DISTRICT.

The Richardson returns 200 oz. for September; not quite up to the usual amount, yet this leaves a margin on the right side.

The Hurricane Point returns 150 oz., and the mine is looking better monthly.

SHERBROOKE DISTRICT.

The Blue Nose mill returns 327 ozs. from the Blue Nose and New Glasgow combined. The 20-stamp is now run steadily, day shift.

TANGIER DISTRICT.

Great changes have taken place in this district during the past few months. After a long period of inactivity, by a little judicious management in the consolidating of interests and holdings, the district is now one of great activity, chiefly in the preparation for extensive working. A number of miners are, however, taking out ore from the old Tarey lead, and the 20-stamp mill is running part time. Last month's yield exceeded 300 oz. Mr. Foster may well feel pleased with his venture.

RAWDON DISTRICT.

The Northrup Mine, largely owned by Clarence Dimmock, Esq., and which has been a large producer in the past, is now likely to pass into the hands of American and Montreal men. The past record of this mine shows excellent returns.

CAPE BRETON.

The directors of the Cheticamp Gold and Silver Mining Co. are now at the mine at Cheticamp watching the first run of ore through their new mill, the results of which are awaited with much interest. The lead on this property is a large one, carrying lead, silver and gold. The owners are all Halifax and Dartmouth men. The general impression is that this property will prove a most valuable one.

It is reported that the Guffey-Jennings Co., who acquired the Lake Lode Mine, Cariboo District, some time ago, have struck a very promising lead in the bottom of their new shaft, at a depth of 450 ft.

Ontario.

LAKE OF THE WOODS.

Work is proceeding steadily and energetically at each of our three mines—the Sultana, Regina and Mikado, and it is the continued excellent behaviour of these producing properties rather than the brilliancy of any new developments that is supporting the hopes of the mining public here this season.

At the Regina, the Tremayne mills are giving good satisfaction, and some very rich quartz has recently been taken out from the bottom of the deepest shaft.

Coal is still used under some of the Mikado boilers, but a large cordwood contract was lately given to some Norman parties. The wood is delivered at the mine for \$2.25 a cord.

Toronto and Western.—A breakdown of some of the hoisting apparatus recently caused a suspension of work in the shaft on D. 410, until repairs are procured from Winnipeg.

Cameron Island.—Operations have ceased for the present, but it is thought they will be resumed before long.

The Sentinel.—When the shaft on the main vein had reached a depth of 67 ft., there being no hoist but a windlass, work was stopped and a small exploring shaft was started on vein No. 2; this was sunk 39 ft., and then the force was put on the first shaft again. This shaft is now being timbered, a pump and a Denver whim have been ordered, and, when this work is completed and the machinery placed, sinking will be resumed and continued to a depth of 150 ft. or more, the option having been extended.

Burley.—Work is progressing steadily, but they do not expect to strike the Sultana vein for some distance yet.

Stella.—A lot of 150 tons of ore is going through the Keewatin Reduction Works from which good returns are expected. At the mine the Stella shaft is down 116 ft., and the present contract will take it down 30 ft. farther. Hoisting is by a whim. In the lower part of the shaft the vein is pretty flat, the dip being not much over 45°; it is a little more than this at the surface—perhaps 60°. There is not a great deal of quartz at the bottom, the larger part of the vein being composed of blocky slate with quartz seams. There is a good hanging wall, however, with its selvage of clay, and laterly masses of rock have been taken out containing glodes—cavities lined with crystals of pyrite, calcite and iron oxide, with massive galena on fractured surfaces. These are of course very hopeful indications as to the permanency of the vein in depth and fully justify the determination of the company to continue the sinking.

Gordon & James.—The contract carrying the shaft to a depth of 42 ft. is finished, and there is no one about the place at present, but it is said that work on a considerable scale is to be commenced shortly.

The Triggs.—The two men who were prospecting the property during the summer have been called in, and a new deal between Captain Triggs and the owners is on the tapis. The matter has been hanging fire for a little while pending the advent of a party from St. Paul, who is interested in the elections over there. Mr. Beck, of Rat Portage, went out a short time ago to look at the property known as McA. 130, adjoining the Triggs on the west, for some capitalists in the old country.

The Virginia Gold Mining Co., Ltd.—This company has a number of mining locations at the north-east end of Sturgeon Lake, east of Regina. They have driven into a bluff on one vein to a distance of about 40 ft., and have taken out some rich rock. A shaft is to be started and work carried on during the winter. The country is quite broken in this neighborhood, and appears to be hornblende schist and altered trap, but the vein appears to be associated with a band of "quartzite." At the mouth of the tunnel the vein makes a bend, being deflected towards the east through an angle of about 50°, suggesting a fault somewhere in the region; but whilst it is apparent that the southern part of the vein is running with the formation, I was not, in the short time at my disposal, able to make out whether the strike changed with the vein or not. There are only three or four miners working at present. Log camps have been put and the company has a gasoline launch on Sturgeon Lake.

A location has been taken up by Captain Pritchard and others on what is believed to be a continuation of the vein on the Virginia Company's property. The quartzite band occurs here also. A water lot also has been applied for in order to secure that portion of the vein under the waters of Sturgeon Lake; and the Virginia Company have a water lot with the same object in view on Elizabeth Lake.

Some four or five miles north-east of the Virginia, that veteran explorer is prospecting the claims on the rich finds secured by Dr. Scovil, Captain Pritchard and himself.

Mr. John Gardiner is prospecting his properties on Denmark Lake.

Messrs. Pardue and Stodders have gone out to their property, McA. 154 and 155, to prepare for winter operations.

Two locations were surveyed recently, one quarter of a mile east of the west boundary of Ontario, on a vein that crosses that boundary some two or three miles south of Ingolf Station on the C. P. Railway. The vein, which is from 5 to 10 ft. in width, is exactly in the contact between the gneissoid granite on the north-west and crystalline black hornblende schists on the south-east. It can be traced for a long distance, and pits have been sunk on it at three points on the shores of Hawk Lake. At one of these places especially the dip is toward the northwest or under the granite. The gangue is quartz and country rock, carrying iron pyrites, and assays from the pits mentioned are said to have gone from \$5.00 to \$8.50 in gold. Some Selkirk people sank a shaft which, curiously enough, was subsequently found to be half in Manitoba and half in Ontario when the interprovincial boundary was run last autumn. This shaft is down about 20 ft., but nothing has been done this year. It is worthy of note that the granitoid gneiss has a decidedly schistose structure at the contact, and for some half-mile or more away, when it gradually merges into the massive form.

Messrs. Kendall and Whiting had a prospective investor out to see their valuable property in this same region, but farther towards the south-west, beyond Hawk Lake. The carload of ore from these properties which it was proposed to bring out last spring, was never taken out, owing to some disagreement amongst the parties concerned.

RAT PORTAGE, October 18th, 1898.

J. M.

British Columbia.

SLOCAN DISTRICT.

The month of September has been a busy one for this district; not only has it seen all previous efforts in the matter of output left entirely in the shade, but numerous discoveries of great promise have also to be recorded. As you are aware, this sort of thing is highly contagious in a mining locality, so that people generally are feeling elated at the good prospects ahead. But seven years have passed since the Slocan was unknown except as a wild, mountainous tract of country, uninhabited

and untrod save at rare intervals by the feet of intrepid explorers. How vastly different is the outlook now! the old travellers would stand amazed at the transformation. Right royally has the Bayne mine celebrated its birthday by eclipsing all shipping records to date. 1,710 tons of high grade galena was the output from this mine last month, an average of nearly 60 tons per day. The Slocan Star, for so long the banner mine of the Province, though sunk into comparative insignificance beside the tremendous exertions of the Payne, is still a mine of enormous resources, a fact which many seem either to have overlooked or forgotten. It likewise is now seven years of age, and commemorated the occasion of its birthday by upholding its reputation to the extent of 420 tons last month, the only other mine to exceed this being the Ruth, which contributed a larger quantity by just 10 tons. From what I hear the Star is likely to increase its output to a considerable degree before long. The total production of the whole Slocan for the month could hardly have been less than 4,000 tons, which, as I said before, constitutes a record, though from present indications there is no knowing for how long it will stand. The Washington and Slocan Boy on which J. L. Rettallack held a \$50,000 bond, have been turned over to the B. C. Goldfields, who will amalgamate them into one and make an effort to float it in London as a going concern. The former of these, it will be remembered, was the first mine in the Slocan to see the advantage of erecting a concentrator, although it has not, I believe, been in operation for some time. Backed up as this venture is by the good opinions of influential men and competent engineers, there appears to be no reason why the flotation should prove anything but a success if properly conducted. Excellent progress appears to have been made at the Noble Five during the past year if the unanimity and good feeling which prevailed at the annual meeting in Spokane last week is any criterion. James Dunsmuir has been re-elected chairman and the other officials remain practically as they were. The main energies of the management will still be directed towards efficiently developing the mine before actual shipments commence. The Ruth was honored recently by a visit from H. W. Foster, M.P., representing the English shareholders who own two-thirds of the property. It is needless to say that he was much impressed with the way the mine is looking, it having by this time advanced to the dignity of second position among Slocan producers.

Sandon is familiarly known as the Silver City, and it may not be generally known that this is true in its literal sense. The streets, or more correctly speaking, the street, for there is only one worthy of the name, is laid with tailings from the Slocan Star concentrator, this having been found a very suitable material for the purpose, so that you cannot pick up a hand-full of dirt or gravel which does not positively shine with specks of galena and other silver-bearing minerals. Such a use for tailings is probably unique in the history of mining, although at Nelson the waste slag from the smelter is utilized to raise adjoining land which is below the level of the lake at high water. Of smelter schemes which have fallen through we have surely had our fill, but becoming dish-artened appears to be quite out of the line of promoters, who return to the attack time and again with renewed energy. The Pilot Bay people still affirm that the smelter will be operated as soon as cheap coke can be obtained via the Crow's Nest, and the Rosland miner is authority for the statement that another large smelter will soon be erected on the banks of the Columbia, somewhere below Trail, presumably by the B. A. C. Of more direct interest to the Slocan, perhaps is the assurance that preparations are being made to erect a complete sampling works in connection with the Three Forks concentrator which operates exclusively on ores from the Idaho basin. Since the collapse of the Rosebery project, the increased need of such an institution has been badly felt. The fears expressed last month regarding the Mollie Hughes appear to have been only too well grounded. After spending over \$10,000 in developing and equipping this property, the North-West Mining Syndicate have, with considerable reluctance, been compelled by the unreasonable attitude of the owners to relinquish their claim upon it. The company were quite willing to continue work, but did not feel warranted in making the large payment required, viz: \$18,000, being a second installment on the \$40,000 bond. Universal regret is expressed at the action of the owners in refusing an extension of time, it being conceded that an almost fatal blow has been struck at dry-ore mining in the Slocan, the effects of which will be felt for many a long day. Situated as this property is in an almost ideal spot for economic development right by the water's edge, a much lower grade of ore could be made to pay than is usually the case in this land of snow and mountains. The owners, to whom the property reverts, will probably do a little work themselves during the winter, but systematic mining is out of the question, without the aid of considerably more capital than is at their command. Happily the other property acquired by the same Syndicate, the Bosun, bids fair to recoup them for any loss they may have sustained. The development so far consists merely of a 60-ft. inclined shaft and two short tunnels on the lead, aggregating all told about 300 ft. of work, yet from this space eight carloads or approximately 160 tons of ore have already been shipped, and the management state their ability to turn out three cars a month regularly, in order to cover working expenses until the mine is sufficiently developed, when stopping will be begun in real earnest. The same syndicate has also acquired an option on a Four Mile group known as the Condor, which may develop into a paying property when thoroughly exploited. Your readers will remember, doubtless, how time and again I have tried to impress upon capitalists the enormous prospective value of claims situated on Silver Mountain, right behind New Denver. As I have explained many times before, the Slocan Star, Ruth, Idaho, Alamo, Queen Bess, Ivanhoe, Mountain Chief, Alpha and a host of other names familiar to all who have heard of the Slocan are situated on this very hill, but where the formation is exposed, and not covered with debris as it is on the western slope. Why in the name of good sense all the best veins should reach daylight and none remain under the wash which covers nearly half the hillside is certainly an enigma, and moreover proves to be a fallacy which is rapidly being exploded. Since the California, Fidelity, Bosun and other equally well-known mines have been located on this side, more thorough search has been made, and as was to be expected by all who have made a study of the subject, new and valuable strikes are of almost daily occurrence. One of these, the Eclipse, has recently been bonded for \$10,000 and is said to be backed by McCune of the Payne. In connection with this it is interesting to note that a cross-cut tunnel is now being driven in soft rock for about \$3.50 a foot, which, contrasted with the Rosland camp where the regular rate is at least \$15—and I have even been told of cases where contracts were let for \$40 a foot—is simply marvellous. I venture to assert confidently that there is no more promising opening for capital to-day than acquiring and thoroughly exploiting claims in this neighborhood. Conclusive evidence of the difficulties attending prospecting this territory by ordinary means is found in the fact that four years ago two prospectors accidentally uncovered a vein of pure galena in the Marion ground, situated south of the California, and concealing it again, offered to sell the information to the locators for \$300. The owners refused this offer, and spent months in a vain search for the ledge, which resulted a few weeks back in their paying the sum asked, when the desired information was immediately forthcoming. This same lead has been traced on to several other claims and renewed activity all over the mountain is the result. The town of Silver-

ton at the mouth of Four Mile promises to be lively this winter. Properties up the creek are all doing well, and when snow flies the accumulations on the various dumps will be raw-hided to the lake en route to the smelter. A marvellous change for the better is noticeable when travelling up the different creeks to what was the case say even three years. Where a barely passable trail furnished the only means of communication then, splendidly built waggon roads and raw-hide trails now admit of easy access. A metamorphosis complete has taken place, and one would hardly recognize the mines for the same, after expecting a long and arduous journey and being so agreeably disappointed. I have found by hard experience that comfortable means of ingress has a great deal to do with one's opinion of a property; many a claim is condemned through sheer ill-temper on the part of the expert, caused by traversing a miserable apology for a trail. The Comstock mines are going ahead with the construction of their concentrator, and to that end 120,000 feet of lumber has already been ordered. The one at Whitewater should soon be in running order, and when this and others under construction are completed, a formidable addition to our present output may reasonably be expected. The Comstock, Vancouver and Wakefield will be the principal shippers from Four Mile this winter, although many smaller concerns are being continuously operated and will doubtless swell the list next year. I referred in general terms last month to a startling find of gold ore on Eight Mile Creek, from which extraordinarily high assays were obtained. Fuller investigation leads me to the belief that a very important strike has been made. As I explained, the country rock is here entirely different in character and origin from the main Slocan belt. From what I can gather, Red Mountain, as it is called, consists essentially of a porphyritic granite which is traversed in places by bands or dykes of diorite and various schistose rocks. It is in one of the former that this valuable deposit has been found, the name of the group being the Congo. Assays showing more than \$100 to the ton are admitted to be the exception; it is not the present richness, however, but the character of the ore and its associations which give it such an enormous prospective value. It is identical in appearance and composition with that of the great LeRoi and other celebrated mines at Rossland, consisting as it does of massive pyrrhotite combined with copper pyrites and quartz in a matrix which, on superficial examination, gave a marked resemblance to the Trail Creek diorite. Work is being pushed on the group as fast as circumstances will permit, though only as yet in the initial stages, and it is quite within bounds that valuable deposits will be brought to light. One of the really great mines of the country which is easily capable of giving employment to over a hundred men, is the Enterprise, on Ten Mile; yet this property jogs along with only fifteen or twenty employees, making merely occasional shipments to let us know, as it were, that it is still there. The reasons for this state of affairs are many and varied. It is asserted that the owners cannot agree upon the line of development to be pursued, that the price of silver is too low, and, again, that the value of the ore is not half what is popularly supposed. Neither of these appears to me to be the true reason of its lethargy; it is a well-known fact that the ore carries a very high percentage of zinc, a metal considerably more valuable than lead in its metallic state, but worse than useless when carrying much silver or associated with a silver-lead ore. Consequently the shippers have not only to pay excessive smelting charges, but what is equally bad, almost prohibitive freight rates on a worthless ingredient. Until smelters are to be found nearer home, it is my opinion that the mine never will be worked to its full capacity, the owners being wealthy men who can afford to allow it to remain inactive, for a time at least. The Earl of Ava, son of the Marquis of Dufferin, paid the mine a visit last week, which appears to be the foundation for a report that the B. A. C. are negotiating for its purchase. The Earl, however, himself stated that his visit bore no significance whatever, as he was travelling exclusively on pleasure bent.

When examining a property recently which was situated in a secluded spot high up in the mountains, I was very much struck with the signal advantages to be derived from the use of a small portable acetylene lamp. The extreme brilliancy of the light was marvellous, and not only could we examine the face of a fairly long tunnel without even setting one foot underground; but for navigating dangerous trails and rock-slides at night, its equal has never been found. When the slight element of danger at present attached to these lamps is once removed, I fully expect to see them take their place in the regular equipment of prospectors and miners.

Almost the first official act of the new Minister of Mines, and one that I am sure will meet with general approval, is to prohibit persons occupying responsible government positions from taking advantage of information gained in the course of their every-day duties. From now on, gold commissioners and recorders are denied the right to own, locate or deal in mineral claims in any way whatsoever, a condition which will effectually prevent such disgraceful disclosures as are unfortunately of regular occurrence in the Yukon.

HOWARD WEST.

NELSON DISTRICT.

Indications are not wanting that winter is approaching, for while the weather is still splendid, yet the first snow made its appearance on the hills around here at the end of last month, and on the higher peaks it has undoubtedly come to stay till next year. The glorious autumn foliage, too, is very marked, and causes the hillsides to look like some enormous garden of flowers in innumerable shades of green, yellow and crimson, with the ever-present dark green of the firs for a background, and a brilliantly blue sky overhead.

With such weather as this, prospectors do not hurry about returning to town, and hence so far but few really new strikes are reported, though doubtless in another month or so we shall hear of plenty, and it is to be hoped that they will prove to be permanent and valuable.

Ainsworth has been, and still is, fairly busy, and indeed the old camp has been working more like it was in its early days all through the summer, and the Highland, No. 1, Little Phil, Skyline, and other properties having a great deal of development done on them and a very considerable amount of ore having been shipped. In addition to this, a large plant is being erected in the neighborhood to supply compressed air to those who may need it for mining or other purposes; the general arrangement being that of the old "Trompe" used ages ago for smelting iron ores in Spain and elsewhere, and fully described by Dr. Percy in his book on Iron and Steel. As the air costs nothing, and the water supply is also provided gratis, the concern should be profitable to its owners, and it is to be hoped that the mines near by will take advantage of this, the most useful motive power ever supplied for that purpose.

Last month we referred to the gold lately found on Rover Creek, near Nelson, and the most varying reports are current as to what is really found there. Probably, however, like other placer diggings, some men are doing very well and others meeting with nothing but work and discouragement—it being stated, indeed, that in one case

quite recently, the clean-up from some 18 hours shovelling amounted to the magnificent sum of 75 cents! Still, as some owners have refused substantial cash offers for their holdings, all the claims are not so poor as this one.

On Forty-nine Creek (close by Rover Creek) there has been a great deal of development done this season, and many of the claims seem to promise very fair returns. As, however, I have had occasion to point out almost too frequently, it is not the assayer who settles the value of the ore, but the smelter, and it is not much use saying you have a ledge 7 ft wide, assaying \$15.00 per ton, when it may easily cost \$20.00 for mining, freight and treatment at the nearest smelter. This is a point which is far too often lost sight of, and much disappointment caused in consequence.

The Hall Mines is making good headway with their new copper property at Kaslo, and the expectation is that the lead will be cut by their lower tunnel in a very few days. This vein shows purple copper and a little black oxide, as well as a thin seam of metallic copper; it certainly looks all right so far. Their smelter is running partly on ore and partly on low grade matte from the Trail Smelter, which they refine as far as blister copper or rather higher, usually casting it into anodes for shipment to electrolytic refining works in the east.

The Athabasca is still looking well, and very extensive development work is being done at the mine itself, in addition to a tramway and concentrator which are built and ready, and a 10-stamp mill which is in the course of construction. This certainly ought to be a dividend payer in the very near future, for apart from the value of the ore, which is very considerable (one shipment lately to the Hall Mines smelter is said to have given 6 oz. per ton in gold), good judgment is shown in carrying on the necessary development to get at the ore when it is wanted.

Adjoining the Athabasca group is the Exchequer, another group of claims, upon which, so far, but little work comparatively has been done; but the owners intend to do a great deal more this winter. It is in a good neighborhood and will probably turn out all right, though so far it is too early to speak with certainty.

The Fern mine reports very favorably. There seems to be a great number of ledges on this property which are uncovered as development proceeds, and every month nearly we hear of a new strike being made of large size and high value, the last one being a body of ore 11 ft. wide and carrying value \$15.00 or \$20.00 per ton. While much of the ore is free milling at present, yet it certainly will not be so when a depth from the surface is reached where the natural oxidation ceases, but it is believed that the cyanide plant will successfully treat that class of ore so that nothing will be lost.

The Last Chance group, belonging to Messrs. Wilson Bros., is being steadily worked and the last accounts are most encouraging. This is all the more welcome news as there was a rumor that the owners intended to close down owing to non-success in finding the vein, but this is contradicted by the owners themselves, who say they are content to go and prove the property thoroughly before shipping any ore. They claim to have a vein some 7 or 8 ft. wide, assaying up to 8 or 9 per cent. copper, besides gold and silver; and it is to be hoped that this is the case, as these gentlemen have not spared either trouble or money to get hold of a good mining property.

One of the latest rumors is that a smelter will be erected on the Nelson and Fort Shepherd line, probably near Sayward; and there is no doubt that there is lots of ore in that vicinity to supply one. A smelter situated thereabouts would be able to handle the products of the Ymir camp, as the railroad touches both places, and indeed it seems as if a smelter in that vicinity was absolutely necessary.

With regard to Ymir, an enormous amount of work has been done in the camp this season on the various properties. Perhaps most work has been done on the Dundee, where they have a 30 ft. vein which is well opened up by tunnels and drifts, and a shaft some 250 ft. deep; the ore is of a concentrating nature, and the management expect to have everything in full swing by the middle of November. At the Elise, Tamarack, and the Monarch group also a very large amount of work has been done, so that the Ymir camp as a whole has been an exceedingly busy one, and is likely to remain so.

Once more the establishment of a School of Mines in this district is suggested, as it has been not infrequently before. If the present Government can see their way to confer such an invaluable favor on us, it will be the best work ever done in B.C. In such a mining country as this, there is room enough for more than one School of Mines; and while we in Nelson hope it may come among us, yet we must not forget that Rossland also has strong claims for it. Teachers and pupils will not be wanting in either town, and it will be productive of untold good.

A. H. HOLDICH.

ENGLISH LETTER.

24 COLEMAN STREET, LONDON, E.C.,
8th October, 1898.

Business in the Canadian Mining section continues to be of moderate dimensions, and transactions are so limited, and prices so nominal, that it is often quite impossible to deal except after protracted negotiations. Certain quotations are sent out over "the tape"—as the little machine is called which keeps the brokers' offices in touch with the hourly changes in prices inside the Stock Exchange itself,—but when it comes to doing business difficulties crop up at once. As an instance of this an experience reported to me to-day may be cited. A prominent broker wanted to deal in Waverleys. Not so long ago these shares were quoted at about $1\frac{1}{2}$: they are now nominally $\frac{3}{4}$ —1. The broker went into the house to find "the market" in these shares, and found it as before stated, $\frac{3}{4}$ —1, but could not deal at that as the jobber who makes these shares a feature of his book was not willing to make "a close price" in them until he knew whether the broker wanted to buy or sell, and the latter was not anxious to show his hand to this extent as it would have probably led to the price being quoted still more unfavorably from a seller's point of view. Business, therefore, did not result. If this is the kind of experience one has in shares like Waverleys, which a little while ago were reported as "a fairly free market," it can easily be understood how difficult it is to deal in securities which have not been so prominently before the public. What little market there is in British Columbia and

Klondike properties: Ontario shares are well nigh a dead letter, and those who took them in hand so gaily a year ago must be very annoyed now at doing so. Hall Mines have hardened a little on the statements that the company has been buying properties and options on other properties, but British America Corporation keep dull despite the strong speeches made by the Marquis of Dufferin and Ava and Mr. Whittaker Wright at the recent meeting of the London and Globe Corporation, which you will not need to be reminded is a partner with the B. A. C. There is a rumor that the weakness of B. A. C.'s is traceable to the market having been called upon to absorb a block of 10,000 shares allotted to the gentleman who introduced Mr. MacIntosh to Mr. Wright. I am told that "the market" in B. A. C.'s has now taken all these shares, and that we may look for better prices. The "B. C. list of prices" is gradually being added to. Among the latest additions are East and West Le Roi, and Columbia and Kootenay. I have already sent you particulars about these companies, which are the offspring of the Whittaker Wright group. They are quoted at a small premium, but there are absolutely no dealings in them at present, although in the speeches at the recent meeting it was stated that the B. A. C. probably possesses "four LeRois instead of one." According to all accounts they have not got one yet, for I am assured that the Turner interest in the famous property is knocking about the city ready to be disposed of to the highest bidder. The New Goldfields group is firm, but very quiet. Sir Charles Tupper is over here, and it is said that if he should take the opportunity to address the shareholders of one of the companies with which his name is identified he will be able to report excellent progress, especially in the case of the Bennett Lake Navigation Co. Mr. Corbould, of the Canadian Pacific Exploration, is now in Rosland visiting the properties of his concern. He is expected back in December. This company is thought highly of, and its Porto Rico property is said to be in an advanced stage of development. The board is a strong one. The B. C. Development group are dull, and even that strong coterie, the L. and B. C. Goldfields Companies, are not particularly resilient, although they are probably the most influential group in the city which has so far identified itself with British Columbia. The Athabasca (London Co.) held a meeting last Friday, and the statements made thereat were promising. Dawson City's are still quoted at 50% discount, and the Turner-Pooley Companies have naturally not benefited by the dismissal of those whose names were so lavishly displayed in bold type when the companies were formed. Klondyke Bonanzas, about which there is some mystery, remain nominally quoted at $\frac{3}{4}$ - 1; but sellers at that (i.e., sellers at anything between $\frac{3}{4}$ and 1), and buyers at anything between $\frac{2}{6}$ and $\frac{1}{6}$, according to the latest phase in this particular concern's history. Vancouver Syndicates are very dull, and I believe I am divulging no state secrets when I say that much dissatisfaction is felt by this group at the developments in connection with the galena. Mr. Fraser, who succeeded Mr. Callahan, has worked heroically, but even a competent mining engineer cannot make dividends without the generous assistance of nature. The Goldfields Co.'s are quiet but dull, and this can be said of practically the whole list. "The B. C. market," as the Canadian section is called, is in a state of suspension, waiting, like Micawber, for something to turn up. The papers are filled with special articles about and pictures of the Yukon landmarks and landmarks that have become familiar to us from special correspondence, etc., and you would be surprised to receive a bundle of press cuttings for only one month extracted from our press and specifically dealing with Canada in one phase or another. But the public just reads them one by one, or passes them over and does not show the slightest signs of losing its head about either British Columbia, Klondyke or Ontario, which, if it is disappointing to the promoting fraternity, will probably save investors in the long run many thousands of pounds.

Recent events, indeed, constrain one to ask if there is really such a thing as a B. C. market? Occasionally one reads a reference to a fractional investment in some British Columbia or Klondyke property, but these are so infrequent and unimportant that it is obvious that those who started the section last August are making but a poor living if they are solely dependent upon their "B. C. book." I was told months ago that we were going to have a big boom in B. C. things; but although I have waited patiently for its advent I see no signs at present of its appearance. Perhaps in the interests of the public it is just as well that the dulness has prevented the consummation of the hopes of those who have tried, and tried hard, to make B. C. and Klondyke go, for experience teaches me that anything like activity would be the signal for the outpouring of those vendor shares which were so freely created last year, which are practically only waste paper, and would bring but sorrow and repentance to those who should be foolish enough to buy them.

Despite the previous paragraph you must not think that there is no hope here for British Columbia and Canadian mines generally. On the contrary, every movement is followed carefully, and the papers are showing their desire to assist the movement by publishing lists of prices of Canadian mining shares. If, as I have already shown, these quotations are frequently fictitious, and always, with one or two exceptions, nominal, it helps to keep the country before the public. Among other papers to assist in this good work are the *Financial News*, *Financial Times*, the *B. C. Review*, the *Canadian Gazette*, the *Mining World*, *Mining Journal*, *Colonial Goldfields Gazette* (Whittaker Wright's organ), *Truth*, *Citizen*, *Money Market*, *Review*, *Capitalist*, *Sunday Special*, etc. Even conservative newspapers like the *Glasgow Herald* publish fractional changes in B. C. prices—when there are any. Otherwise it would never do to let the market get into a sluggish state, and so there at the back of it occasionally alter the quotation, and holders, thinking this is the result of bona fide business, think after all that there is some business in the shares in question, and thinking this are comforted—which is a state of mind in which promoters would always wish them to be.

The B. C. Government has been getting itself into hot water this month. First they cashier Vernon—at which I was not surprised; and then they abolish the London Agency and refuse to support the Mining Exhibition which is to be held here next year, and about which I shall send you fuller particulars in due course. The Semlin Government seem to be actuated by some silly economical sentiment. Cheeseparing one paper calls it; another dubs it "ill-timed parsimony," and city men have simply been staggered by such an exhibition of insolvency, not only in abolishing an office which, if properly conducted, and located in the centre of the metropolis, would be most useful to all interested, but also in refusing to countenance the Mining Exhibition. British Columbia will be of course well represented, but privately, and their action can but recoil on their own heads and those who have returned them to power.

SIR CHARLES TUPPER ON THE B. C. LONDON AGENCY.

In an interview which a representative of C. J. Walker's Canadian Press Agency had on October 7th with the venerable Canadian statesman, Sir Charles Tupper, he said he was very sorry indeed to hear that the office of the Agent-General for British Columbia had been shut. "I consider it of the utmost importance," said Sir Charles, "that the Government of British Columbia should have a well informed agent here, thoroughly acquainted with the Province, and able to give persons interested in this country reliable information, particularly at the present time, when so many events of

momentous importance in the development of British Columbia are happening. The interests of the Province demand that there should be some agency for the distribution of accurate information regarding the country. So much British capital is already employed in the development of British Columbia and Canada generally that it is absolutely indispensable that statistical and other data should be readily forthcoming from some office situated in the city." Sir Charles seemed to think that the decision in question would probably be followed up by the appointment of a new Agent-General in London, and, if a rumor current in the city to-day is correct, the British Columbia Government have already regretted their mistake, and speedily endeavored to atone for the bad impression previously created by the decision to close the Westminster Agency. Up to the present, however, the Agency had not been able to learn who had been appointed.

Northern Exploration Co. of B. C., Ltd.—The Hon. Randolph Capel presided on Oct. 3 at the first general meeting, held at Winchester House, of the Northern Exploration Co. of B. C., and stated that, in the short time that had elapsed since the company went to allotment, very little work had been done; but the necessary agreements had been completed, and Mr. Kellie had started for British Columbia. The Board had had several letters from him, giving details of claims with respect to which he was negotiating; but it would be premature at present to say more than that they seemed to be very good indeed and likely to prove very profitable to the company.

The Royalty Question.—Reuter's Klondyke correspondent has called attention repeatedly to the deterrent effect of the 10% royalty upon gold mining in the North-West Territories. In London we do not know much about the question which is vexing the souls of so many miners up in the far northern goldfields, but if 10% is supposed to be the amount required to pay for the administration of the territory, then that item must be more costly than one would suppose, assuming that the output for the season reaches the \$15,000,000 which seems to be generally accepted as the approximate gross output for 1897-98. In commenting on Reuter's Dawson correspondent's latest letter, the *Financial Times* hints that "unless steps are taken to ameliorate the condition, the Government is in a fair way to kill the goose that lays the golden eggs." And this is the general view obtaining in town.

The Directors of the Ontario Lands and Oil Co., Ltd., in their annual report, recommend the payment of a dividend on the preference shares at the rate of 4% per annum, equal to 8s. per share. This dividend will absorb £2,400, leaving a balance of \$543 14s. 3d., out of which the directors propose to place £500 to a reserve fund and carry forward £43 14s. 3d.

According to the statistics compiled by the *Banker's Magazine*, the value of 325 representative securities quoted on the Stock Exchange was £3,227,190,000 on Sept. 20th, as against £3,224,778,000 on August 20th. This shows an increase of £2,412,000, or .07 per cent., which is not much, but it is something to be thankful for in these dull times. The most striking improvement is in the Railways, which are up 13½ per cent., but the list of 10 mines selected can hardly be regarded as typical of the general mining market. Yankee bonds, foreign railways, bank shares, financial and industrial companies, all show advances, but British and Indian funds, home railways and a few others are lower, owing principally to political causes.

The following is a rather pungent and pessimistic criticism on the London and Globe meeting, presided over by the Marquess of Dufferin and Ava the other day. It is taken from "Capel Courtier's" article in the *Weekly Sun*.—The Westralia market "winked the other eye" at the Marquess of Dufferin's optimistic statements at the London and Globe meeting, and the price would have given way sharply but for the inside support which was immediately forthcoming. It is distinctly sad to see so distinguished a diplomatist as Lord Dufferin enmeshed in such a hopeless business, the true inwardness of which he obviously does not in the least understand. He paraded the profit of £989,679 as sufficient answer to all the structures that have been passed on the company, but a glance at the balance-sheet shows that it might just as easily have been figured out at a million or two more. The item, "shares at cost, £2,311,091," is sufficient evidence of this fact. Against its cash in hand of £107,226 the corporation owes £258,575, of which £119,171 has been raised on securities pledged. No wonder it finds it necessary to issue the balance of its shares; where else would the dividend come from, not to mention the cash it will have to find for the Baker-street Railway? It is a sorry business, all together, and I am heartily sorry that Lord Dufferin is mixed up in it. But the fact that he completely ignored the *Pall Mall's* question about the payment of over £400 to its late city editor, shows that he must be aware of the kind of business he has to deal with, and that will considerably modify the sympathy which would otherwise be felt for him when the inevitable smash comes.

A meeting of the Athabasca Co. (London) was held on Friday last, and very encouraging statements were made by the chairman. I hear from a broker connected with this company that it is expected to give a good account of itself at an early date.

New British Dominions Exploration, Ltd.—Registered 17th Sept. by Richard Free 10 New Broad street, with a capital of £50,000 in £1 shares. Objects: To adopt and carry into effect a certain agreement for the acquisition, by purchase or otherwise of the undertaking, assets and liabilities of the British Dominions Exploration, Ltd., on such terms as the company may think fit, with the mines, mining rights, etc., appertaining thereto, and to develop and work the same; and further to acquire any other mines, mining, water and other rights, grants, lands, or premises in any part of the world, to search or prospect for, excavate, quarry, dredge, win, purchase or otherwise obtain ores and substances of the earth, and to extract, reduce, wash, crush, smelt, manipulate and treat the same, and by any process, obtain gold, silver and other metals, minerals or precious stones, and also to carry on any metallurgical operations; to lease, settle, improve, colonize and cultivate lands and hereditaments in any part of the world, and to develop the resources of the same, etc.

Lake Huron Copper Syndicate, Ltd.—Registered Sept. 19th. Capital, £10,000, in £1 shares. Objects: To adopt a certain agreement, and to acquire and turn to account any businesses, concerns, undertakings and properties of all kinds, in Canada or elsewhere.

Ymir Gold Mines, Ltd.—Registered Aug. 29, by Renshaw & Co., 2 Suffolk Lane, E.C. Capital, £200,000 in £1 shares. Objects: To enter into and carry into effect an agreement, with such modifications (if any) as may be agreed upon, to be made with the London and B. C. Goldfields, Ltd., for the purchase of the Ymir Gold Mines situate at Wild Horse Creek, West Kootenay, comprising four claims known as the Ymir, Rockland, Mugwump and Golden Horn, and sundry fractions and rights appertaining thereto, constituting the Ymir group, to develop and work

the same, and further to acquire any other mines, mining, water and other rights, grants, leases, claims, concessions, options of purchase, metalliferous land, alluvial ground in any part of the world. To acquire by grant and to develop the resources of and turn to account any lands or rights in which the company is interested.

B. C. Mining Nomenclature.—Some of the titles given to mines in British Columbia render a Stock Market report curious reading. It may surprise some people to read that the "Sunset" is operated by the Canadian Goldfields Syndicate; also that "Evening Stars" are obtainable at 5 cents. And it will open the eyes of some of our showmen when they read that "Giants" have been changing hands at 7 cents! Mr. Ritchie, the enterprising managing director of the Aquarium, will want to secure a few at once. "Wild Horses" appear to be in great demand locally, let us hope not for the purpose of carrying off "Sarah Lee!" "White Pears" and "Eagles" are also in request, the latter especially, though for our own part we should prefer something more tame. "Deer Parks" we are told, have remained stationary during the week, which must be a satisfaction to their owners; it is not pleasant to have one's park dodging around the town. — *From the London (Eng.) Financier.*

OUR ROSSLAND LETTER.

ROSSLAND, Oct. 15.

The past month, on the whole, has been rather a quiet one in Rossland, though it has not been without incident. Ore shipments have gone on increasing steadily, despite the fact that the installation of the new machinery at the War Eagle has caused a diminution in the output of that mine. Last week the Le Roi broke all records up to date by shipping 3,289 tons, and this, it is said, will be about the average hereafter. The War Eagle promises to increase its shipments to about 400 tons a day as soon as its new plant is in operation, and the Iron Mask announces that its output will be increased to 250 tons a week. The No. 1 and Columbia and Kootenay have each contracted to ship 1,000 tons to the Trail smelter in the immediate future. It will be nearly a year before the Centre Star does anything in this line, but it will be as big a shipper as any when it begins.

THE MONTE CRISTO BOOM.

Perhaps the most sensational event during the past month was the closing down of the Monte Cristo mine. When this news leaked out it created almost a panic among those who held stock in either the Monte Cristo or Virginia. These two companies are controlled by what is known as the Mackay-Hosmer Syndicate of Montreal, and the local manager is George Pfunder, by whom all the development has been directed. Very few people in Rossland have seen the underground workings of either mines. Some months ago the announcement was made that the Monte Cristo was to ship 50 tons a day, and stories were put into circulation to the effect that in addition to enormous quantities of low-grade ore, some 30,000 tons of shipping ore had been developed. On these rumors a boom in Monte Cristo was inaugurated by a local firm of brokers, and stock which had been begging, or at least dormant, at 12 cents, began selling like hot cakes and finally reached the price of 36 cents a share, which put a value of \$720,000 on the mine, the capitalization being \$2,500,000, with 500,000 shares still unissued. How much higher shares would have gone there is no knowing, but two events put a stop to the boom. The first was the cessation of shipments after only 416 tons had been sent to the smelter, and the second was the offering of 100,000 shares by the Montreal syndicate which controls the property and apparently disapproved of the boom. These two events caused the price to decline considerably, but as it was explained that shipments were only to be discontinued temporarily, many kept on buying. During the whole boom not a single share of stock was sold by the Mackay-Hosmer syndicate, and it is now the universal belief in Rossland that nearly all the stock which changed hands was sold by an official of the company in Rossland.

BOOMED VIRGINIA TOO.

So successful had this boom in Monte Cristo been that the same operators put their heads together and planned a boom in Virginia. The control of this property had been bought during the winter by the Mackay-Hosmer syndicate, but 140,000 shares or thereabouts were still held by Austin Corbin, of Spokane, and his friends. The boomers secured this block, and announced that it had been bought by the Mackay-Hosmer syndicate. As a consequence the public became convinced that only 40,000 or 50,000 shares were outstanding, and everybody wanted a block. Then a mammoth strike was announced and the rush for shares began. What had been dull at 25 cents rose rapidly to about 50 cents, and jumped in twenty-four hours from that price to \$1.00 and \$1.05. The boomers unloaded the whole block which they had represented was bought by the Mackay-Hosmer crowd, but with which it is now known they had nothing whatever to do.

THE IRON HORSE NEXT.

Two such successful deals in a few months encouraged the boomers to make a third essay. The control of the Iron Horse, which joins the Virginia on the east, was bought by them, and again the public was given to understand that the Mackay-Hosmer syndicate was the purchaser. Whatever was good enough for the public, so the public bought freely. The purchase price was said to be 7 or 8 cents a share, but the public got little of it below 15 cents. It looked as if it too might go to a dollar, when Mr. Hosmer disclaimed any connection with the deal, both for himself and his associates, and since the stock has sold less freely, though it has maintained and even improved slightly in price.

MR. CAMPBELL'S VISIT.

Just about this time, some two weeks ago, there appeared on the scene Mr. W. Campbell, of Montreal, private secretary to C. R. Hosmer. He began an investigation of both properties, and as a result closed down the Monte Cristo pending an investigation by a competent expert. Who this expert will be is not known, but the general belief is that it will be John E. Hardman, of Montreal. To your correspondent Mr. Campbell said: "We are not closing down the mine because we have no ore, but because we want a thorough examination of the property before doing any more development work. We have now done some 5,000 ft. of work and it has cost a lot of money. We have a lot of ore in sight and will resume shipments as soon as the railway is extended to the mine." He declined to say anything as to the value of the ore shipped or that flooded out in the mine, and also said he was not in a position to give out any information regarding the Virginia. He, however, was most explicit in asserting that Mr. Hosmer and his syndicate had nothing to do with the boom in either the Virginia or Monte Cristo and were not interested to the extent of a cent in the Iron Horse.

So far as the Rossland public is concerned their views concerning these properties may be summarized as follows: They are satisfied the Monte Cristo has a lot of low-grade ore, which may by economical management be made to pay, especially if the Trail smelter pays a premium for iron, as seems probable. They are also satisfied that the Virginia is traversed by one or two good veins and has a good prospect of being a mine, and they regard the Iron Horse as one of the most likely prospects in the camp. The best evidence of this is that they are buying Monte Cristo at 15 cents, Virginia at 50 cents, and Iron Horse at 16 cents, the mines being capitalized respectively at \$2,500,000, \$500,000 and \$1,000,000.

THE LE ROI MINE.

The trouble between the two factions of the Le Roi Company has been one of the principal subjects of interest in Rossland of late. This has been due to two causes—the sensational nature of the developments in the mine and the extraordinary turn negotiations have taken. As to the first: The west drift on the 700 ft. level when I last wrote showed 28 ft. of shipping ore with five drills working abreast. This was at a distance from the shaft of about 150 ft. Since then the ore body has kept on steadily widening till the pay ore measured 48 ft. 10 in. and nine drills worked abreast. Careful samples from day to day showed this ore to have an average value of \$23 00 to the ton. Between the 500 and 600 ft. levels a new 8 ft. body of high-grade copper ore has been opened up on the hanging wall and is now fairly exposed. This is, with one exception, the richest ore ever found in the mine. Meanwhile work on the shaft has been crowded, and the 800 ft. level has almost been reached. As soon as a sump has been made a station will be cut and another drift run to the west on the 800 ft. level. Should the ore body there prove to be anything like that on the 700 ft. level, several millions will have been added to the value of the mine.

A BIT OF HISTORY.

As the REVIEW's readers have already been informed, the minority shareholders, consisting of Senator Turner, Col. Turner, W. J. Harris, Col. Ridpath and one or two others, are in control of the property and Mr. Harris is directing the work. They own 204,000 shares out of the 500,000 into which the company's capital is divided, so the Marquis of Dufferin was in error when he announced to the shareholders of the London and Globe Finance Corporation the other day that they and the B. A. C. owned four-fifths of the mine. After the deal for the whole mine at \$3,000,000 was knocked out, it is said, Senator Turner and his friends were willing to take \$6.50 a share for their stock, but the B. A. C. refused to consider this offer and instead tried to force them to accept \$6.00. They succeeded in getting their chief engineer, Mr. W. A. Carlyle, appointed receiver for the mine. Senator Turner finally ousted the receiver and began suit in the Washington Courts against the B. A. C., ex-Governor Mackintosh and the shareholders of the Le Roi who sold out, for \$780,000 damages. He also obtained an injunction preventing the Le Roi Company or its shareholders from selling the mine or a control thereof to a foreign corporation on the grounds that it owned real estate in the State of Washington in the shape of the Northport smelter. At this time there was a very sore feeling between the two factions.

LORD AVA AS MEDIATOR.

When Senator Turner and his friends got possession of the mine again they found Mr. Carlyle had not been idle. He had suspended shipments and devoted all his attention to extending the drifts and deepening the shaft. They were, therefore, soon in shape to begin a drift on the 700 ft. level, with the astounding results above described. At this juncture Lord Ava, the eldest son of the Marquis of Dufferin, arrived in Rossland. Through his efforts the two factions were brought together, and as a result the B. A. C. was given a few days' option to purchase the whole of the minority holdings, about 204,100 shares, at \$8.12½ a share. This option Ex-Governor Mackintosh cabled to London along with a strong recommendation that it be taken up. In Rossland it was believed this was the end of the matter, but to the surprise of everybody Mr. Whittaker Wright declined to avail himself of it.

PRICE ADVANCED TO \$8.50.

Now it has been announced by Col. Turner that another option at \$8.50 per share has been given to a London syndicate which is distinctly not friendly to the B. A. C. The colonel's statement, for obvious reasons, is accepted on all hands with more than a grain of salt. He also makes the astounding statement that the damage suit in the Washington Courts was decided against the defendant by default and that he and his friends propose to collect these damages by assessing the Le Roi stock held by the B. A. C., but which it is not permitted to vote, and that when a dividend is declared, as it will be next month, the B. A. C. shares will not participate, but the money due on them will remain in the company's treasury.

Meanwhile it is said that Whittaker Wright will be in Rossland shortly, and practically everybody hopes and believes the whole matter will then be settled by the B. A. C. purchasing the minority interests in the Le Roi.

POWER FOR THE MINES.

A great deal has appeared in the press of Canada regarding the West Kootenay Power and Light Company. As is probably well known to the readers of the REVIEW this company has constructed an electrical power station at Bonnington Falls on the Kootenay River, thirty miles from Rossland, and two high tension pole-lines over which the power is transmitted to its substation here. This power is now being utilized to light the city and will be used to operate the War Eagle Company's 45-drill Ingersoll-Sergeant air compressor, hoist, pumps and all other machinery. Many other companies are waiting to see the War Eagle plant in operation with the intention of getting their power from the same source if it proves economical and satisfactory. In the meantime, the Trail smelter and the Silica reduction works have had power lines built and are now using the power. The plant of the power company represents today an outlay of over \$600,000 and the Mackay-Hosmer syndicate owns the controlling interest.

TAYLOR SYSTEM TO BE USED.

This company is not, however, to long enjoy a monopoly of supplying power to Rossland's mines. Last week there was incorporated the Rossland Air Supply Company, Limited, with W. S. Norman of Spokane and Rossland, F. Aug. Heinze of Butte, D. J. Fitzgerald of Trail, A. J. McMillan of Rossland, and C. K. Millbourne of Nelson, as directors. Mr. Norman is the promoter and Mr. Millbourne will be manager of the new corporation. The capital, \$200,000, has been subscribed, principally through Mr. Millbourne's agency, London. The company intends supplying Rossland with power in the state of compressed air by the Taylor system, so long in use at Magog, Que. The power plant will be located at the Falls or Beaver Creek, a tributary of the Columbia on the east branch, some three miles southeast of Trail. The Beaver is not a large stream and will be augmented by diverting 1,500 miners inches from the North Fork and 500 from the main Salmon River. Engineers are now at work surveying these ditches. The pipe line which will be 14 inches in

diameter, will cross the Columbia River at Rock Island on a bridge built for that purpose and will be about 10 miles in length. It will deliver air in Rossland at a pressure of about 80 pounds to the square inch and in sufficient volume to run about 200 5/4 inch drills. The Air Supply Company will cater especially to this trade leaving the West Kootenay Power and Light Company a clear field in supplying power for lighting, hoisting, etc. As the Taylor system does away with compressor plants and their necessary complement of engineers it means an immense saving in operating expenses to mine owners over either steam or electrically operated air compressors and a consequent reduction in the cost of mining in Rossland. The plant is to be in operation by September next.

REDUCTION WORKS AT SILICA.

The British Columbia Bullion Extracting Company of London, England, which has erected at Silica, three miles from Rossland on the Reed Int. railway, a 50-ton mill to treat the low grade, silicious ores of this camp, is now engaged in making its preliminary tests. The plant is operated by electric power furnished by the West Kootenay Power and Light Company and obtains its water supply from Little Sheep Creek on which it is located. The mill has been so planned that it can easily be doubled in capacity and the process used is the Pelatan-Clerici. A contract was obtained some time ago by Lionel H. Webber, managing director of the company, to treat 10,000 tons of War Eagle ore and several carloads are being shipped daily to the works. It is on this ore that the trial runs are being made. The management is confident that it can treat the low grade silicious ores of this camp at much less cost than any smelter, which, in view of present rates at Trail, necessarily means about \$5 per ton as a maximum charge. In another month the plant should be in full operation.

CENTRE STAR-IRON MASK SUIT.

Mr. Justice Walkem last week rendered a decision in favor of the Iron Mask Company in the suit brought by the latter to enjoin the Centre Star from working in its ground through a crosscut tunnel. This decision was most unexpected to the public and probably to the Centre Star people as well and had the effect of greatly strengthening Iron Mask stock in the local market. Judge Walkem's decision does not, however, go to the root of the question and interest now centres in the approaching trial at Victoria when the case will be fought out on its merits.

ANOTHER CHARTERED BANK.

Among the announcements of the month which have given satisfaction to the people of Rossland none was more pleasing than that of the Bank of Toronto which has leased a stone building on Columbia Avenue in which it will open for business next week. This will give Rossland branches of four of Canada's great chartered banks—Montreal, British North America, Merchants' of Halifax and Toronto. The opening of a fourth bank here proves conclusively that in the opinion of bankers, at least, Rossland is the commercial metropolis of the Kootenay country, a title heretofore claimed by a sister city.

LOCAL IMPROVEMENTS.

The widening of the C.P.R. branch from Trail to Rossland to standard gauge is proceeding rapidly and should be completed not later than December 1. Several extensions are being constructed to shipping mines which will be finished by the same date. A handsome passenger and freight depot is also being erected.

The corporation is spending large sums of money in street grading with the result that the city is rapidly assuming a metropolitan appearance. A contract for street lighting has just been let to the West Kootenay Power and Light Company which is now installing arc lights at all the principal crossings.

The new \$60,000 Bank of Montreal block is sufficiently far advanced that everybody can see it will be the handsomest in Kootenay and equal to any commercial block of its size in the province.

COLUMBIA AND KOOTENAY.

Work in the Columbia and Kootenay has been confined to tunnels Nos. 3, 4 and 5, and No. 6 will shortly be begun starting 150 feet below No. 5. Tunnel No. 4 is connected with tunnel No. 3 by a raise and at an intermediate point a crosscut is being made in a strong ledge. During the month tunnel No. 5 struck what is thought may be the main vein and here very good values have been obtained. It is quite evident the values are improving with depth. The force of men will be increased by about 20 in the coming month.

GREAT WESTERN AND NICKEL PLATE.

Exploration work on the same levels has been continued all month in these two properties but nothing important enough to be classed as a strike has resulted.

THE JOSIE.

The 300-foot level on the Josie is being extended rapidly both east and west and crosscuts will be extended shortly.

THE NO. 1.

The vertical shaft on the No. 1 is down 180 feet and the tunnel is now in 240 feet and still continuing along a strong vein 4 to 6 ft. in width. This air chute is now 90 ft. long. Compressed air enough for four drills is being purchased from the LeRoi company and the new shaft house is nearly completed where a powerful hoist with cages will be installed.

The new offices of the B.A.C. will be ready for occupancy by November 1. A storehouse and machine shop will also be erected right away.

THE JUMBO.

The No. 2 tunnel of the Jumbo, in which a big strike was made just as the REVIEW was going to press last month, still continues in ore, but the character has changed completely. As in the No. 1 level, the ore lies in wide chutes in the ledge, —first highly silicious, then solid sulphides, and then silicious ore again. The first body of quartz has been passed and the workings have been in solid pyrrhotite for the past two weeks. This has shown better values right through than in the upper workings and also a gradual improvement from day to day. At any time now the management expects to break into the second body of silicious ore, and when they do they will be greatly disappointed if it does not prove a bonanza chute. At the last meeting of the company in Spokane a seven-drill air compressor was ordered, and a new tunnel, No. 3, has since been started. This will be only 350 ft. in length and will cut the vein at a depth of nearly 400 ft. It will be made the main working tunnel of the mine. The company has refused an offer of 65 cents a share cash for the whole or the control of the mine. J. A. Finch, the millionaire mining operator of Spokane, is the principal stockholder.

WAR EAGLE.

Shipments at the War Eagle have been curtailed for the past two weeks, though the force of miners has not been reduced. Such ore as is being taken out below the No. 2 level is being stored in old workings until the new hoist is installed. The gallows frame, which is 108 ft high, has been erected for some time and the hoisting machinery is all on the ground. The hoist will have a capacity of working to a depth of 2,000 ft., hoisting a load of 8 tons at the rate of 700 ft. a minute.

CENTRE STAR.

Work has been begun on the new three-compartment shaft on the Centre Star. This will be the largest shaft in the camp. The mine is to be equipped with a 45-drill electrically-operated air compressor, and a hoist which will be a duplicate of the War Eagle's new plant. It is expected that in about eleven months this shaft will be opened to the 550 ft. level, as work is being carried on at the tunnel level as well as at the surface. In a year the Centre Star will be one of the biggest shippers in the camp.

IRON MASK.

A 10-drill electrically-operated duplex air compressor has just been ordered by the Iron Mask Company from the Rand Drill Company, of Sherbrooke, Que. It is to be delivered at once, and the foundation is now being prepared. Meanwhile work in the mine is being confined principally to the north or undisputed vein, where the ore body continues to improve slowly in values. In the main workings on the south vein a new winze has been started which is now down 6 ft. in fine ore.

THE IRON COLT.

The Iron Colt is one of the oldest claims in the camp and is 1,500 x 600 ft. in size, having extra-lateral rights. It is owned by a provincial company capitalized at \$1,000,000, the principal stockholders being Wm. Mackenzie, of Mackenzie & Mann, P. Burns of Nelson and Rossland, J. G. Holt of Montreal, George Campbell of Winnipeg, G. E. L. Porteous of Montreal, and J. Ferguson McCrae of Rossland. The claim lies east of the Enterprise and Iron Horse, and joins the Columbia and Kootenay on the west. It is equipped with a 5-drill Ingersoll-Sergeant air compressor plant complete and has been opened by a shaft and tunnel. The shaft is down 75 ft., showing ore all the way. The tunnel is an extension of the Alberta crosscut and taps three ledges at a depth of about 300 ft. The first was a small one and has not been explored. The second was drifted on to the west for 50 ft., showing from 8 to 35 ft. of ore assaying up to \$4.00 to the ton. No drifting has been done on the third vein, although it appears to be wide and strong. The property has been closed down for lack of funds since February, but work will be resumed shortly. New development funds will most likely be obtained by reorganizing the company with assessable stock.

THE VIRGINIA.

The shaft is being extended from the 300 to the 500 ft. level. It is not certain whether any other work is being done in the mine. There does not appear to be as much ore on the dump as I stated last month.

IRON HORSE.

The Iron Horse Company has just ordered a 7-drill Ingersoll Sergeant air compressor for immediate delivery. The double compartment shaft is now down 34 ft.

WHITE BEAR.

A drift has been started to the east on the 250-ft. level in the White Bear. This is the first work which has been done in this direction from the shaft and it promises well. At a distance of 50 ft. from the shaft 2 ft. of good looking ore was found.

GIANT AND NOVELTY.

There is no change to report in the Giant tunnel, and the shaft continues down in good looking ore without any notable change in values. Surface stripping on the Novelty, after uncovering three or four good showings, has been discontinued, and a shaft, which is now down 20 ft., was started on the best of them. The ore is solid and handsome in appearance, but does not yet assay much.

THE SOUTHERN BELLE.

On the Southern Belle, on the north slope of Red Mountain, the winze from the tunnel is down some 50 ft., showing a little copper ore.

GERTRUDE AND CONEY.

No change has taken place in the workings of either property during the past month. The Gertrude shaft has now found the 100 ft. mark but does not yet show much ore.

THE MASCOT.

The compressor for the Mascot has arrived and will be installed as rapidly as possible. A new tunnel is to be started, which, when 1,000 ft. in, will give a depth of 700 ft. The winze from the upper tunnel is down 35 ft., and shows a small ore body running from \$15 to \$20 in all values.

SOUTH BELT MINE.

There is still but little interest manifested in properties in the South Belt. This is due principally to the fact that no mine has yet been developed in that section. The disappointing results of last year's work on the Crown Point will never be overcome until one or more properties in that section become dividend-payers. Regarding the Crown Point itself, it is well to remember that there is enough ore in sight above the 80 ft. level, where the vein is cut clean off, to repay the original cost to the War Eagle Company and all the money since expended in prospecting for the vein at depth. Local mining men are all agreed that it is only a question of time and money until the ledge is found below the fault.

GRAND PRIZE.

Work on the Grand Prize was started a week or two ago by prospecting the surface for the Deer Park vein. Superintendent McDonald appears to have located it about 800 ft. from the Deer Park workings. He made a big surface cut first and then started to sink on the ledge. A depth of 20 ft. has now been attained, showing 6 ft. of vein matter with three stringers of quartz, aggregating a little over a foot in width. The quartz contains lots of molybdenum, the ore which carries the big values in the Deer Park. No assays have been announced.

THE HOMESTAKE GROUP.

The only claim in the Homestake Group on which work is going on is the Gopher. There a winze is being sunk from the tunnel level in a chute from \$12 to \$16 ore. The winze is all in ore. On the Homestake and R. E. Lee it is hoped to start work next week, the machinery having now all been overhauled.

NEST EGG FIRELTY.

This property is said to be under option to a Toronto syndicate, and it is possible work will be resumed on it at an early date. There are some fairly good ore showings in the workings on this property.

DEER PARK.

The new 7-drill air compressor at the Deer Park started work last week, and for the first time machine drills are being used in the mine. One drill is used in the drift on the 250-foot level and the second is at work in the shaft, which is now down 280 feet.

THE COMMANDER.

The Commander shaft is now down 255 feet and shows a little mixed ore on the bottom. The ore body appears to have dipped away from the shaft, and it is likely no considerable ore body will be found without cross-cutting.

CANADIAN GOLD FIELDS.

The slump in Canadian Gold Fields shares is due to the failure of the management to keep its promises regarding the Sunset No. 2. Several times it has been announced that regular shipments were to begin, but so far this has not been done. The only work now being done on the property is an extension of the drift on the 350-foot level to a point under the discovery shaft. This is being done by contract.

EAST ST. LOUIS.

The shaft on this property shows 12 feet of ledge matter when cross-cut about the 50 foot level, and a pay stretch about 14 inches wide which assays \$12 to the ton. Work is being carried on by two shifts.

GOOD HOPE AND ALBERTA.

There is nothing new to report about either the Good Hope or Alberta. Work is being continued without any notable results.

EVENING STAR.

The lower tunnel is now in a dyke which was encountered in the upper workings. It will not be cut through for ten days or two weeks yet. The pay ore on the upper level was found west of this dyke, in which direction the lower tunnel is being driven.

THE VELVET MINE.

In the Velvet mine on Sophie mountain, which belongs to Sir Charles Tupper's London company, the developments in the past month have been of the most encouraging description. For some time the workings on the lower level (165-foot) showed no ore, but of late the drift has been in a solid body, averaging about \$100 to the ton in gold and copper. The mine is to be equipped with more powerful machinery at once, and there is some talk of a tramway and small matting plant being built shortly. A waggon road is now being made so that ore can be shipped to the smelter this winter.

The Victory-Triumph, which adjoins the Velvet and is controlled by another London company, is also reported to be developing nicely.

SALMON RIVER MINES.

An important strike is reported in the lowest level of the Dundee mine near Ymir. The Yellowstone, an adjoining property to the Salmo Consolidated, has been sold for a big figure, and the latter company's stock is looking up in consequence.



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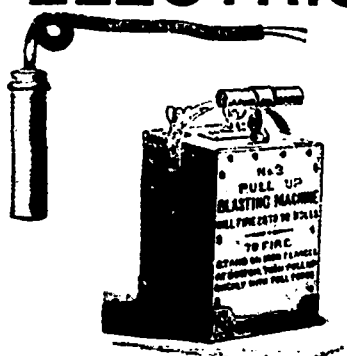
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The mill at the Porto Rico is not yet completed owing to delay in delivering the machinery. Several other properties are working large forces of men and the district is expected to attract a great deal of attention next year. There is some prospect, too, that the C. P. R. will build a branch line in there from Trail, which may eventually be extended east to Kootenay lake, making a cut-off on the present Crow's Nest Pass line.

THE BOUNDARY DISTRICT.

Never were the prospects of the Boundary district so bright as at present. A great many properties have been equipped with machinery during the past summer, and a number of immense low-grade copper ledges have been opened up. The British Columbia is under option to a London company for \$250,000, and there seems to be every prospect of the deal going through. On the Knob Hill the diagonal cross-cut tunnel has been in ore for 300 feet, and the average is said to be about \$12 in gold and copper. The Columbia and Western Railway, now under construction by the C. P. R., will be completed some time next summer, so that every mine in the district will shortly have cheap and convenient shipping facilities.

The Cariboo mine at Camp McKinney keeps up its dividends regularly. It is a free milling property.

CAMP OF REPUBLIC.

Rosland has always taken a good deal of interest in Republic, the leading camp on the Colville Indian Reservation, State of Washington. This camp owes its prominence to the Republic mine which was opened up by the Clarks after they disposed of the War Eagle. A half interest in the Republic is at present under option to the Exploration Company of London at the price of \$2,500,000 for the mine. The mine is opened by two cross cut tunnels, with several hundred feet of drifts, showing a large body of exceedingly high grade free-milling ore, and is equipped with a 50-ton Pelatan-Clirice mill, which is now being doubled in capacity. It has already paid one dividend, and will divide \$50,000 a month among its shareholders hereafter. Two other tunnels are being run to develop it and the adjoining claim, the Jim Blaine, and it is expected the Republic ore chute will be cut by one of them within thirty days. The option to the Rothschilds is off when the vein is reached.

Two other properties in Republic are admitted to be mines. On one of these, the San Poil, the ledge was only cross-cut last week by the No. 3 tunnel. The other is the Mountain Lion, in which Inhnathan Bourne, of Portland, Ore., one of the most venturesome mining men of the Pacific coast, is largely interested.

THE STOCK MARKET.

Trading has been heavier in Monte Christo than in any other stock during the past month. When I last wrote it was firm at 29. Since then it went to 32, then dropped to 11½ and is now in fair demand at 16.

Virginia has been another active stock. From 80 it has steadily declined to 50 cents, and has now re-acted and is selling at 55.

Deer Park, Homestake, Giant, Novelty, and Commander have just held their own.

Iron Colt has advanced a point or two.

Iron Horse has stiffened to 17.

White Bear improved to 9 and dropped back to 7½.

R. E. Lee, Gopher and Grand Prize are a trifle weaker.

Canadian Gold Fields (Sunset No. 2) has declined from 9 to 5.

Some Le Roi sold a month ago at \$5.75, but now none can be obtained under \$8.50.

Iron Mas', which I quoted a month ago at 90, dropped to 70, and has again improved to 75.

War Eagle dropped from \$2.95 to \$2.81, and has recovered to \$2.87. It has ranged from \$2.80 to \$2.95 for the past three months.

Quotations on Evening Star, Alberta, St. Paul and Good Hope are merely nominal, there being no transactions reported.

Jumbo went up to 55 on heavy local buying, but some small blocks are now offered at 42 to 45. A sharp advance in this stock is confidently expected by those posted on the developments in the mine. The management consider the stock worth \$1.00.

There has been considerable dealing in one or two Republic stocks. San Poil advanced from 41 to 80 and reacted to 75. Jim Blaine advanced from 25 to 36. Republic gained 30 cents and is now hard to get at \$2.50.

There has been a little more interest in Ymir stocks, and considerable Dundee and Salmo Con. have changed hands.

The new find between the 500 and 600 ft. levels in the Le Roi, to which I referred briefly above, has proved a wonder. Besides the 8 ft. of ore which averages about \$100 per ton in all values, there are now exposed in the crosscut 14 ft. more, all of which is of shipping grade.

The No. 2 tunnel of the Jumbo has at last got through the big body of pyrrhotite and is now in solid quartz. Average samples the full width of the drift taken yesterday and the day before, each went \$16 to the ton. The same chute of quartz, where opened on the first level, proved to be over 20 ft. wide and averaged nearly \$20 a ton, the higher grade ore being on the hanging wall side. Before this reaches you it is quite likely the lower workings will have reached this higher grade ore, in which case the stock is certain to jump to \$1 a share or better.

The Grand Prize has two exceedingly good showings of quartz on which surface cuts have been made and on which prospecting shafts are now being sunk. I visited the claim a day or two ago and was most agreeably surprised to find such strong ledges, but I do not believe that either is the extension of the Deer Park vein.

Developments in the Iron Mask are so encouraging that I hear from the management they are delighted the negotiations with the Gooderham-Blackstock syndicate came to naught. In fact it is very doubtful if a sale at any figure could be negotiated at present, and if the Toronto people want to end the Centre Star-Iron Mask lawsuit about the best way to do it would be to consolidate the two claims in one company. I believe a very fair settlement could be reached this way and am very much surprised that no effort has been made in this direction. The only people who can possibly profit by the existing condition are the lawyers.

I had almost forgotten to mention, in connection with the Jumbo, that though it is assessable stock, no more assessments will be levied, as the management now sees its way to begin regular shipments at an early date. A large majority of the stock is held by J. A. Finch and M. R. Gulusha, of Spokane, but Rosland people own some 50,000 shares, and about the same quantity of stock is held by a few lucky Torontonians.

H. W. C. JACKSON.

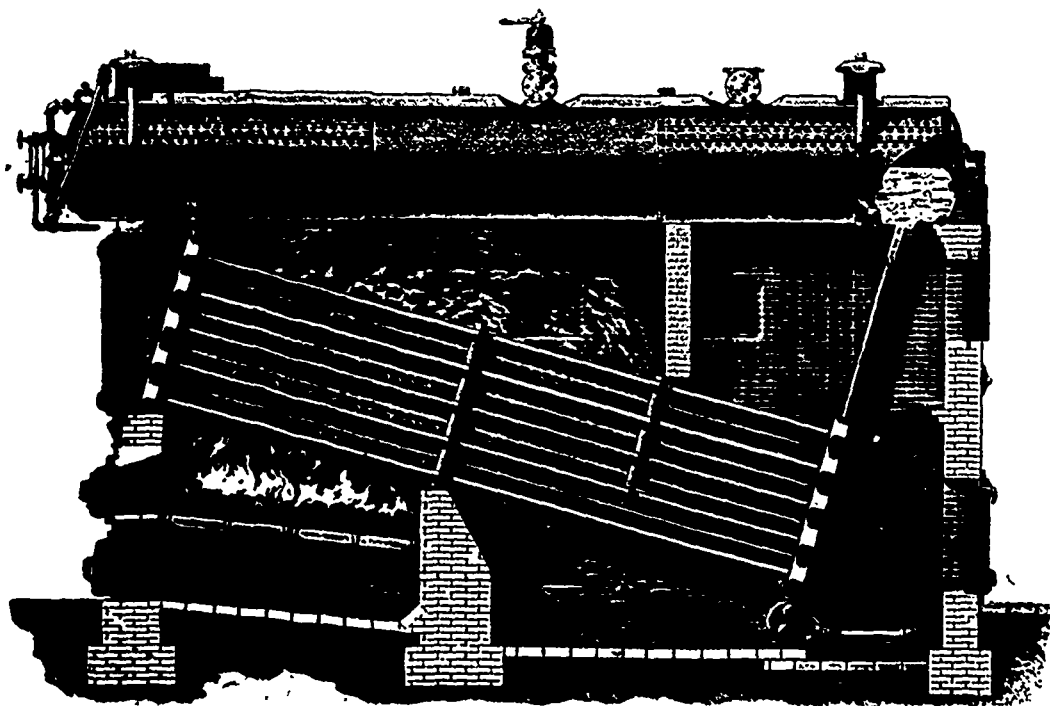
[BY WIRE.]

ROSSLAND, B. C., Oct. 27.

George Pfunder has resigned the superintendency of Monte Christo and Virginia Companies, and the Mackay-Hosmer Syndicate has appointed foreman McPherson to succeed him. This is apparently the concluding chapter in the history of recent Monte Christo-Virginia booms. Mr. Pfunder still controls Iron Horse, the Mackay-Hosmer Syndicate not being interested in that property.

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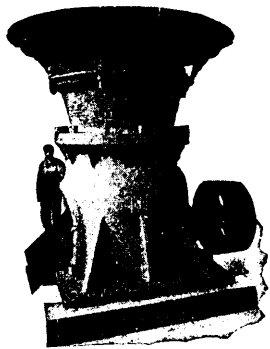
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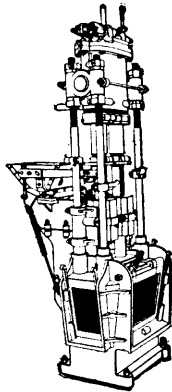
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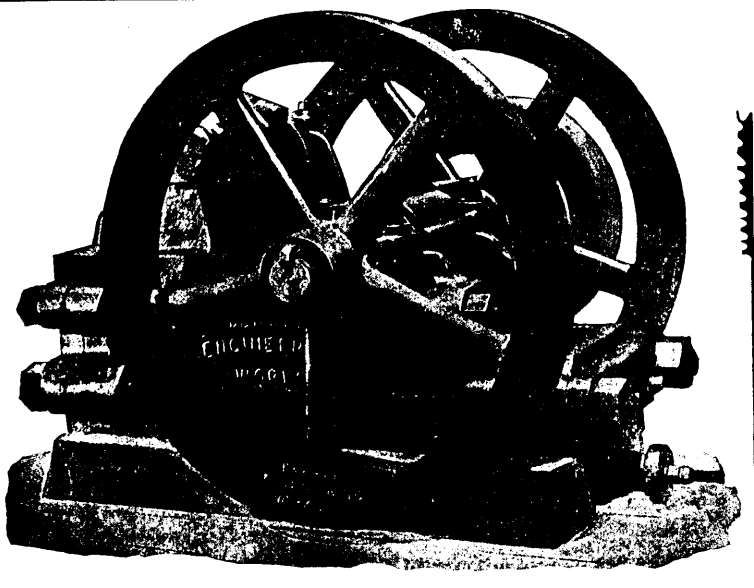
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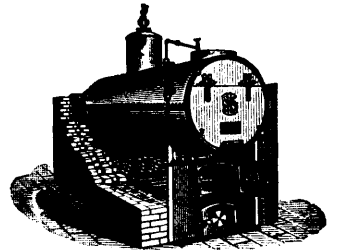
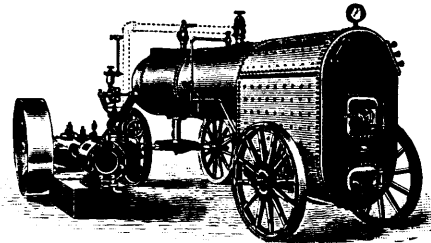
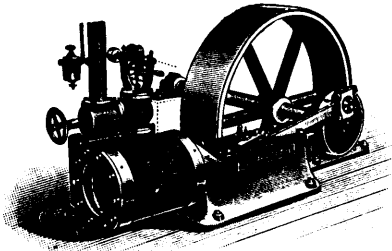
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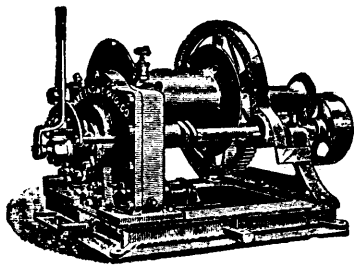
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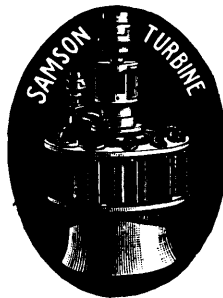
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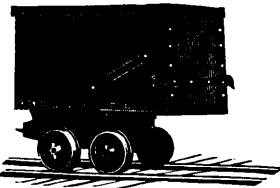
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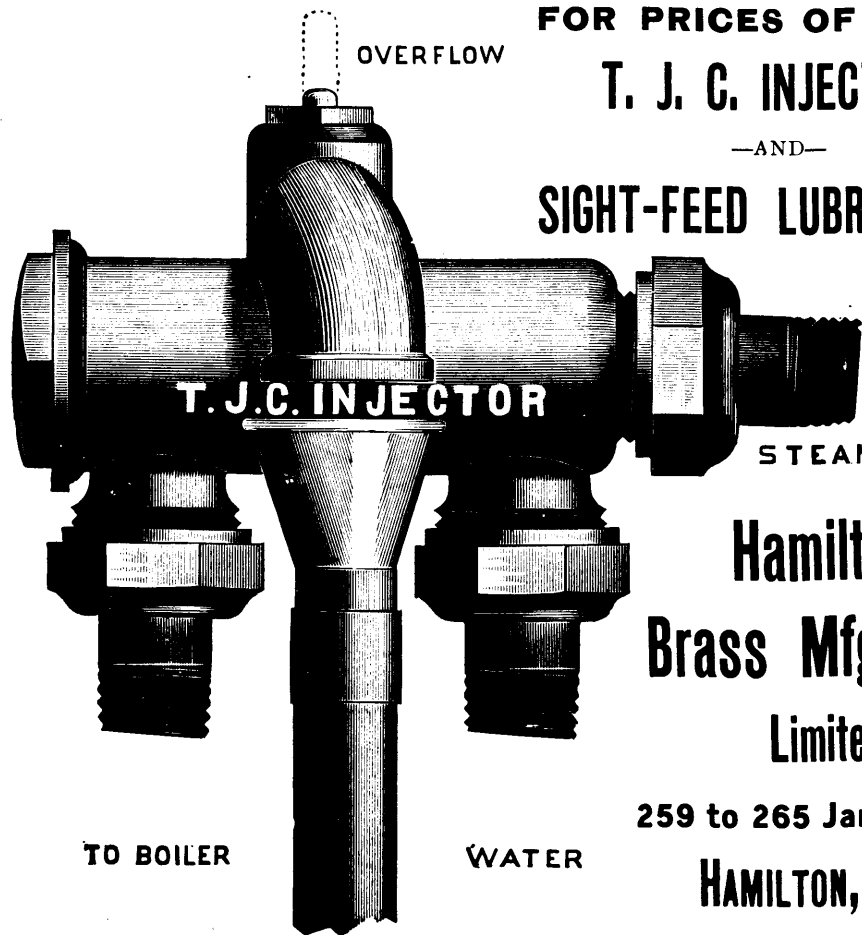
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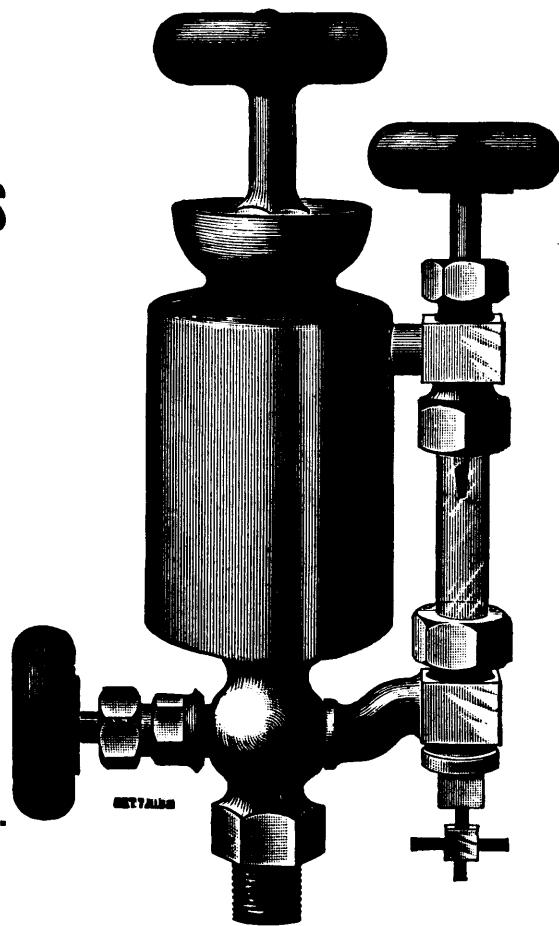
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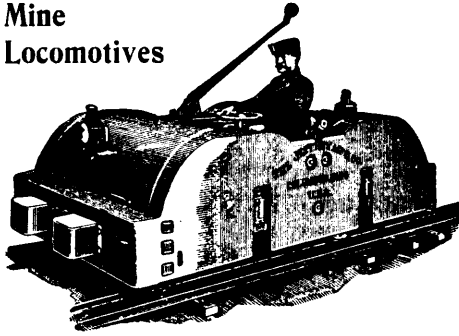
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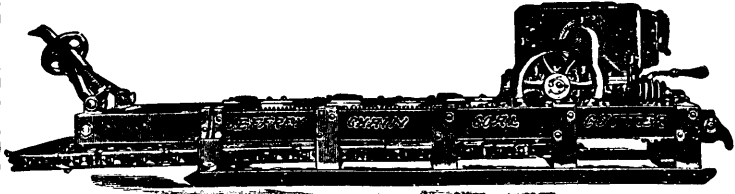
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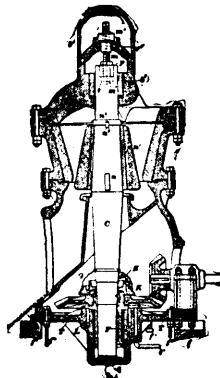
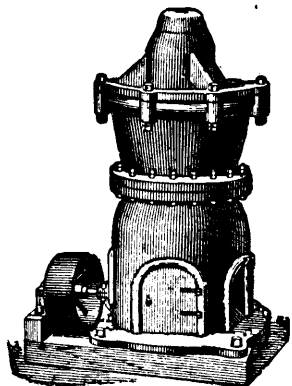
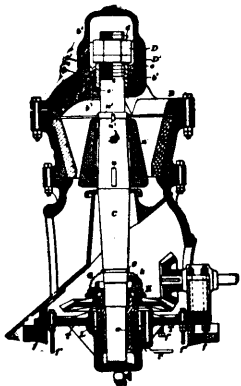
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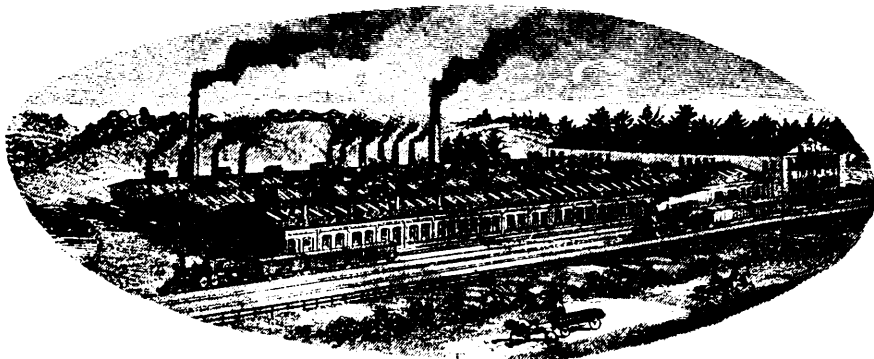
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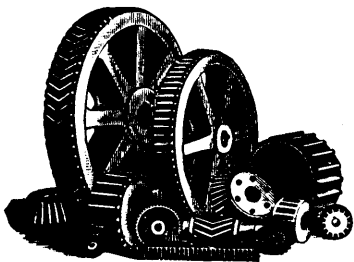
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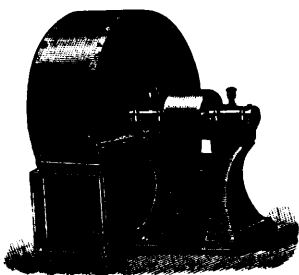
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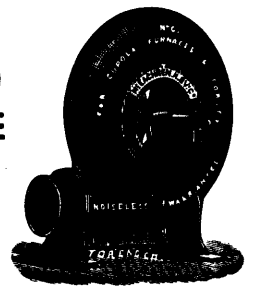
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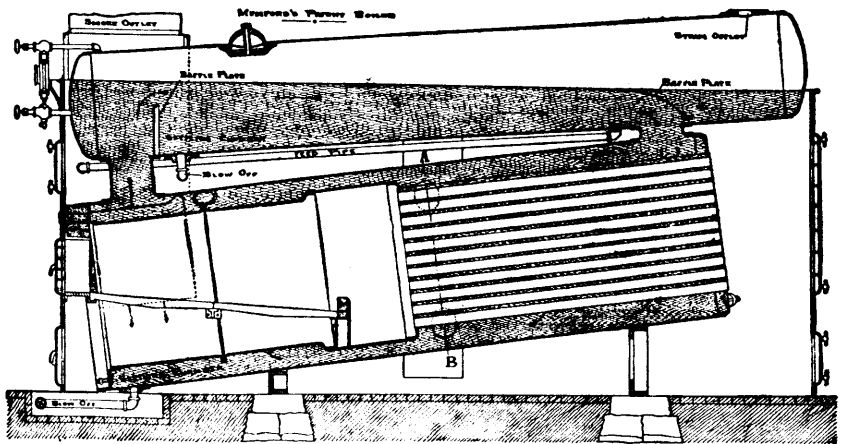
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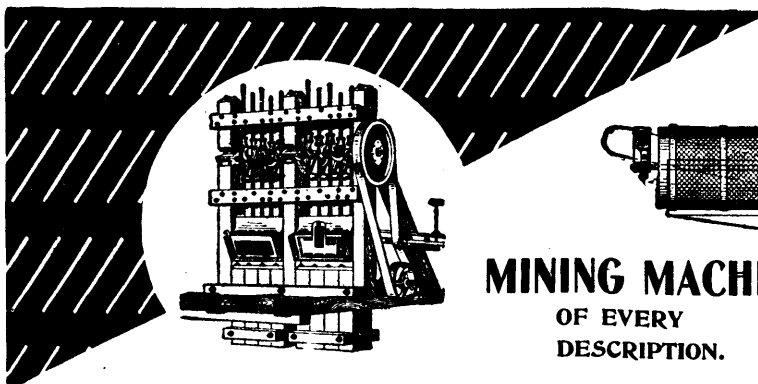
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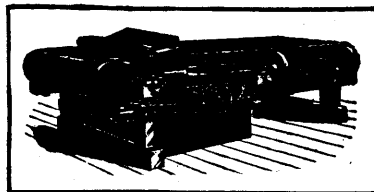
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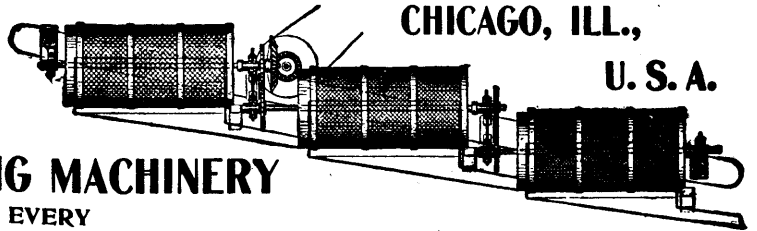
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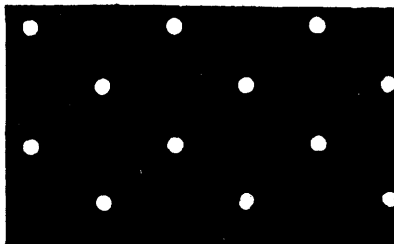
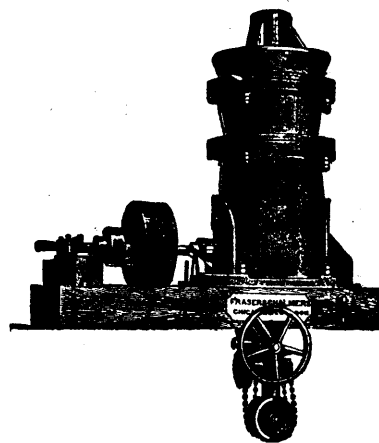
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