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ESTABLISHED 1882.

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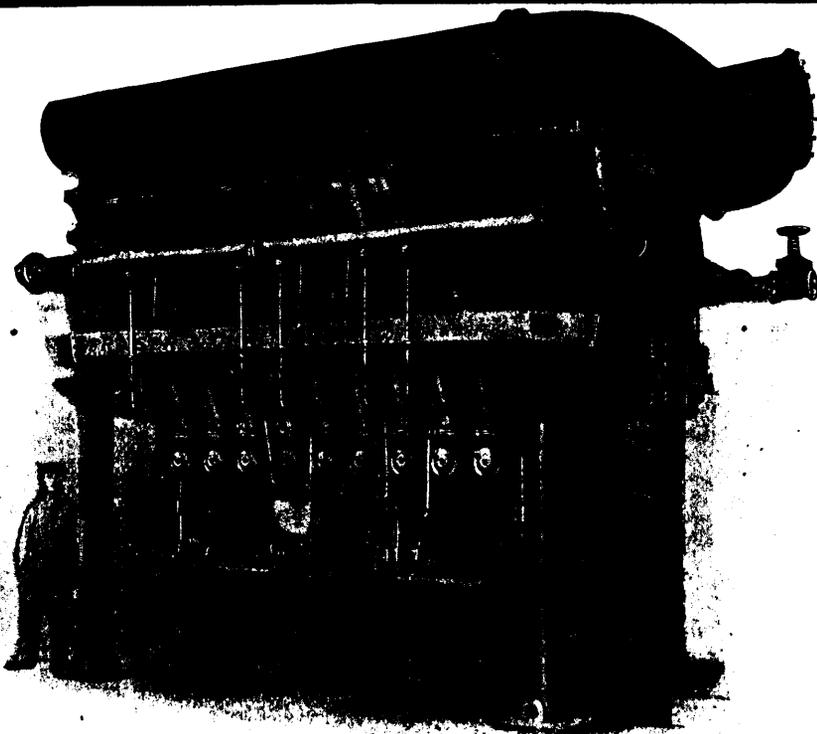
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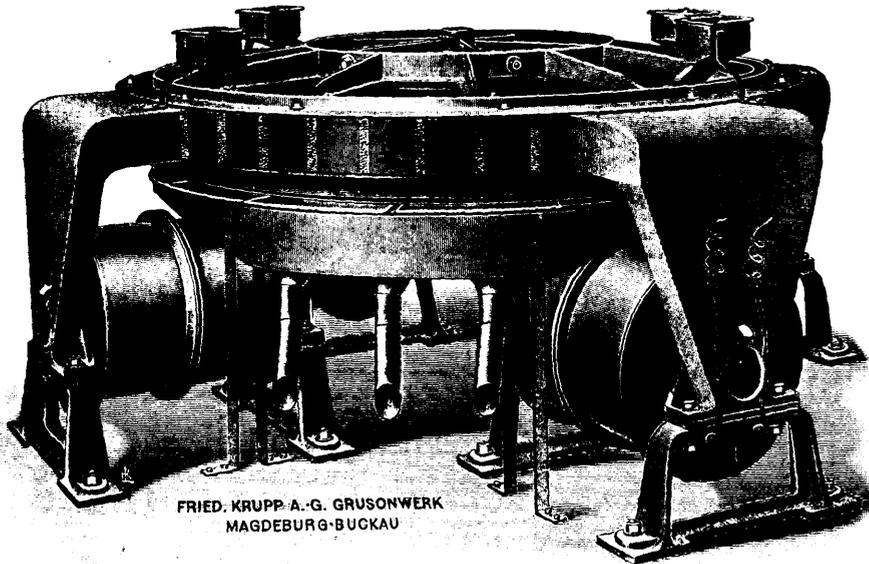
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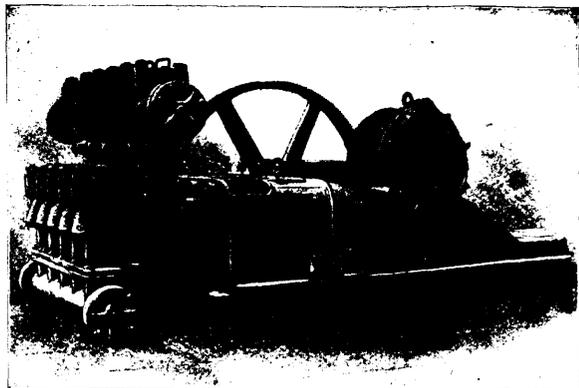
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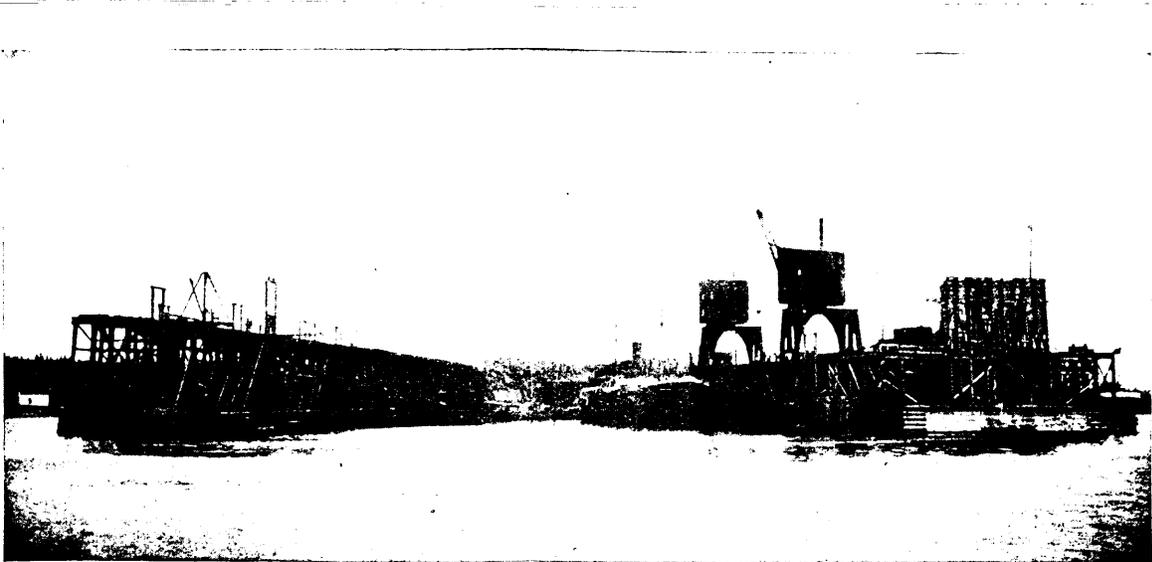
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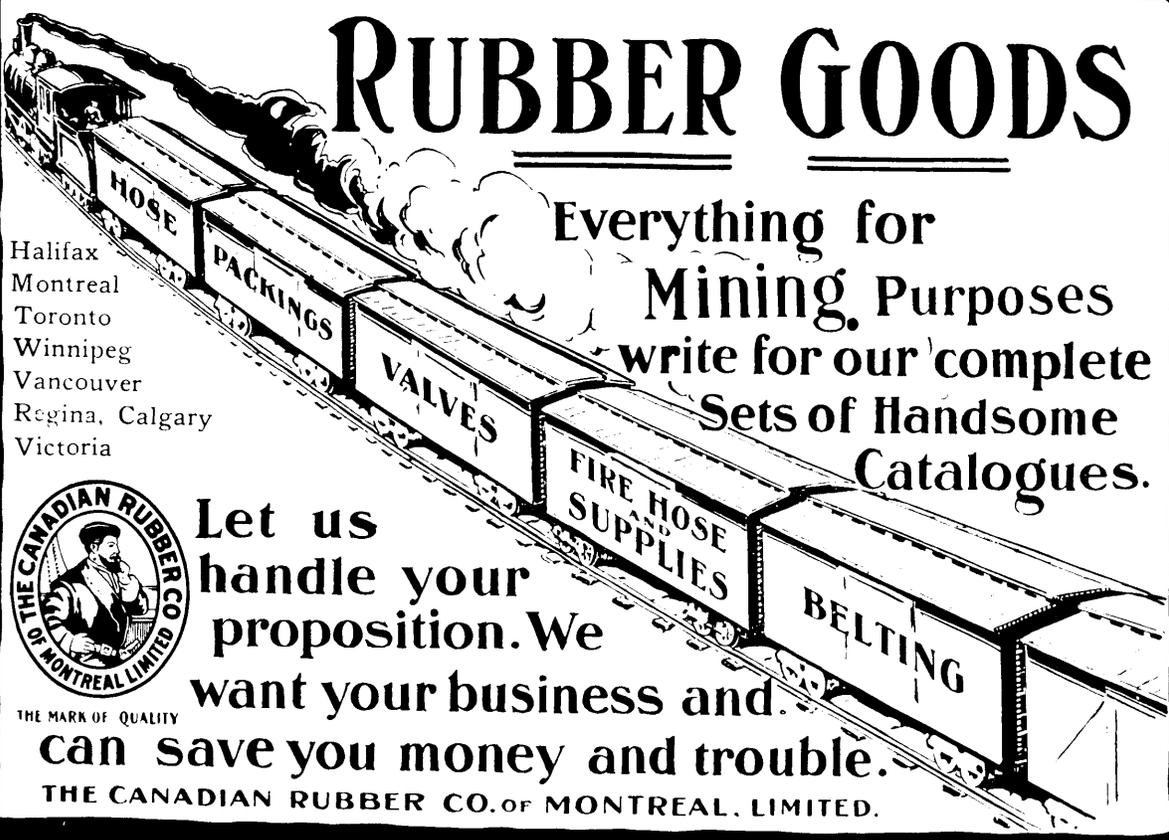
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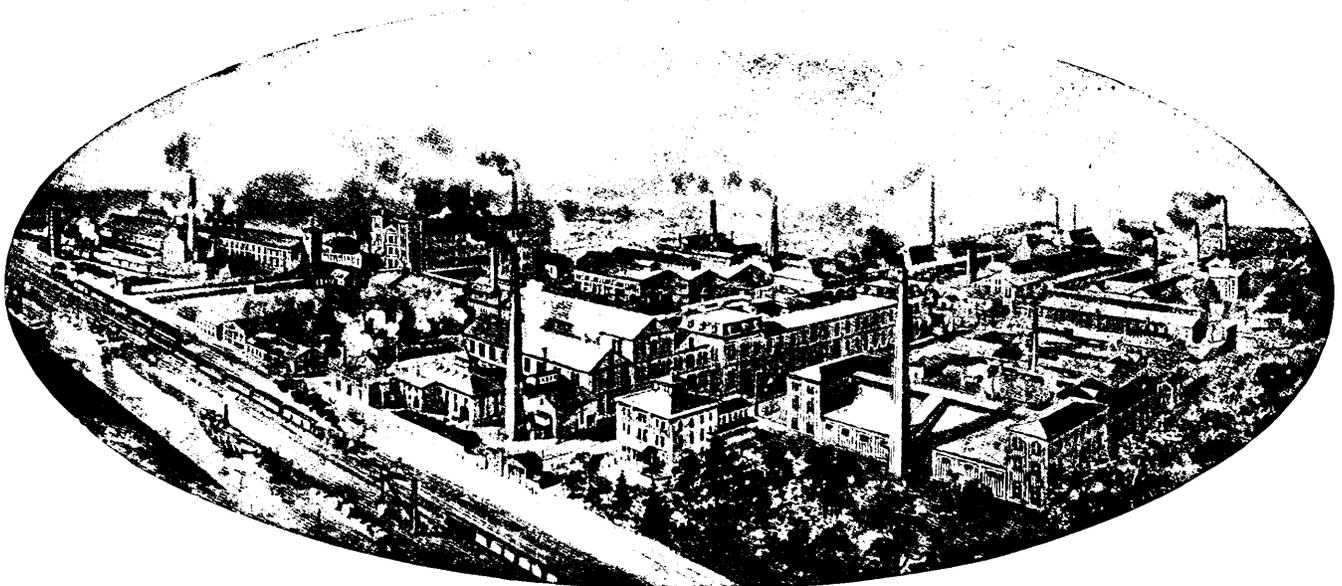
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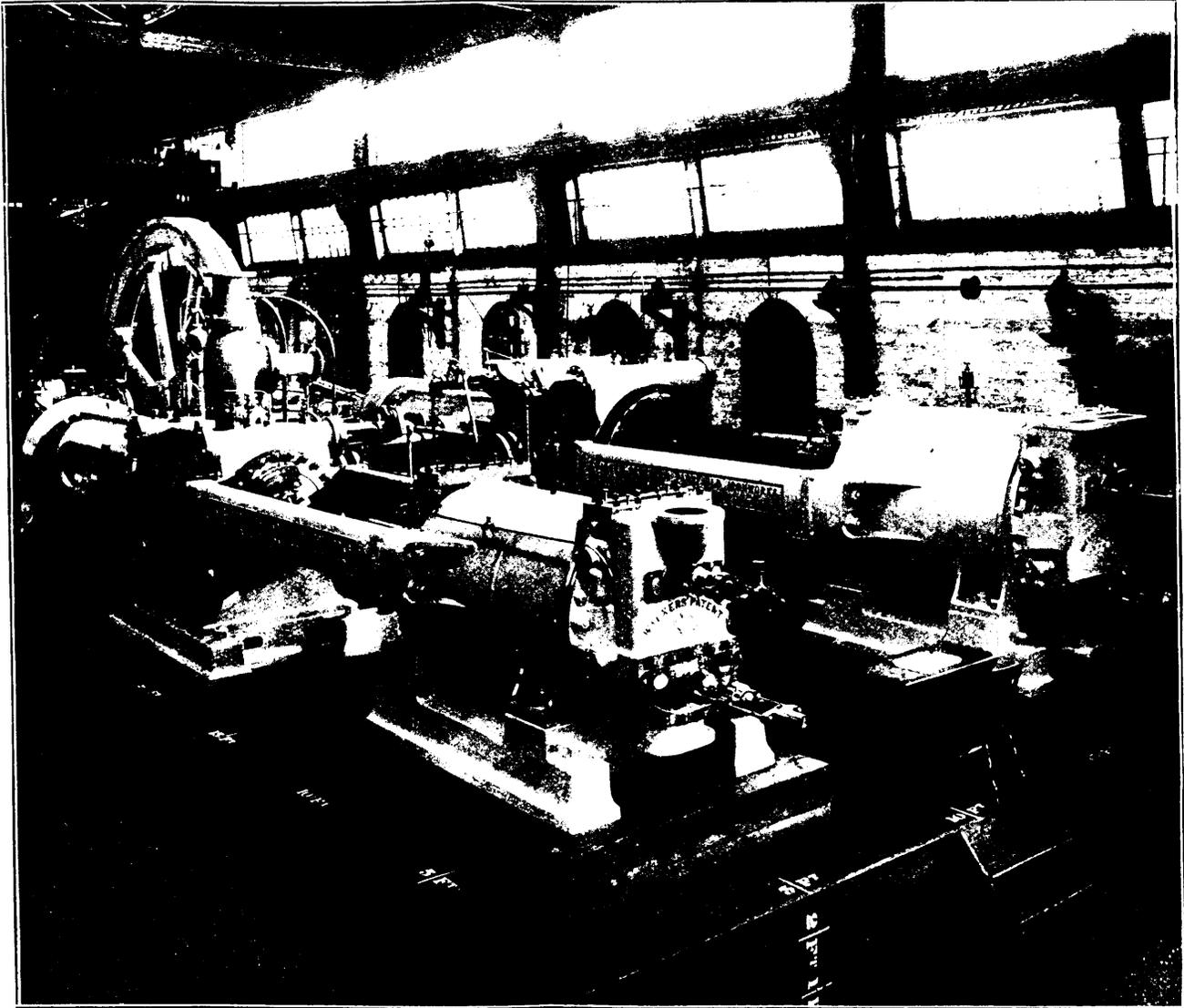
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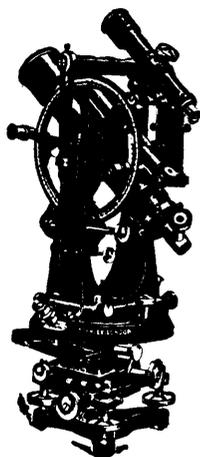
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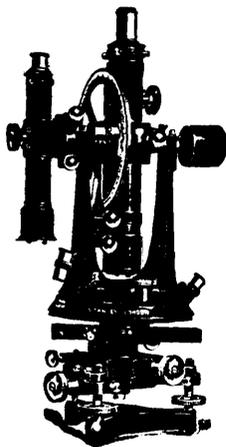
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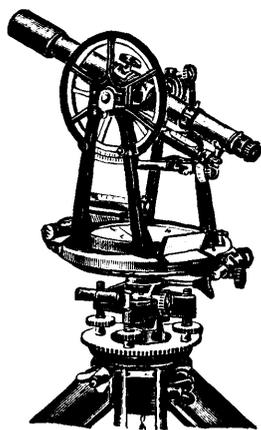
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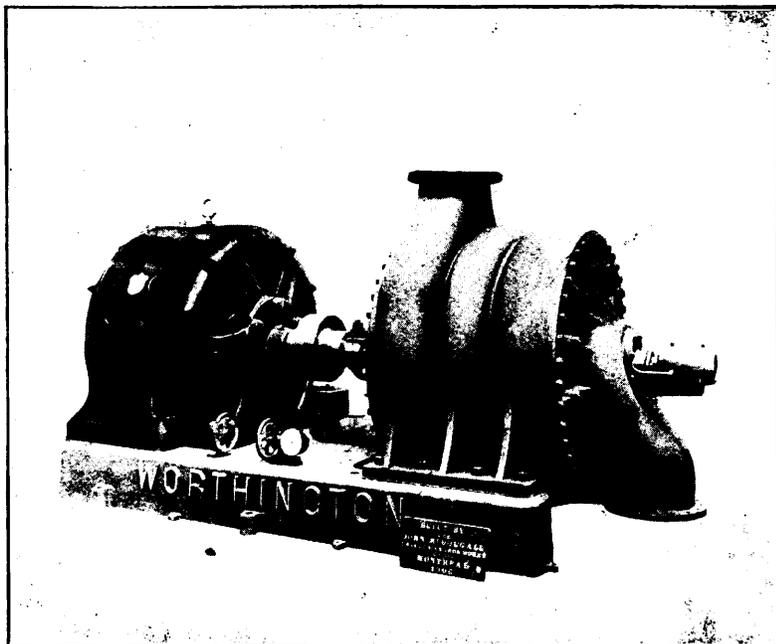
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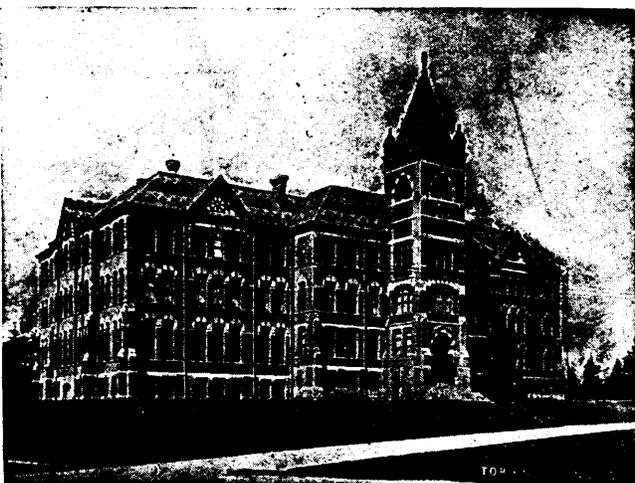
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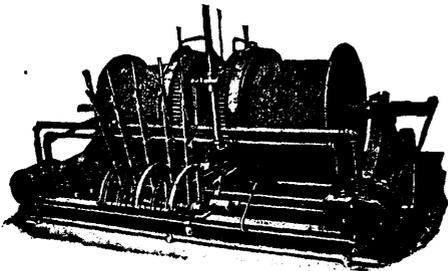
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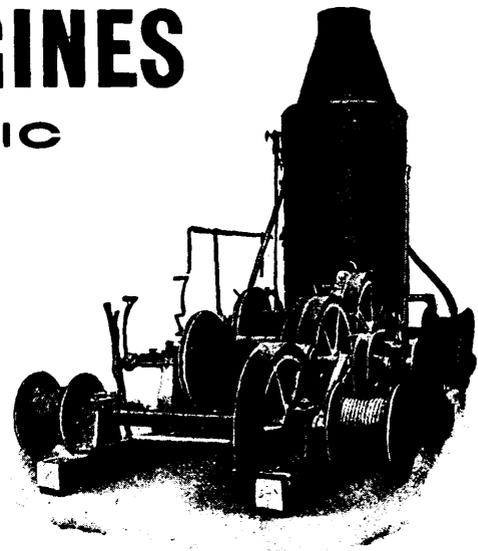
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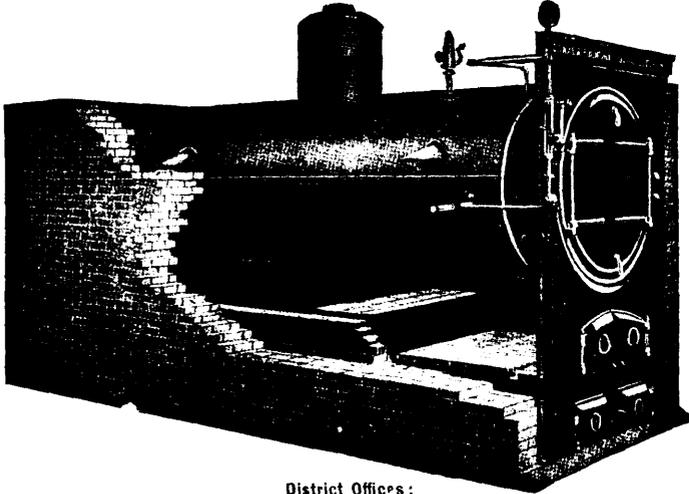
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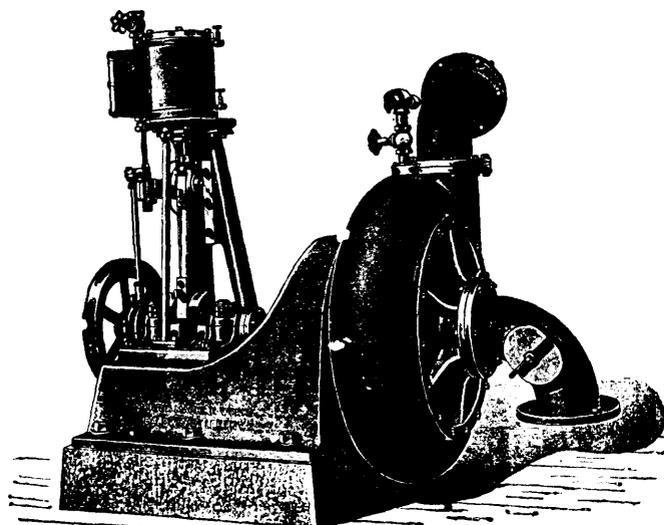
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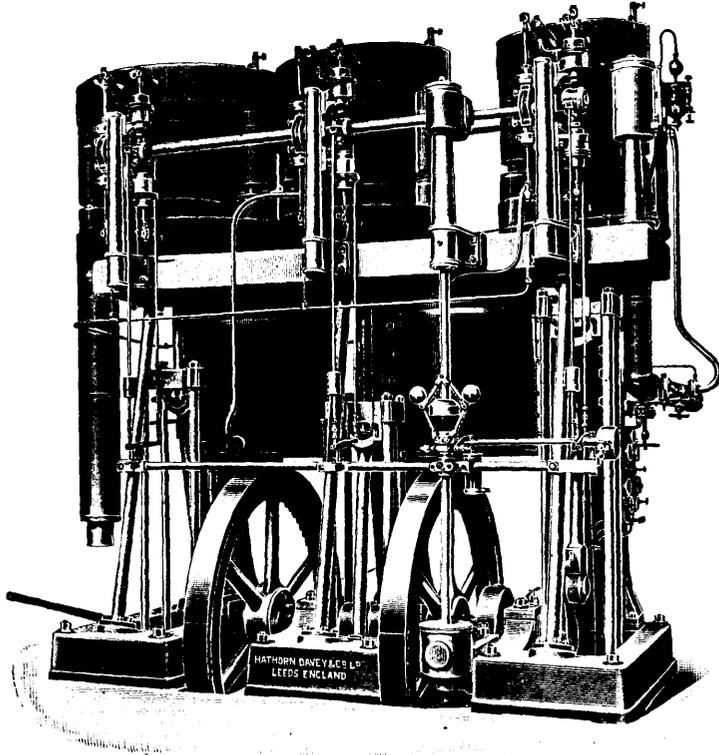
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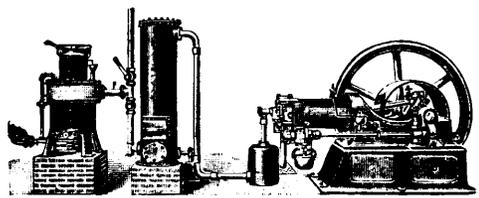
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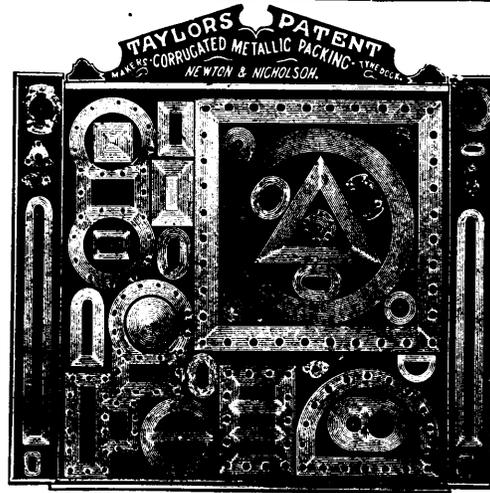
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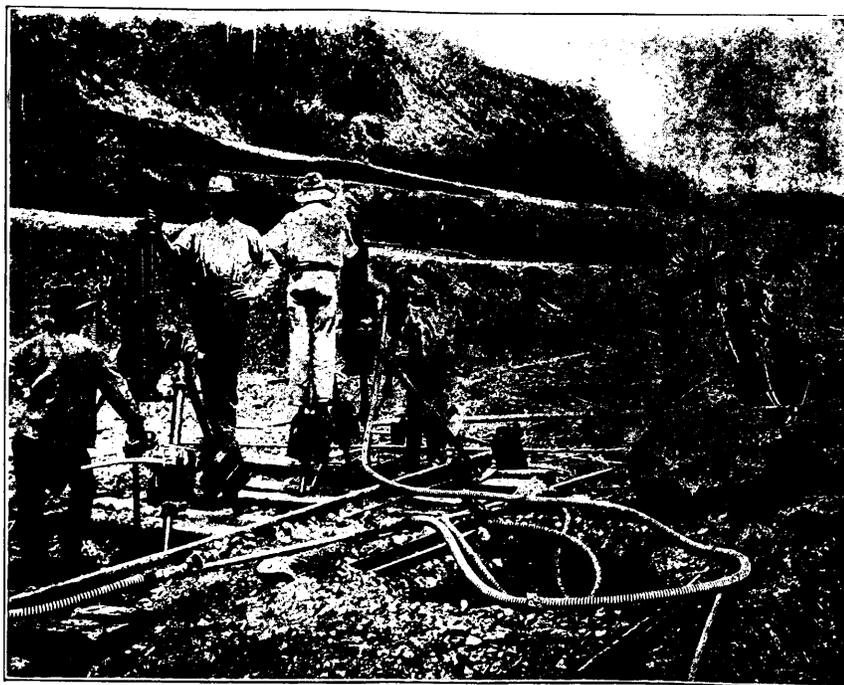
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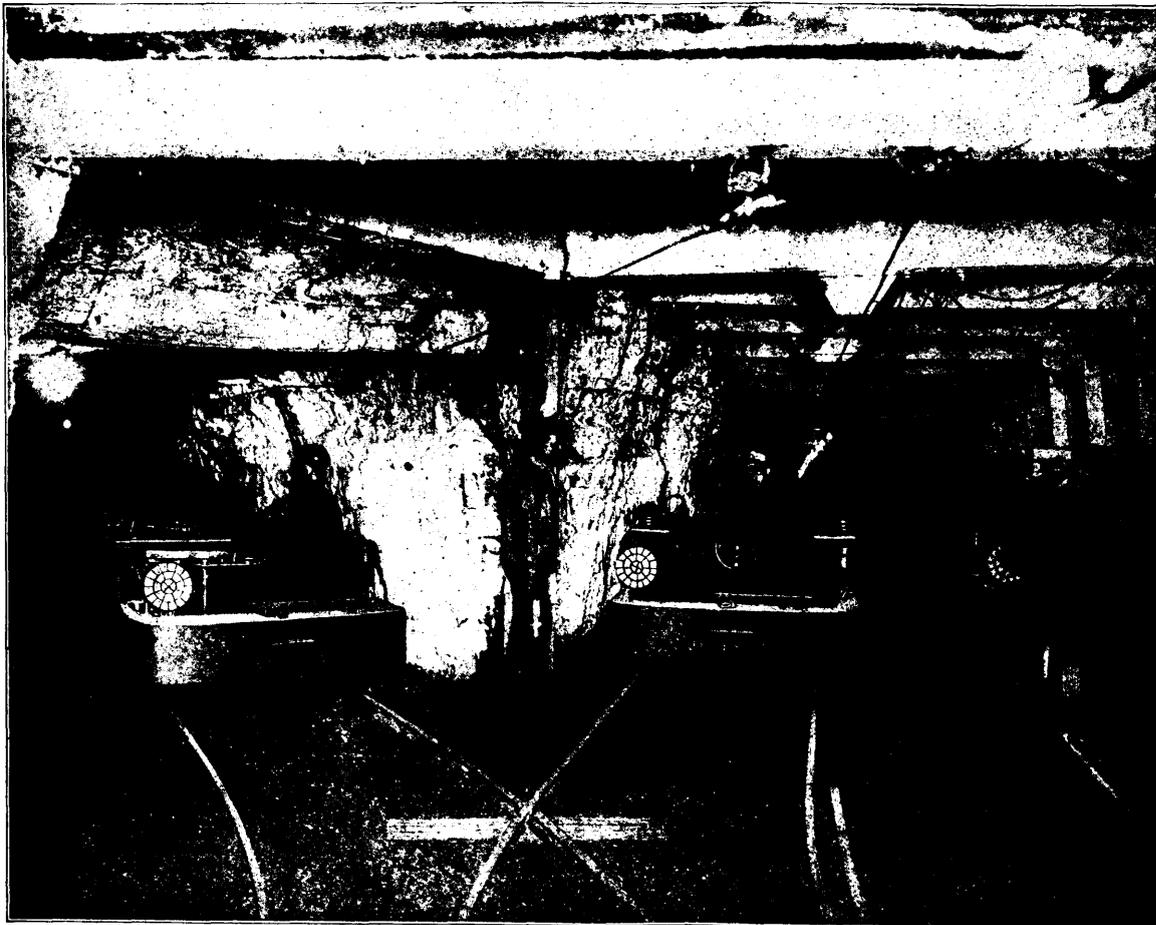
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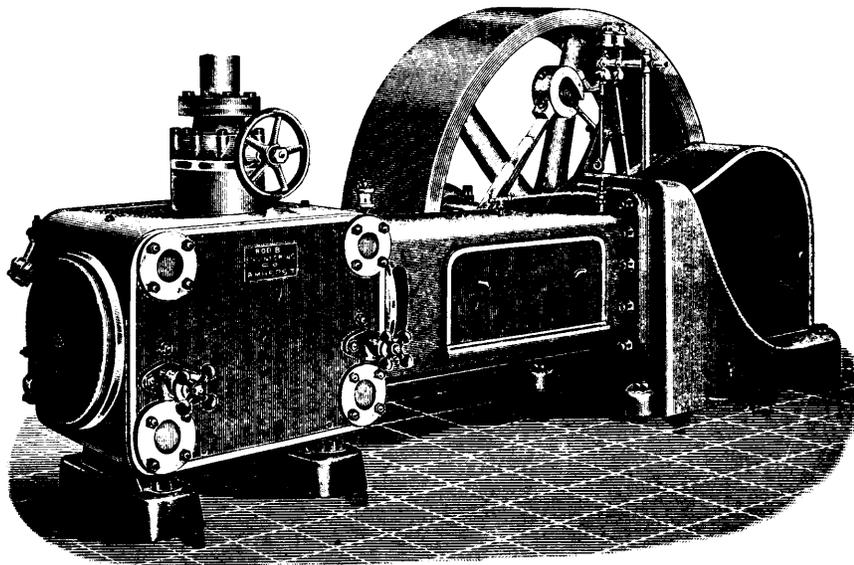
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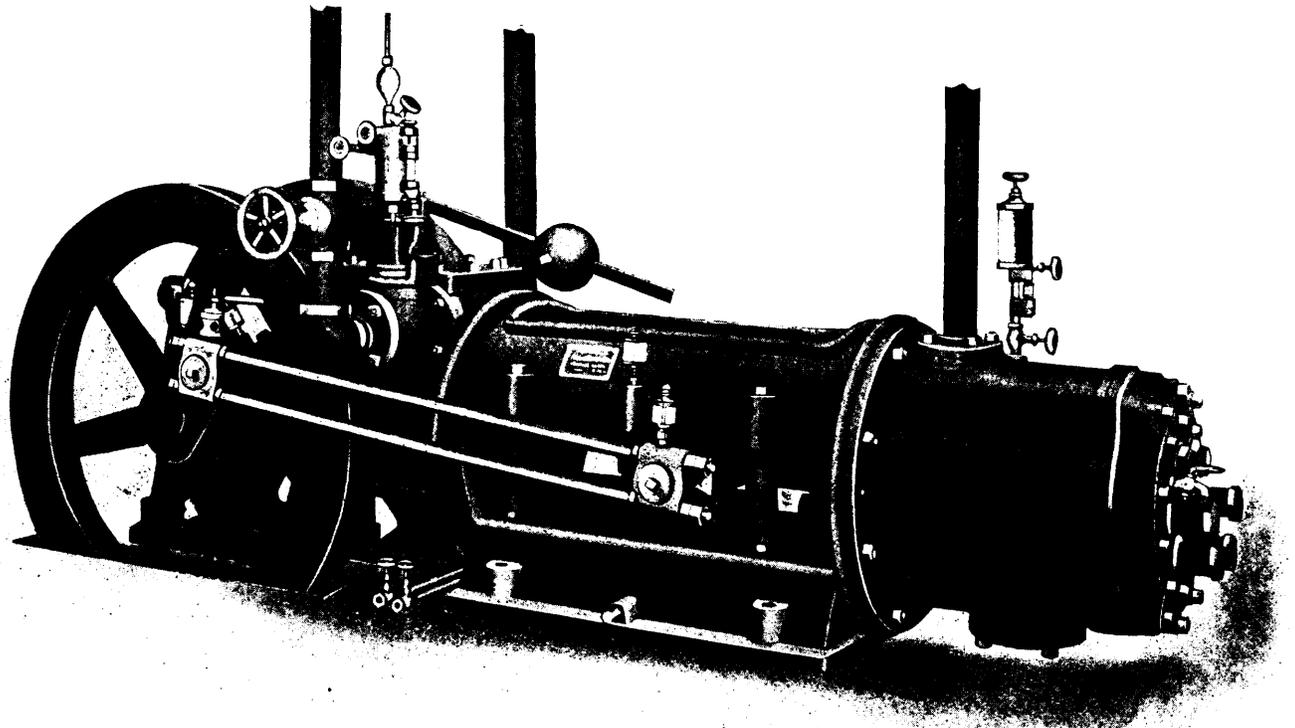
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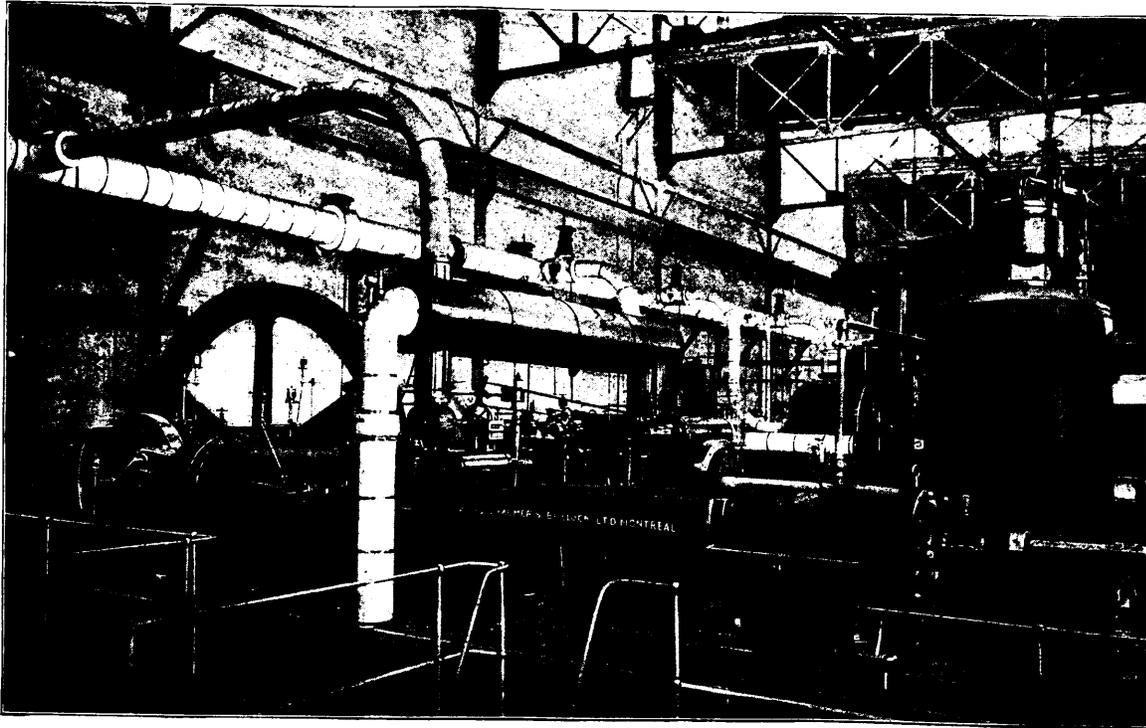
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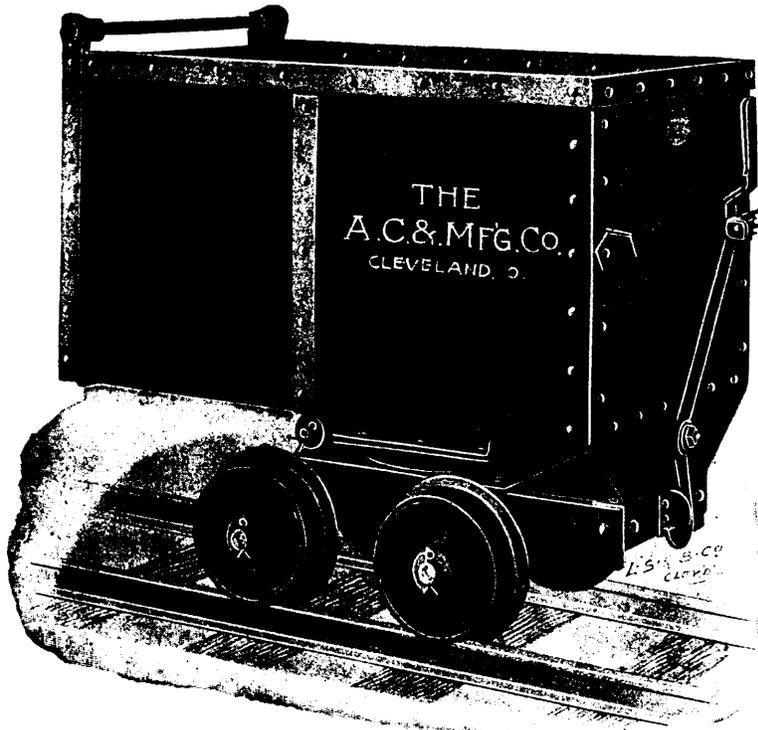
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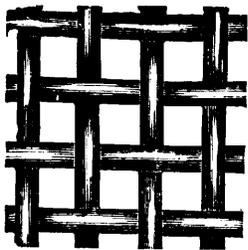
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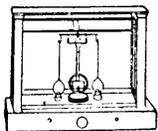
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THE CANADIAN MINING REVIEW

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The monthly analysis of gold production in the Transvaal for April shows that there were produced 120,467 ounces of fine gold, valued at £1,786,030. Of this total 274,079 ounces were contributed by the plates; 9,738 ounces obtained from concentrates; 111,754 ounces from sands, and 24,694 ounces from slimes.

Prof. John Macoun will make an examination of the country along the line of the Grand Trunk Pacific Railway between Portage la Prairie and Edmonton, but especially west of the proposed crossing of the Assiniboine. In making this examination he will touch at certain points examined and reported on by him in 1872, 1879 and 1880, and will be able to make a much more reliable report on this account, as he can compare his notes taken in former years with those made on this expedition.

From the matured knowledge of the natural history, climatology and natural resources of the country, a valuable and exhaustive report may be expected. Besides reporting on the soil and climate in the immediate vicinity of the road, he will be able to speak with more certainty about the future of Saskatchewan and Alberta than he was able to do in his earlier reports.

Enough material and notes on the fauna and flora of northern Saskatchewan and Alberta will be obtained to enable the department to publish a comprehensive report on these subjects. Competent assistants will accompany Prof. Macoun, who will collect birds, mammals and plants for the Museum.

Most Canadians are aware that we have in this Dominion supplies of coal to express the amount of which our language falls lamentably short. "Enormous," "tremendous"—such words as these only feebly express the tonnage of lignite lying beneath the thousands of square miles in the western provinces. Unlimited is perhaps the correct word, for the supply is certainly "unlimited" for many hundreds of years. A billion, to the ordinary person, is little more than a figure of speech, but the tons of

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coal in Alberta alone are probably represented by hundreds of billions.

Though the presence of this coal is well known, and has been known for some time, the fact that it is only "lignite" has been sufficient to induce most people to believe that its economic use is comparatively small.

An invention has, however, been patented which has all the possibilities of rendering this lignite quite as useful as hard Welsh anthracite. This invention, known as a gas producer, has been put to very severe tests, and has proved that coal similar to our western lignite can be made to produce, by its aid, an amount of power equal to that produced in the ordinary way by best Welsh.

Mr. Dowling, of the Geological Survey, lately read, before the Mining Institute, a paper in which he gave some remarkable figures. These show that in an ordinary steam plant the amount of coal (similar to that found at Medicine Hat) required to produce one horse-power per hour is six pounds, whereas in the gas producer a similar result is obtained from less than two and a quarter pounds. This test was made on what is known as "wet" coal, but if the coal be dry, the variation is equally startling. These extraordinary results open up a field whose limits are practically boundless.

The Geological Survey has recognized the tremendous possibilities and their reports on the western coal areas will be read with more than usual interest.

The ultimate object of the mining industry is to extract from the earth's crust various mineral substances required by mankind and bring them to such a condition that they become of value, either as a means of currency or display, or as material for the manufacturer.

Once this is allowed, it is evident that the community at large is interested in having the most made of the resources of its country, and in having the supply of the material it needs produced as cheaply as possible, that is, with the minimum of expenditure of time, material and energy. This requires that those having the direction of the operations for mining these mineral substances should be armed with the fullest possible information and should come to their task with a thorough knowledge of the nature, modes of formation and habits of the deposits to be worked.

It has long been recognized that a legitimate and important branch of the work of a Geological Survey consists in presenting to the public an annual review of the economic condition of the mining industry, including, whenever possible, technical data required by practical miners regarding the economic mineral deposits of the country. Such a report has been issued by the Dominion Survey since 1886 and, although it often runs to some two hundred pages,

the matter is so arranged as to show at a glance the present state of the mining industry in Canada.

Often the accumulation of the data required for the completion of the annual report is made with the greatest difficulty, because some operators, directly they are asked for facts, curl, snake-like, into their shell and refuse to give any particulars whatever, believing, apparently, that the information will be used somehow against them.

The Survey's policy is, and always has been, to publish nothing that can damage legitimate private interests, and the director appeals to all mining men to help as much as possible in furthering the work of the Mines Section of the department, so that the interests of the mining community at large may be likewise helped.

SOMETHING IN A NAME.

Nine years ago, His Excellency the Governor-General, by and with the advice of the Queen's Privy Council, was pleased to create a "Geographic Board." This body was to consist of and has consisted of one member for each of the departments of the Geological Survey, Railways and Canals, Post Office, and Marine and Fisheries, such member being appointed by the Minister of the department; of the Surveyor General of Public Lands, of such other members as may from time to time be appointed by Order-in-Council, and of an officer of the Department of the Interior, designated by the Minister of the Interior, who shall act as secretary of the Board.

This carefully appointed body, consisting as it does of the best informed men in the Dominion, seems to have had about as much effect upon the spelling of Indian names as if it had never existed. The daily papers, even those in the front rank, continue to spell such words as "Abitibi" in a dozen different ways. They persist in calling "Sassaganaga" (Island Lake) "Sissiginaga," and "Lake Timiskaming" is "Temiscaming," "Temiskaming" or even "Temiscamingue." All these Indian names have a very definite meaning, and they are not to be confounded with some of the idiotic appellations given by the earlier white settlers. The Indian name usually refers to some marked physical peculiarity. For instance, "Timiskaming" means "Lake of the Deep and Shallow Water," and if you have ever been on "Timiskaming" you will recognize the fitness of the designation. The lake itself is six hundred feet deep, but the bays between headlands are usually extremely shallow.

Seeing that the Fifth Report of the "Geographic Board" is to be obtained in exchange for a ten cent piece, we think there is no excuse for Canadian editors when they misspell names of places in the Dominion. We have too much of what may be called "Brass Band Patriotism," and it is worth while considering whether it would not be better to

show our love for this Canada of ours by taking at least sufficient trouble to learn its geography thoroughly.

LET THOSE WHO RUN, READ.

The Department of Mines and Geological Survey of New South Wales is issuing a series of bulletins upon the mineral resources of New South Wales, similar in their nature to those that are issued by the Canadian Geological Survey, and which have attracted such favorable comment. Bulletin No. 11, by E. C. Andrews, B.A., deals with molybdenum. We are impressed with the very practical nature of this bulletin. No attempt whatever has been made to render it intelligible only to the trained metallurgist—the very man who needs it least. Rather has it been written for the uneducated prospector, for whose guidance it has been prepared. One continually finds little explanatory sentences that will make the meaning clear even to men of slight education. We think that there is much wisdom in this course, and when pamphlets are written in order to aid the prospector, the language, while it should be accurate and precise, need not be too technical.

The value of molybdenite exported from New South Wales varied between fifteen and twenty-nine tons for the years 1902, 1903 and 1904. The higher figure was reached in 1903, when the value of the product was £4458. In New South Wales molybdenite has been found generally at the contact of coarse and fine sandstone-like granites with older rocks. The latter may be rocks of all descriptions, such as porphyries, felsites and andesites, but usually the contact with slate is the most productive. Some very sensible remarks concerning the occurrence of quartz reefs are worthy the attention of prospectors in other countries than New South Wales. The writer says:—

"A few remarks concerning the occurrence of quartz reefs generally will not here be out of place. The author has seen men jubilant at the discovery of reefs such as the one described above. Prospectors often contend that the narrow outcrop will 'be sure to improve in depth' both in width and value. Now, this is against all experience, and the mass of experience is simply the basis of all mining geology.

"Let us examine an outcrop with respect to its life at a depth, irrespective of its mineral values. If the reef is very narrow all along its course, and can be traced some two or three chains only along the surface, we may rest assured that usually this class of reef will pinch out below at little or more than one hundred feet. If the outcrop widens here and there, and can be traced along the surface for a mile or more, we may be sure such a reef will live to great depths, and that frequently it will widen out and "pinch" as it is traced downwards.

Again, if one finds molybdenite (or other mineral) scattered sparsely at intervals only along an otherwise barren vein of quartz, one may rest assured that such a line will be very patchy. Again, with few exceptions, one will find the outcrop, or the reef near the surface, to carry much bigger values than at depth.

"Along many reefs shoots of ore occur, while the vein alongside is valueless. It will often be found, in such cases, that a cross-course or peculiar "bar" of country is associated with the rich shoot."

A WORD IN SEASON.

In these summer days, when the streets of our larger cities are full of stories concerning the "marvellous" wealth of the Cobalt region, of the Chibogamoo country and of the unknown north through which the Transcontinental Railway is building, we came across the following excellent editorial in the June number of our highly esteemed contemporary, *Mines and Minerals*. And, believing that neither New York nor Arizona can equal in mining ignorance either Montreal or Toronto, we reproduce the article in the vain (?) hope that some of our otherwise respected Canadian citizens may take heed thereof and be, for once, wiser than his neighbor, and wise in his generation:—

A lawyer recently borrowed from our library a book on gold mining in order that he might go to Australia for a New York syndicate to report on a gold mine. He had neither technical training nor practical experience, still a number of bankers who rank as conservative financiers were willing to accept a report based upon a knowledge of the geology and of occurrences of gold veins and of gold mining acquired by reading one book en route to the mine. This may be an extreme case, and undoubtedly is, but it merely illustrates the general idea that any one is competent to report on a mine.

We have in mind another pseudo expert, who recently armed himself with an immense revolver, a bottle of snake antidote, and a government report on the Indians of the Southwest, and started off to do his own experting on a copper mine in Arizona.

As usual, he was led to discover our old friend, the true fissure vein, and a minute investigation of a 200-foot hole, called a shaft, convinced him that the values went down, and not up. After cracking rocks all along the 30-foot outcrop easily followed over the desert for a mile, he was convinced that a 200-ton mill would never be able to mill all the ore right in plain sight—and in this some one made the mistake of telling him the truth.

Our precocious friend having seen all there was to see, thereupon backed up his convictions with his spare cash and invested in some lurid curiosities in the shape of stock certificates. But in the course of his missionary work among his friends at home, he encountered a "Man from Missouri" who had to be shown. So a certain mine expert travelled all the way to Arizona to see the greatest copper mine in the world—much to the wisacre's disgust at the useless expense. Much to his surprise the expert found that our friend was perfectly correct in his report—only he had overlooked one little detail. The immense ledge truly did carry millions of tons of copper ore in plain sight—only it will take several geological epochs to make it available for human needs, for, sad to relate, this ore was simply chrysocolla, or silicate of copper, which can neither be smelted, concentrated, nor leached to recover its copper, and is about as valuable to the copper industry as if located upon the wide expanse of the moon.

And thus we sigh in resignation as we record one more failure of the man who does not require the services of a mine expert.

A CONFLICT OF OPINION.

The old adage "Many men, many minds" was never better illustrated than it has been in Cobalt recently. The New Ontario Mining Act is the disturbing cause. Unfortunately there seems to be an inclination to make this a party question—something that would be much to be deplored. Let us, as far as possible, keep mining and politics distinct.

Elsewhere in the present issue will be found a long contribution by a special correspondent, Mr. Wm. A. Laycock. Mr. Laycock has very strong views on this subject, and there are many who think with him; on the other hand, there are a large number who are not inclined to see things in the same light.

The *Haileyburian*, which is published within a few miles of the focus of disturbance, and which is an independent organ, with a leaning toward the Government, has the following to say about the recent meeting:—

"We were present at the supposedly representative meeting of the miners and prospectors, at Haileybury, and we have rarely taken so much fun out of folly as we did on that night. The hall was crowded, and after listening to a lot of eloquence, which a bystander characterized as hot air, a motion was put, practically endorsing a vote of confidence in the present Government. The Chairman pronounced the motion carried, though there was not a ten per cent. showing of hands in favor of it.

"We saw one resolution put through on the strength of an innocent hand being raised by a man who knew not what he did, and, afterwards would repent in the misery of a minority, which we have often done ourself.

"As a general expression of public opinion the whole results of that meeting can be discounted, though delegates have been appointed to go down to Toronto, to interview a tired Government. Some threatened that they would be retired, but we hardly think so, and will cheerfully bring on the fight, any time that they want it."

Mr. J. H. Warner, M.E., a mine owner, also agrees that the discontent is practically limited to unsuccessful prospectors, and is of the opinion that the new law is not in need of amendment. On the other hand, Mr. F. Wallace White, of Cleveland, U.S.A., who is represented to have "a syndicate" behind him representing enormous wealth, says some very unkind things about the new enactment. He states that he has been twenty or thirty years in the mining business—a few years more or less do not, of course, matter—and is very sure that the law as it stands is impracticable, unreasonable, unjust and unwarrantable. This statement seems to about cover the ground. We believe the matter is to be threshed out in a few days in Toronto, a special meeting of the Government having been convened to consider the question, but unfortunately the REVIEW will have gone to press before that important meeting is held, so that we cannot say just what will be done. In such cases as this it is always well to hope for the best and prepare for the worst—and this is the only advice we can offer our friends.

HIGH WATER MARK.

The large flotation now being attempted in New York, Boston, Montreal and Toronto, under the name of the "Nipissing Mines Company," was originally a comparatively humble undertaking. One E. P. Earle, an ore and metal broker of New York city, to whose attention the ore from Coleman Township, Ont., had been called, visited the township late in the autumn of 1904, and subsequently,

for himself and some members of the International Nickel Co., acquired some six or seven tracts of mineral land, aggregating 846 acres, and organized a corporation under Dominion laws with a (comparatively) modest capital.

At this time (Jan.-July, 1905), all ores sent out from the new region went to Ledoux & Co. to be sampled and were then sold to Mr. E. P. Earle for account of the Nickel Trust. It will be distinctly remembered by many of the mine owners at Cobalt that, when the production from that camp began to threaten to swamp the market for Cobalt ore, that first pay for arsenic was refused, then payment for Cobalt in the ore began to steadily decline (from 80c per lb. to 30c) until finally no payment was made for either Cobalt nickel or arsenic; with the climax coming last December when the owners of mines in the Cobalt region (with the exception of the Nipissing and one other) decided to sell no ore to the Nickel Trust, but to undertake the smelting of their ore themselves. The result of which is the North American Cobalt Co. and the Experimental Smelter at Hamilton, Ont.

It will also be remembered by Messrs. Trethewey, Timming and others that officials of the International Nickel Company then found it quite convenient to repudiate any connection whatever with Mr. Earle, who was represented by these officials to be merely an ore broker whom they sometimes had occasion to use.

These remembrances are forcibly called to mind by the list of directors of this new "Nipissing Mines Company," Capt. De Lamar, E. C. Converse, Col. R. M. Thompson and Ambrose Monell!! Verily! in those days was there more truth in the mouth of E. P. Earle than in the International Nickel Co. But, to criticise the flotation, it seems clear to the REVIEW that to expect reasonable dividends on \$12,000,000 of capital and also a return of the original investment, which must occur in any legitimate mining venture, is to expect an improbability, from what is at present known of the district.

The point in favor of the large capital is the very large area of some 846 acres owned by the corporation; the main points against it are, the known fact that at least four of the "veins" have completely disappeared at a depth of forty feet or less, and the experience of several of the deposits that increased depth has been accompanied by diminished values.

THE TASK OF THE GEOLOGIST.

We have our full proportion of the educated, yet it is undeniable that the average Canadian—the man on the street—has but slight conception of the usefulness of a geological survey. We believe that it was once the proud boast of a certain Cabinet Minister that he had never set foot within the Geological Survey Building during all the years he had

been at Ottawa. But a little thought will show any intelligent man that the Geological Survey is capable of rendering the country a very great service. It is not necessary that the trained geologist should himself discover valuable deposits of mineral. For every vein that is worth the working there is many a square mile of barren rock, and the geologist is too busy upon the purely scientific side of his task to have much leisure for digging and delving in the hope of discovering some rich vein. His task is to show to the uneducated prospector the areas wherein the latter should work. He can say such and such a district is promising for coal, or gold, or copper or what not, and then the prospector can get to work intelligently, and without losing some of the short open season in prospecting ground that never could, in all human probability, repay his efforts. And this is but one of the services the trained men of the Geological Survey can render.

No doubt the Survey itself has been to blame, inasmuch as it has been rather too much inclined to hide its light under a bushel. The man of science is not always the man of business. The active, energetic fellow with a commercial mind is very shy of reading scientific reports, especially if they bristle with chemical formulae, whereas the geologist fairly revels in such things. Only the other day our valued contemporary, *The Mining and Scientific Press*, alluded to the terribly perplexing phraseology adopted by a commission that has just finished its labors in California. This commission was appointed in hot haste by the Governor of the State to report upon the recent earthquake. The information it was to gather and impart was to be for the benefit of the average Californian citizen. Yet, when this report—admirable in all other respects—issued from the press, it was found to be so terribly abstruse that nine out of ten men could not understand what it was all about. We think that there has been a little too much of this sort of thing with our Geological Survey reports, but we feel sure that in future they will not be open to this reproach.

Not many weeks ago the American scientific press hailed with delight a "discovery" that had been made in connection with corundum by a United States geological expert. The "discovery" had, however, been made and reported on two years previously by our own Survey, but it had been hidden in an unwholesomely dry-looking blue book, which, we are pretty sure, was chucked straight into the waste-paper basket by most of those who received it.

Whatever may have been the views of the several past directors of the Survey, from Logan to the present time, it is quite evident that the lately appointed director, Mr. A. P. Low, has no intention of allowing the useful work being done by his officers to escape the notice of the public. The press of Canada is kept posted—and in a way that requires

of its readers no special scientific attainments—with any work done by the Survey that is likely to be of general or economic interest. In future, no mining man will have an excuse for not studying all the data available concerning the district in which he is working, or which he intends to prospect. It will be very strange if he cannot find in the voluminous reports of our Survey some useful hints, or some statement that may save him both time and money. Any bona fide applicant has only to write to the Survey for any published report in which he is personally interested, and we understand he will receive the same by return post, free of charge.

THE EVA MINE.

By Alfred W. Dyer.

Two facts in connection with the recent successes of the Eva mine in the Lardeau, to which so much attention has recently been given in the press, come out saliently; the one being that it is possible in a country with as yet inadequate railway facilities and where top prices are paid for labor, to make a thirty-five per cent. profit out of six-dollar free milling gold ore, even when run on a development basis. The other that it is possible for enterprising men, even when only backed by small capital, to make a Kootenay mine pay from the grass roots, for the Eva has been developed with the profits of development.

As a result of six years deliberately persevering work, in varying fortune, the Eva Gold Mines have 200,000 tons of \$6.00 rock in sight, seven tunnels, giving a depth of 800 vertical feet and measuring over 5,000 feet lineally, two tramways of a joint length of over a mile, a flume over 4,000 feet long, a mill and concentrator sufficient to handle 1,000 tons of ore monthly, the usual equipment of tools and buildings, and are making a profit of \$1,500 a month, turning out regularly each month a gold brick valued at over \$5,000, and all on a development basis. Now the Eva is contemplating a different system. There are two courses open to the mine, the one being to use the present profits in putting in a power drill compressor, a cyanide plant to treat its own concentrates, and so, possibly, to double almost immediately the profits and put them into the larger scheme. This is to invest capital, open up the mine to a depth of another 1,000 feet by driving a tunnel, 3,800 feet in length, increase the proposed power drill and also the mill, and so handle double as much weekly as is now being done monthly and do so at a largely decreased expense. One of the two schemes will be definitely entered upon before this meets the eye of the readers of the MINING REVIEW.

The Eva mine, which is situated on Fish Creek, five miles above its fall into the north arm of Upper Arrow Lake, lies 2,000 feet vertically above the



Flume Bringing Water to Eva Mill.



Glory Hole on Blow Out.



The Eva Mill.

town of Camborne, where the mill is situated. Its geological characteristics are peculiar. R. W. Brock, of the Dominion Geological Survey, terms the country rock, north and south of the two fault planes of the mine, spotted phyllites. It is called in the district merely schist. The two fault planes are true fissures, two to five feet wide. They lie roughly parallel on the property, 100 to 175 feet apart, and can be traced on the surface for several thousand feet outside of the 2,000 lying on the possessions of the company itself. They comprise the same mineral belt on which occur the mines at Ferguson, the Nettie L., Silver Cup and others. Between the two planes are lying masses of ore, lenticular and irregular, ranging anywhere from twenty to seventy feet in width, and which are dyke matter, an altered diabase schist. The value of this ore runs about six dollars per ton.

The slope of the hill at the face of the workings is about thirty-three degrees. The highest working is two thousand feet above the mill and the lowest 1,200. All work is done by tunnel, with upraises connecting. Three glory holes, or surface quarries, have been started, one of which is being quarried sixty feet across. The upper working is connected with the lower by a tramway 1,300 feet long. The ore is fed automatically into the second tramway, 4,800 feet long, connecting with the mill below. The upper tramway is two bucket; the lower, a double rope, of the usual Riblet type.

Descending the hill, the ore is fed automatically and directly over a grizzly, 1½ inch aperture, into the ore bins. From the grizzly it passes directly into a Comet B, gyrating rock crusher, and thence through two Challenge feeders, the feed of a size to pass through a 1½ inch ring, into two batteries, each of five stamps. Here water is added, and from time to time quicksilver, the amalgam being cleaned up once a month from the mortars. The pulp then passes over ten-foot copper amalgam plates, where forty per cent. of the recovery is made, to hydraulic classifiers, four in number, each of which supplies a concentrator consisting of a Wilfley table with set and water adjusted, to the classification, and through three six-foot Frue vanners. Here are accumulated the concentrates, chiefly iron pyrites, running from one to two per cent. of the tonnage treated. This is sent periodically to the smelters, where a favorable rate is obtained because of the iron pyrites having value as a flux, running thirty per cent. with an excess in units over silica contents. The value of the concentrates averages \$26.00 per ton. Freight to the nearest shipping point, Beaton, and freight thence plus smelter charges runs up the cost of further treatment to about \$13.00 a ton. With the installation of a small cyanide plant, to be put in this summer, the treatment will be cut to \$3.00 to \$5.00 per ton, allowing a further sensible margin of pro-

fit. The value of the ore when fed is a few cents over \$6.00. The recovery is \$5.20.

The mill is designed for forty stamps, with power and machinery so arranged, but the mill at present has only ten stamps which will be immediately added to. The power is got by means of a flume from Pool Creek, which manager Gracey reports has never had less than 1,800 miners inches at its lowest stage when examined, and on which the company possess a record of 700 inches but are hardly using fifty at the present. The flume is 4,000 feet long, and as it had to be blasted out of a precipitous rock face for much of the way, it cost \$10,000 with the pipe line. Were the mill enlarged to its capacity it would use about 228 horse power. Three Pelton water wheels now supply power for crushers, tables, vanners and batteries.

The total costs of mining and treatment from Jan. 1, 1905, since when the mill has been running continuously, have averaged \$3.84 per ton. These the manager's recent report gives as follows:—

Mining..	\$1.45
Development..	1.37
Tramming.. . . . .	.16
Milling.. . . . .	.62
Superintendence and general.. . . . .	.24

Total.. \$3.84

Lately these costs have run down as low as \$3.60 and were never higher than \$3.95. The relative costs of mining and development, as most of the ore has been taken out in development, are difficult to ascertain, and have been adjusted by allowing for the cost of drifting.

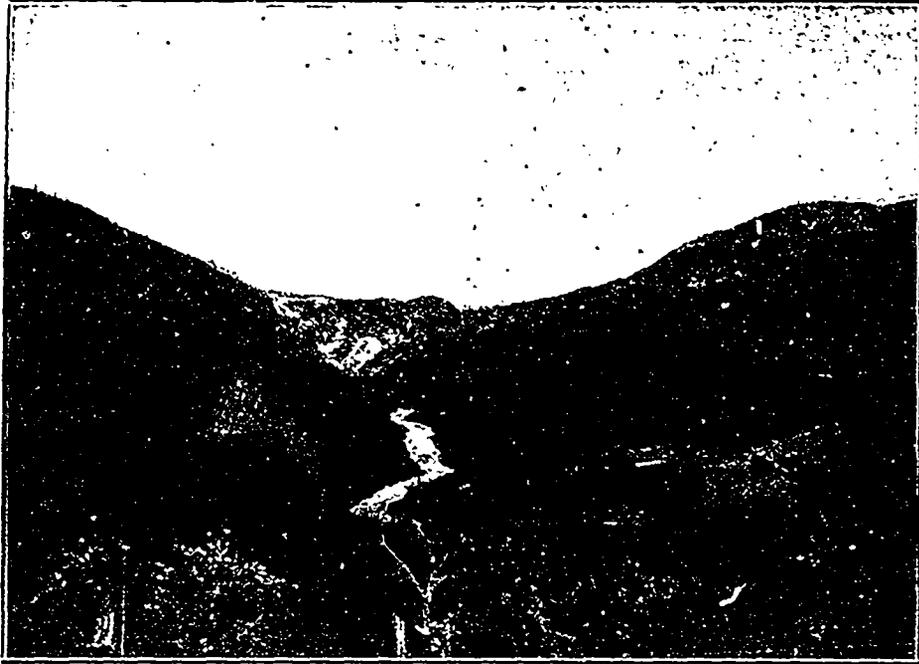
These results have been obtained by the work done, work largely in the nature of a test, with a ten-stamp mill. But bringing the mill up to a forty-stamp basis, the costs are expected to be:—

Mining..	\$1.06
Tramming.. . . . .	.09
Milling.. . . . .	.32
Superintendence and general.. . . . .	.15

\$1.62

Development work would be in proportion to the amount of tonnage desired. Without any further development, it would be possible to run the mill, increased to forty stamps, for the next four years. But if the larger scheme be decided upon, the output of the mine could be doubled even on this estimate and the output maintained for a large term of years before sinking would be necessary.

Manager Gracey gives as reasons for the exceptionally low costs the fact that the ore can be mined for a depth of 1,800 feet without sinking, the ample water power, the system of handling the ore from the rock face to the tailings by gravity alone, that many thousands of tons can be quarried from the glory holes, and from the plentiful supply of timber.



Looking Down Thibert Creek from Junction of Berry Creek.



Berry Creek Mining Co.—Showing Strata of Gravel in Bank.

MINING IN NORTHERN B.C.

The last general report of the Berry Creek Mining Company, Limited, of Victoria, B.C., by its manager, Mr. Alex. Hamfield, throws a good deal of light upon the conditions that exist in the extreme northern portion of British Columbia. The mine is situated in the Cassiar mining division, and is reached by way of Fort Wrangel, Alaska, and Telegraph Creek, B.C. From Telegraph Creek a pack trail, 72 miles long, is followed to Dease Lake. There the traveller embarks and goes by water to Porter's Landing, 26 miles distant. From this point a pack trail 8 miles long exists to the mine. The mine is 3,000 feet above sea level.

The Cassiar District was discovered in 1873, and produced in a few years about five million dollars in placer gold, three creeks, Dease, Thibert and McDames, being the heaviest producers, and about one-third coming out of Thibert Creek.

After this no work was carried on, except by a few Chinamen in a desultory way, until the Berry Creek Company undertook to prospect and open up Thibert Creek.

The Company is the owner of ten hydraulic leases, each 800 acres, in one continuous body fronting Thibert Creek for 15,000 feet. The title to this ground is held by lease from the British Columbia Government. The mine is situated on an ancient river channel, probably pre-glacial, on the south side of Thibert Creek, following the same general direction as the latter, from west to east, and is of similar nature to the channels in Cariboo, Atlin and Yukon. The general formation is schist, making a favorable bedrock for retaining the gold, the latter

occurring from the size of nuggets to very fine, some being almost invisible, and its existence having only become known through assays of concentrates, but the greater portion is of the size of small shot and is easily caught in the sluices. The principal part of it is found in the gravel on bedrock, although some also occurs through certain layers in the upper part of the deposit. The deposit shows the unmistakable river strata; first heavy gravel with boulders, then lighter gravel, then clay and sand, and lastly again finer gravel.

It is difficult to correctly estimate the size of a deposit of this nature as the width varies from 300 to 600 feet, and the height from 50 to 200 feet.

Estimators put the average width at 350 feet, the height at 125 feet, and the length at 15,000 feet. This will give on the Company's properties an estimated gravel deposit of about 30,000,000 cubic yards of gravel, of which not more than between 400,000 and 450,000 cubic yards have been washed by the Company, and perhaps 100,000 cubic yards by former miners.

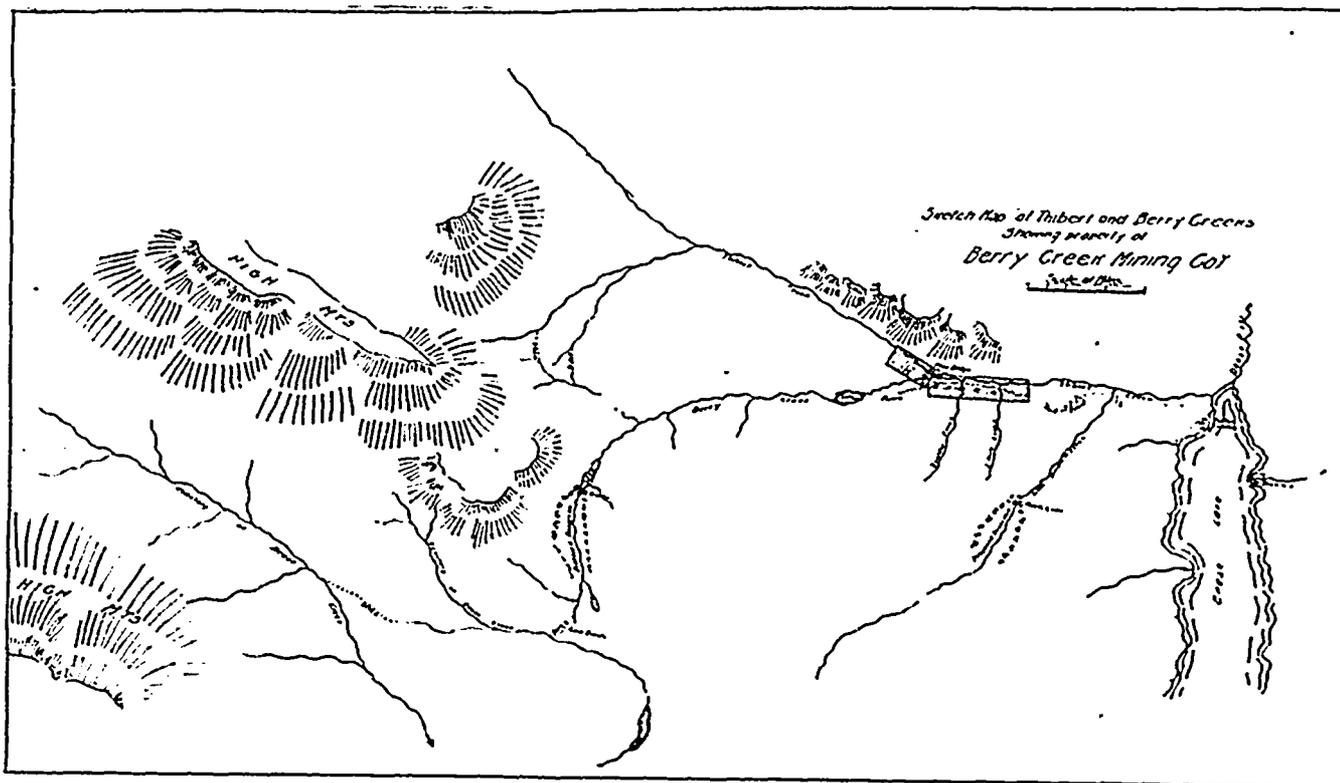
Labor.

The scale of wages at the mine is as follows:—

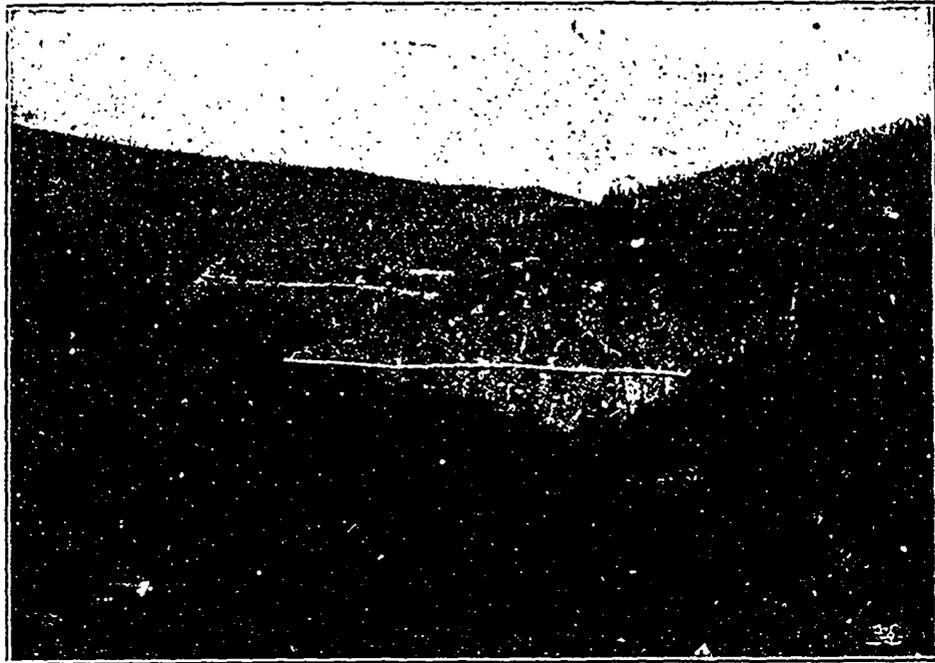
Foreman	\$5.00
Pipers	4.50
Blacksmith	4.00
Carpenter	3.50
Laborers	3.00

to which must be added \$1.25 per day for each man's board.

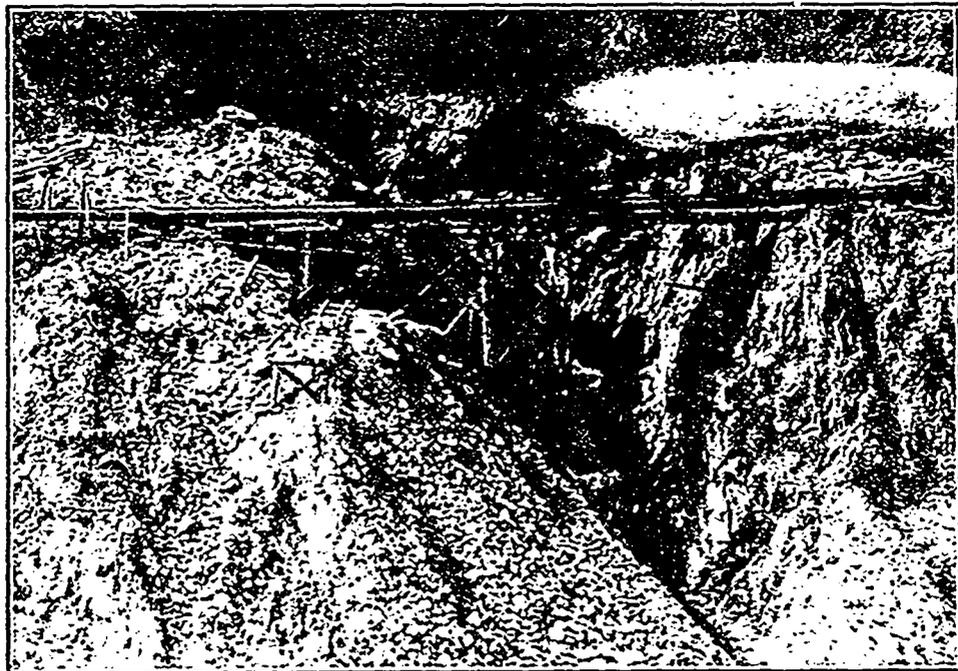
Men brought from Victoria receive 50 cents per day less than this scale, as the Company has to pay the cost of their transportation. The price of ordin-



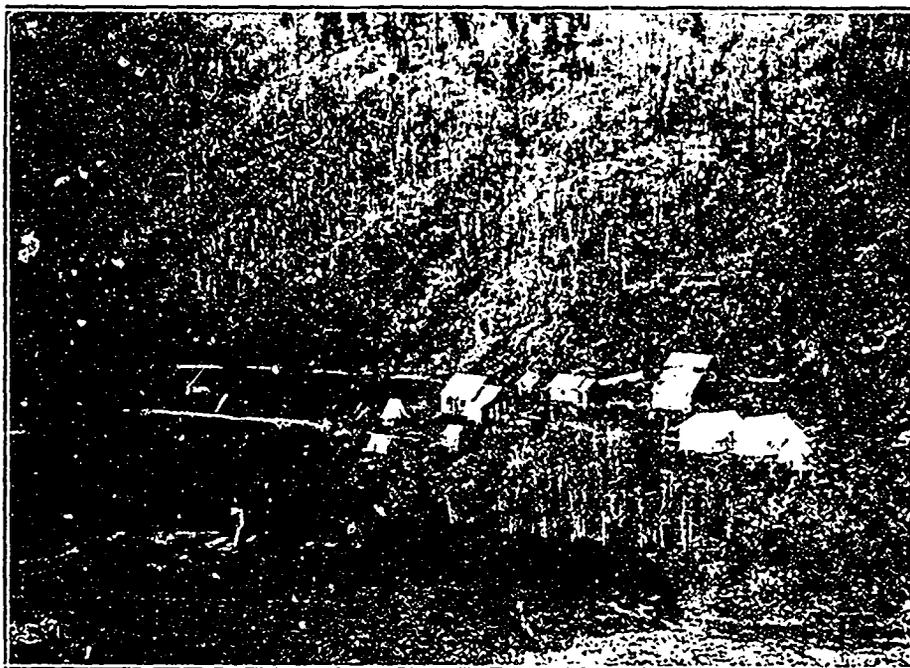
Map of Thibert and Berry Creeks, Cassiar.



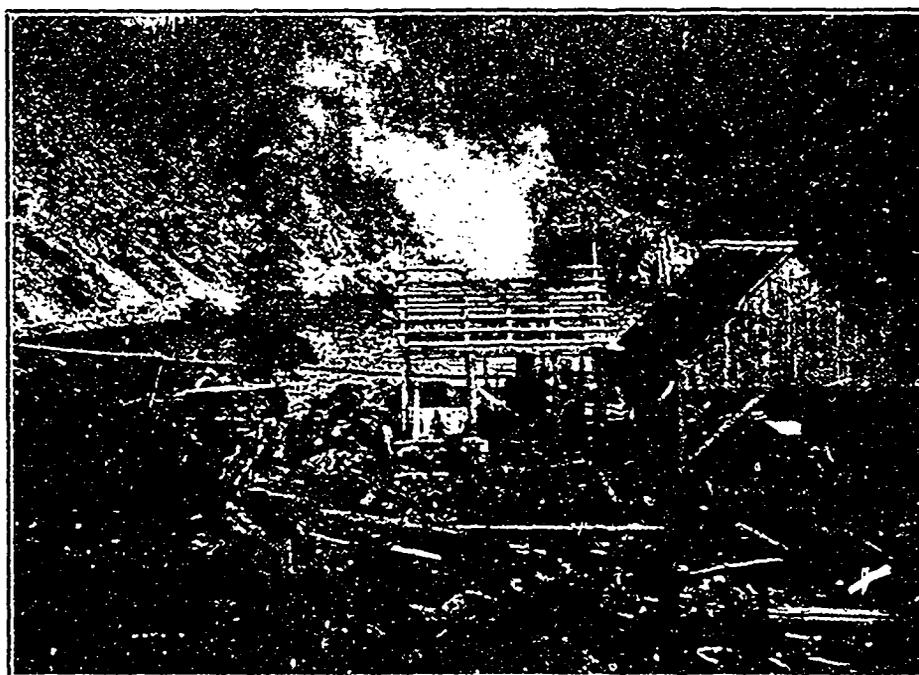
Berry Creek Mining Co.—Flume Conveying Water to Mine.



Berry Creek Mining Co.—Showing Dump of Washed Gravel.



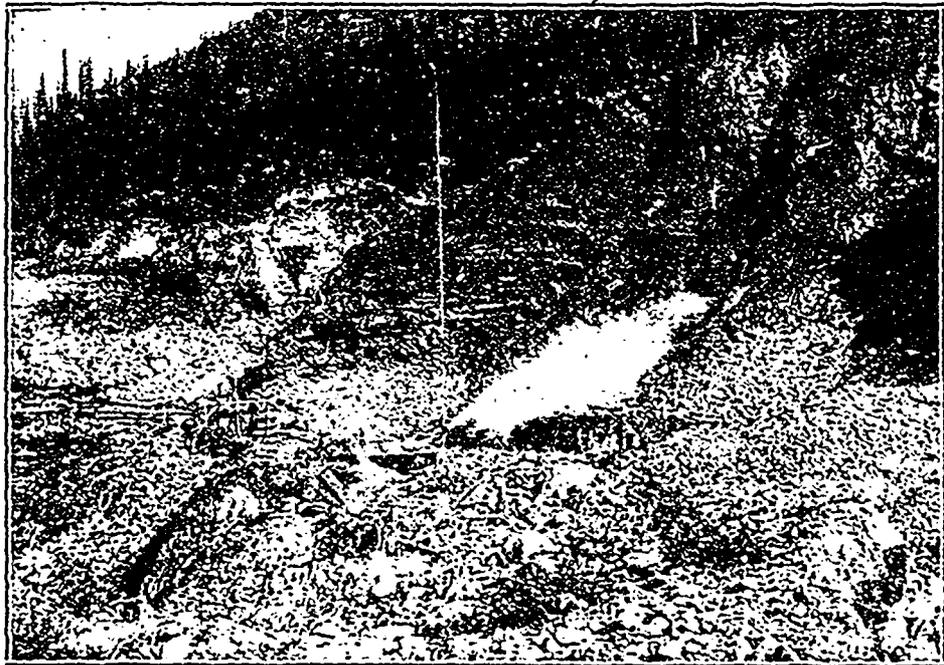
Berry Creek Mining Co.—Mine Buildings on Thibert Creek.



Berry Creek Mining Co.'s Sawmill on Dease Lake.



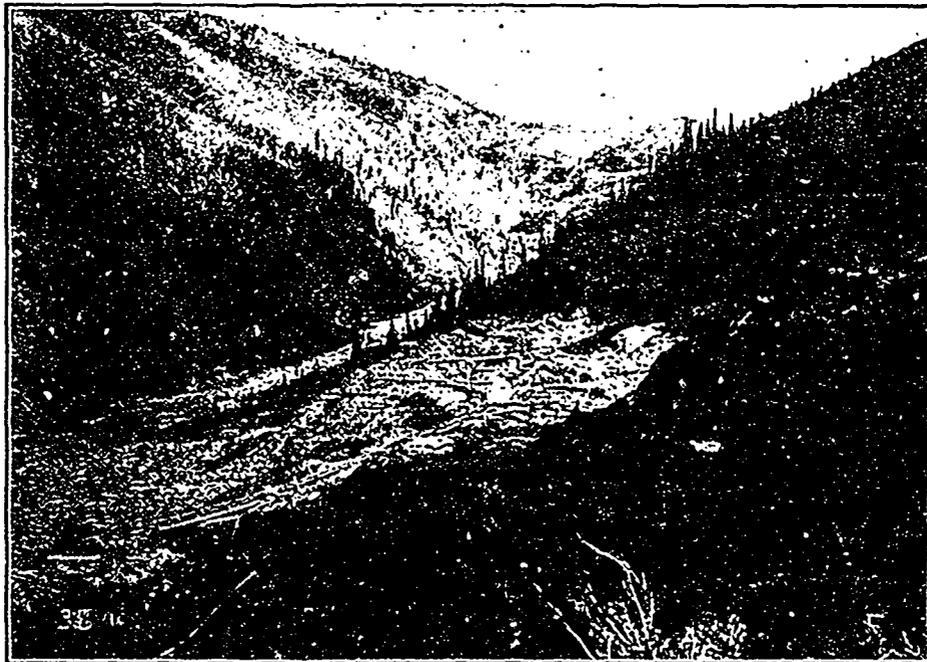
Berry Creek Mining Co.—Showing Part of Mine with Two Giants Working.



Berry Creek Mining Co.—Showing No. 3 Pit with One Giant Working.



Berry Creek Mining Co.—Showing Mine with One Giant Working.



Berry Creek Mining Co.—Showing Position of Mine above Thibert Creek.

any labor can probably be cheapened by hiring Japanese, or men from Eastern Canada. The Hudson's Bay Company has had the handling of the company's freight for the last three years at 11½ cents per lb. from Wrangel to the mine. This can probably be cheapened from 2 to 3 cents per lb. by the Berry Creek Company being prepared early in the season to enter into a fairly good sized contract.

Preparatory work on the mine commences sometime in April, and washing can often begin the 10th of May, and continue until about the 20th of October. If everything is in readiness for the spring work so that no time is lost, this will give from 150 to 160 days, 24 hours per day, for washing of gravel.

A NEW MATTING FURNACE.

By F. F. Coleman.

The National Metallurgical Company's smelter at Matehuala, Mexico, which was put into successful operation last year, is now being more than doubled in capacity. The additional furnace and equipment is being furnished by the Traylor Engineering Company of New York, who originally designed the plant.

The new furnace which forms the chief feature of the addition, was built at the Engineering Company's new works at Allentown, Pa. It was shipped to Mexico early in May. The furnace was set up complete at Allentown before shipment. A photograph made of it in the shops is reproduced herewith.

The furnace measures 42 inches in width and 160 inches in length inside the tuyeres. It has a capacity of 250-300 tons per day.

The ores treated are copper sulphides which are reduced to copper matte. The matte contains about 40 per cent. of copper. The new furnace is fitted with the Giroux Hot Blast Top, which has proved itself such a valuable fuel-saver at the United Verde Smelter at Jerome, Arizona, where the top was introduced by Mr. Giroux while he was in control of the operations of that plant. The Giroux Hot Blast Top is now controlled exclusively by the Traylor Engineering Company.

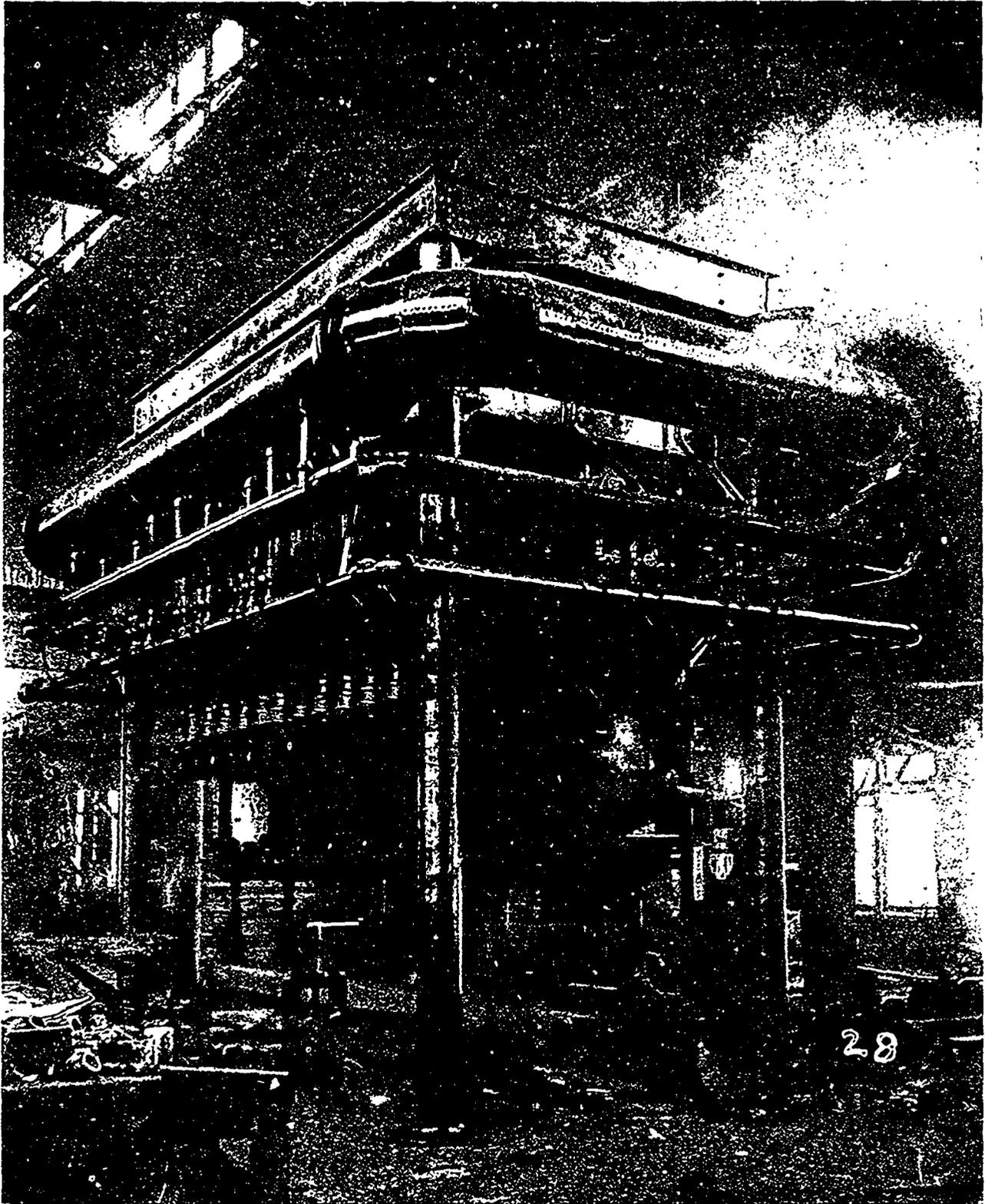
This device consists of two sets of air-heating pipes surrounding the upper part of the furnace within the brickwork and connected directly with the bustle pipe by means of a nipple at each end of the furnace. The upturned opening in the bustle pipe, shown in the illustration, forms this connection on the end of the furnace shown in the foreground. There is a similar connection at the other end of the furnace.

The Giroux Hot Blast Top for this furnace will heat the air for the blast to a temperature of about 400°F. Experience has shown that it effects a saving of 30 per cent. in coke, besides adding materially to the daily capacity of the furnace.

The entire furnace is self-contained. That is, it

is entirely supported on the corner columns and jack screws so as to be independent of the building in every way.

The furnace is constructed with flange steel water jackets throughout. The jackets are made so that no rivet heads or riveted seams of any kind are exposed on the inside of furnace where they could cause trouble by leaking. The rivet heads and seams are all at the outside where if a leak should start it can be promptly noticed before it can give trouble and be remedied simply by caulking. The water pipe and bustle pipe are both on the outside of the blow pipes and about four feet from the jackets, so that in case it is desired to remove a jacket section the water pipes and blow pipes immediately in front of it may be taken off and the jacket removed without disturbing the balance of the air and water connections on the furnace. This cannot be done where the pipe is arranged on the inside of the blow pipes as is usually the case. The upper jackets are supported on an I-beam frame carried by brackets on each of the four corner columns. These are carried independently from the other portions of the furnace. All the jackets composing the lower set are fitted with lugs which are arranged to bolt to similar lugs on the bottom flange of the top jackets so that in case the furnace bottom plate is removed for the purpose of replacing the brick lining, or for any other reason, the set of lower jackets remains in place without disturbing any of the connections suspended from the upper jackets carried by the I-beam frame referred to. All joints are made with sufficient clearance and adjustment so as to avoid the close fitting which is the cause of so much trouble in the average furnace construction. The lower jackets are all made so that any sediment which may collect in them is deposited at the bottom of the jackets. This is below the zone of intense heat and, therefore, will not endanger the jacket sheets. The joints between the blow pipes, tuyeres, and jackets are arranged with recesses and provided with round asbestos packing held by clamp draw-bolts. This affords tight joints and, at the same time, permits of a certain amount of flexibility which is necessary to avoid the danger of straining the joints and causing leakage when the furnace expands or contracts from the heat during operation. There is no brick work required for lining the furnace below the feed floor except the small amount immediately over the furnace bottom plate. The furnace is tied securely at the sides with an I-beam frame having end draw bolts. This feature does not show plainly in the cut. The waste water discharge from the gutter passes down through two outlet pipes into the central opening of the two rear furnace columns. These are furnished with a tap flange at their base which, when the furnace is erected, is below the ground floor, and from there may be connected by pipe to a drain.



Giroux Hot Blast Top, Copper Matting Furnace.

A COMPARISON OF THE COBALT AND SUDBURY MINING DISTRICTS.

Editor Canadian Mining Review:—

Now that the Magmatic Segregationists have completed their rainbow around the Sudbury district and provided for the leaks which resulted in all the ore bodies that do not conform to their theory, the nonconformists, heretics, and others in outer darkness may have a few things to say on what "might have been," if things are not just as they say they are. If for no other reason I would as a taxpayer object to the waste of public money in printing and distributing at public expense such a mass of misinformation as is contained in the Report of the Ontario Bureau of Mines regarding the origin of the Sudbury ore deposits. There is much in the report of a geographical and historical nature that has been printed in other publications which is probably accurate. The theoretical interpretation of the geological conditions continues year after year with the same monotonous regularity, to force upon the unresisting public the mistaken magmatic, fusion, acid, and basic edge, differentiation theory that has become tiresome.

There is only one point to determine what will disprove all that the Canadian Geological Survey and the Ontario Bureau of Mines and the people whom they imitated, have said on this subject. That point is simply "Is the greenstone which they call by several different names an overflow on top of the sediments or is it the infolded basement rock on which the sediments were laid down?" I claim that it can be proven to any competent observer that the latter is the truth and, therefore, the ore bodies which occur on the contacts between the folds of greenstone and sediments are of hydrothermal replacement origin.

There are miles of contact without ore bodies or signs of mineralization, and there are also dozens of contacts that are not shown on the maps issued by the departments referred to. They have painted in the geology as being of a certain character, where subsequent observations have proven it to be of an entirely different character, and it is no exaggeration to say that a more misleading and mistaken source of information could not be found than their reports and maps, which should be correct. It is of no use to try at this late date to convince them that they are wrong in theory, or as regards their maps, but it is worth while to protest against the acceptance of their reports by others who have not the opportunity to make observations.

I have taken every opportunity to combat the acceptance of their teachings and I now wish to challenge the Director of the Geological Survey and the Minister of Mines of Ontario to come here as my guests to see the conditions which will prove my contention, that the greenstone is the infolded basement rock on which the Huronian Series was laid down. With that one point proven the whole

magmatic segregation theory is swept out of existence as regards these ore bodies.

I will also extend this invitation to Dr. Frank Adams, of McGill, and Mr. John E. Hardman, M.E., of Montreal.

The mining industry has had to stand for so much theorizing by office observers that I think such a committee would be well worth the while and do much toward arriving at the truth. The sulphur gases from the smelter and roastyard have killed the vegetation along the tramway and there is no better place in the district to get an ideal cross-section of the geology and observe the folding. My observations at Cobalt convince me that the same general conditions prevail there. The igneous rock, which is called by different names in different parts of the district, is the basement rock on which the Huronian series and all the later sediments were laid down. Subsequent folding has caused these rocks to be thrown into wave-like forms and the synclinals of these folds are now occupied by a chain of lakes parallel to Lake Temiskaming in the majority of cases.

Cross-folding is also in evidence and this has resulted in a series of folds the synclinals of which are occupied by lakes at right angles to Lake Temiskaming, which is also a synclinal fold. The veins are fractures radiating from contacts exposed by glaciation. The folding has not been as great as in the Sudbury region where the sediments are standing on edge.

The fact that the veins contain silver was determined by the source of the magmatic waters containing that metal, and has no bearing on the method of deposition, which in all such veins has been due to highly heated solutions coming from great depth through small fractures along planes of movement in process of folding. The folding is also due to the escape of magmatic waters and the reduction of interior pressure.

The constant reduction of the earth's diameter due to the escape of these magmatic waters through hot springs, geysers, and volcanoes results in the cold crust being thrown into great folds which grow into mountain ranges. Along these folds new openings are made and magmatic steam under enormous pressure and temperature rushes out, bringing with it in solution the sulphides which are deposited in the fractures near the surface, and make veins and ore bodies about the origin of which men calling themselves geologists get all balled up.

A debt of gratitude is due to the discoverer of the true source of magmatic waters, be he Arthenius (Swiss), or any other, but now that we recognize that the waters issuing from hot springs, geysers, and volcanoes are distinct additions to surface waters, it is easy to explain many things that previously were enigmas.

HIRAM W. HIXON.

Victoria Mines.

THE DAIGLE MINE.

By W. A. Laycock.

Even as late as the fall of 1905 a trip from Cobalt or Haileybury into the extreme south east corner of Coleman Township, would have entailed some hours of laborious effort, while only the most sanguine prospector would have dared to suggest a reasonable amount of hope that valuable discoveries would be made. Now, the conditions are changed in every way, and not only may the wayfarer travel in comfort, but at the end of it all each may see discoveries of ore sufficiently rich and interesting to please the most exacting.

The early morning train between Latchford and New Liskeard is usually well filled with passengers for stations between those two towns, stopping at Argentite to allow a typical mining camp crowd to reach the various points of activity in the Cross Lake. Lorrain and S. E. Coleman sections, by steamboat, or gasoline launch, which run every hour or less to any point required. Both the railroad and boat service is so excellent that many interested in these sections, live with their families in Haileybury or Cobalt, and make the journey back and forth each day.

Last month, on the day in question, a party of six, with the writer, visited the discovery known as the "Daigle" find. Wild, and apparently unjustifiable rumors of the length, breadth and richness of this ore body had been floating around the district for some weeks, growing more unreasonable as the description spread, much in the manner of the historical "Three black crows," and, naturally, we looked forward to something extraordinary at the end of our journey.

When the steamboat landed us at the head of Cross Lake, we found a good waggon road, and a walk of a mile and a quarter before us, up a steady slope and along well timbered ridges, and this—apart from the persistent attentions of numberless mosquitos and black flies—was most enjoyable, spiced as it was with the pleasures of anticipation.

On arrival we found roomy camps in course of erection, and then immediately turned our attention to the much-discussed vein.

Varying from a mere crack up to fourteen inches of ore the vein has a strike of almost due north and south, and by actual measurement has been traced for a distance of fourteen hundred and twenty feet, this, however, by no means represents the extent of the outcrop, systematic stripping having exposed it on further claims both to the north and the south. It has already proved to possess the greatest length of outcrop of any in the Cobalt district, and a well sustained report that it has been picked up by crosscut stripping a third of a mile further south, would suggest that one of the most important ore bodies in New Ontario has been discovered.

Perhaps one of the most interesting features, is that at one point where the outcrop is nothing more than an irregular crack, at less than six inches below the surface, over five inches of ore have been exposed. This can be distinctly seen in the illustration, immediately below the "⊥." This kind of occurrence is not singular in this district. One vein upon the Nipissing Mining Company's property carrying several inches of ore, comes to its apex some eight inches below the surface, upon which there is no sign of vein or even fissuring. Other instances could be cited of valuable ore bodies being opened up, when the surface indications of such were of the smallest.

In other places where the vein has been exposed by extensive stripping, the ore varies from four up to eighteen inches in width, and is shown to be well defined.

A shaft has been commenced at the south end of the property, and at ten feet in depth eleven inches of solid ore is being bagged for shipment, three tons of the same having been so treated in two days at the end of the month, and active development is quite the order of the day.

The greater amount of the ore, exposed is quite characteristic of the district. Very little vein matter, which consists of white calcite, and in one small exposure—

quartz—is present, the ground mass being smaltite or diarsenide of Cobalt, with high values in silver, very little of the latter, however, being visible, and the amount per ton was reached by assay, the lowest obtained in silver alone from an average sample showing no visible silver, being nineteen hundred and thirteen ounces per ton.

The surface of the ore body shows considerable evidences of the decomposition product of smaltite—Cobalt bloom—except where the ore has been removed by erosion or later weathering influences. In places the walls of the vein stand well defined for eighteen inches or more, without filling of any kind, above the outcrop of the ore as existing in place.

At one exposure where the vein is about eight inches wide chalcopryrite is present in massive form, co-mingled with smaltite in lesser quantity, and assays have shown the presence of gold to the extent of several dwts. to the ton.

Nicolite, cobaltite and native bismuth are also visible in places, but comparatively little of any of them have so far been exposed.

The geological formation in which this ore body exists is a matter of much discussion and dissension among mining men, and incidentally mining inspectors. One classifies the formation as of Keewatin origin, another denies the presence of the same, and asserts that rocks of the middle Huronian series are the principal ones in evidence, another that the slates of the Lower Huronian predominate! In the writer's opinion, the formation as exposed show rocks of the earlier origin, with an intrusion of gabbro, at both the northern and southern end of the property. In fact, the vein may be described in places as being a true fissure, and in another as a contact. It is almost impossible to determine any contacts at present, as but little of the country has been stripped systematically. About 250 feet from this vein, another calcite vein outcrops, and almost at right angle to the former a band of country rock about two feet wide, and mineralized in massive form with pyrites of iron and copper forms a connection between the two. This, however, does not in any way interfere with the continuity of either one or the other of the veins, but it is not known how far this pyrites deposit extends.

In reference to the calcite vein above referred to, a shaft has been sunk 35 feet, exposing an ore body about 12 inches in width, this carries good values in silver, and cobalt in the form of smaltite, chalcopryrite being present in small quantities. This was the original discovery upon which the property was "passed," and the rich vein before described was subsequently discovered as the result of stripping.

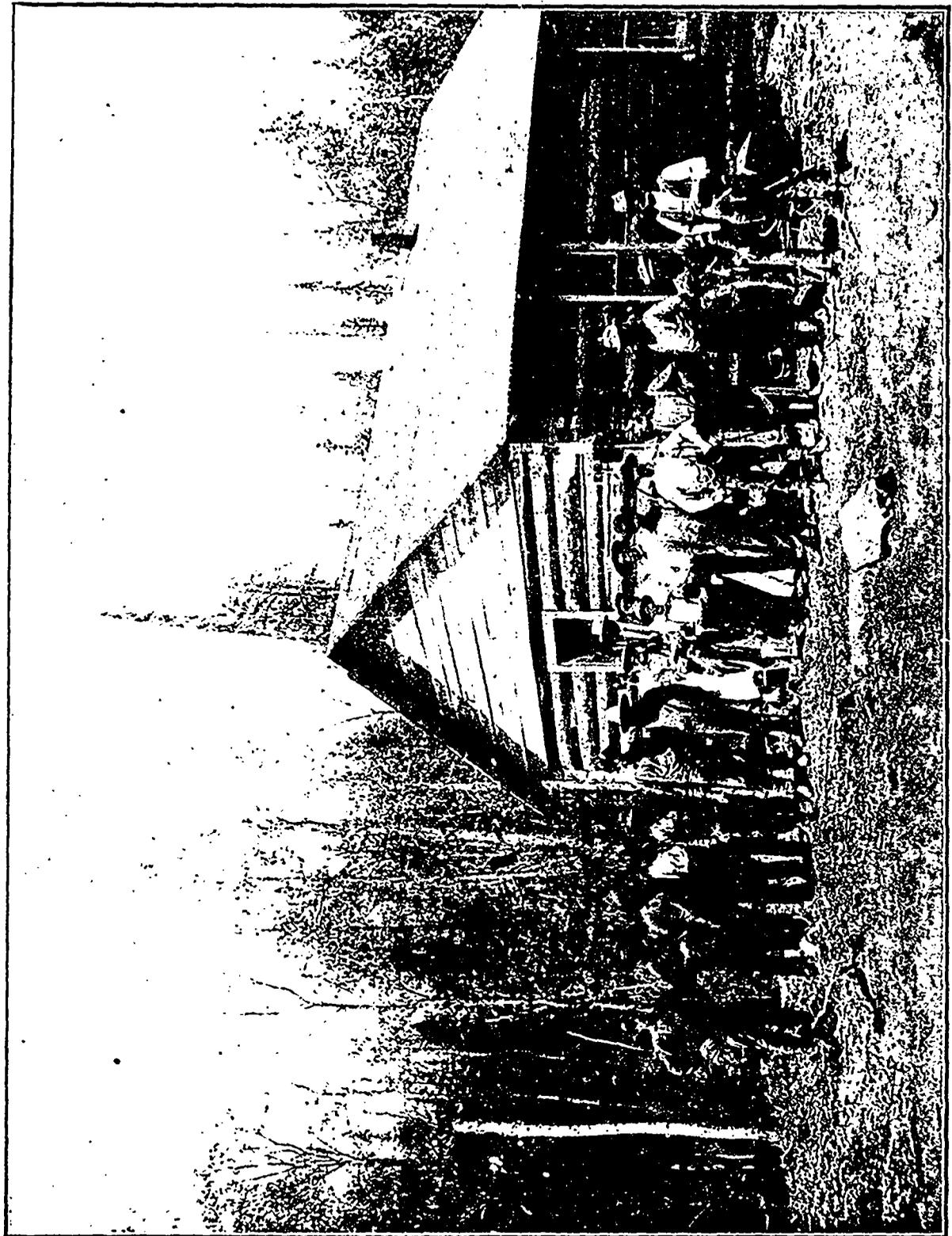
A quarter of a mile due southwest from the shaft on this vein, another discovery has been made of native silver and smaltite. The ore body is narrow where exposed, but values are good. The formation is gabbro.

In further proof of the fact that the characteristic ores of the Cobalt district have a greater distribution than was anticipated, two discoveries of importance have been recently made in Buckle Township, and two in Lorrain. In reference to the former, one is situated but little over a mile west of Argentite siding; a shaft was sunk on a stringer of calcite, carrying little mineral save chalcopryrite, and the surface indications were of the most unlikely description. Between forty and fifty feet in depth silver and smaltite were shown up, and the shaft at eighty feet is still exposing good values.

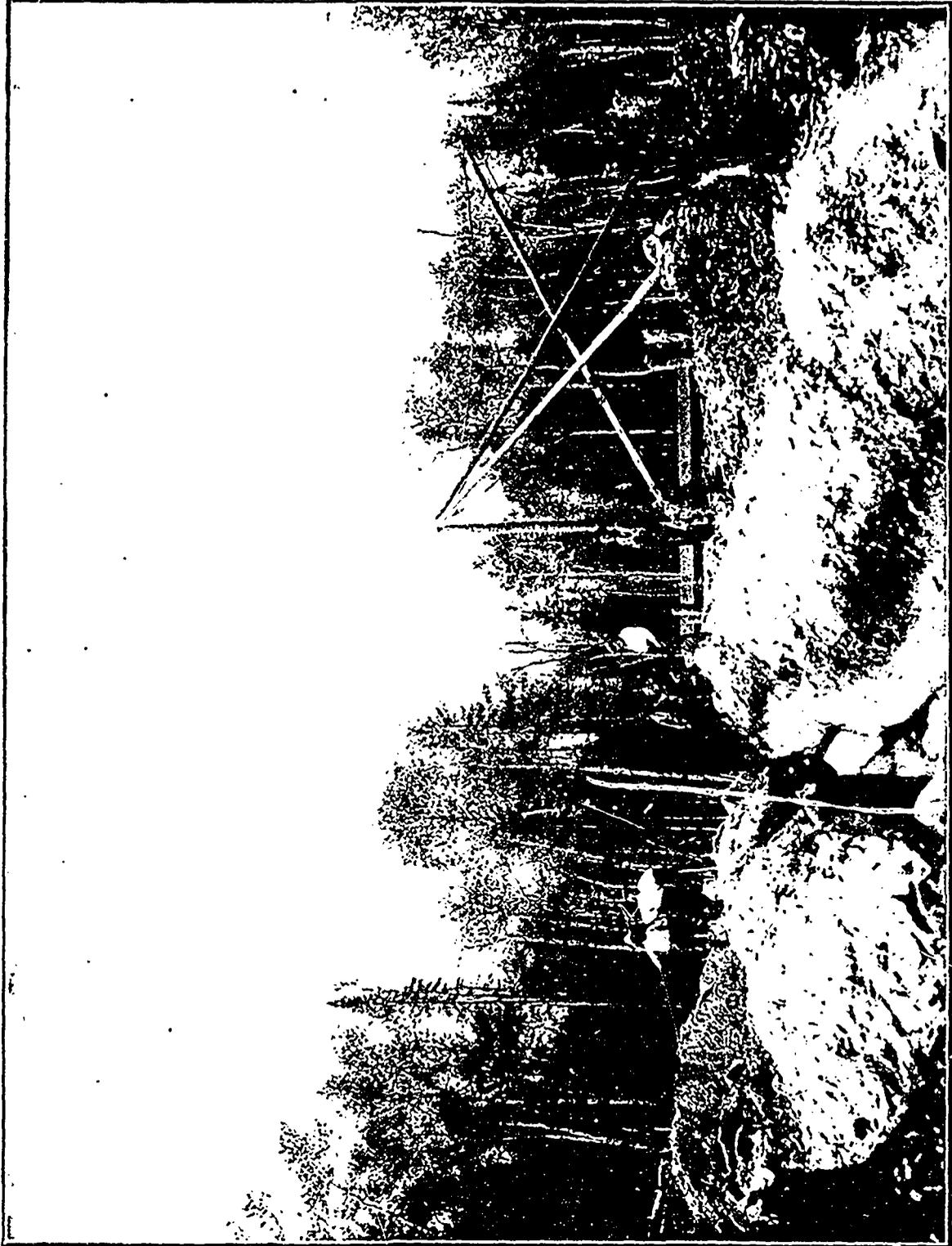
About four miles further north in the same township, a pit about ten feet in depth was sunk upon a stringer of hematite. At eight feet smaltite took the place of the former, showing also fair values in silver, and in one sample gold.

In the township of Lorrain two discoveries have been made of native silver on adjoining claims, and apparently upon the same vein, but little work has been done, and so far it is insufficient to form any decided opinion as to the ultimate merit of the deposit.

All the discoveries referred to are of importance apart from their respective merits, as proving that the silver-cobalt distribution is not confined to the compar-



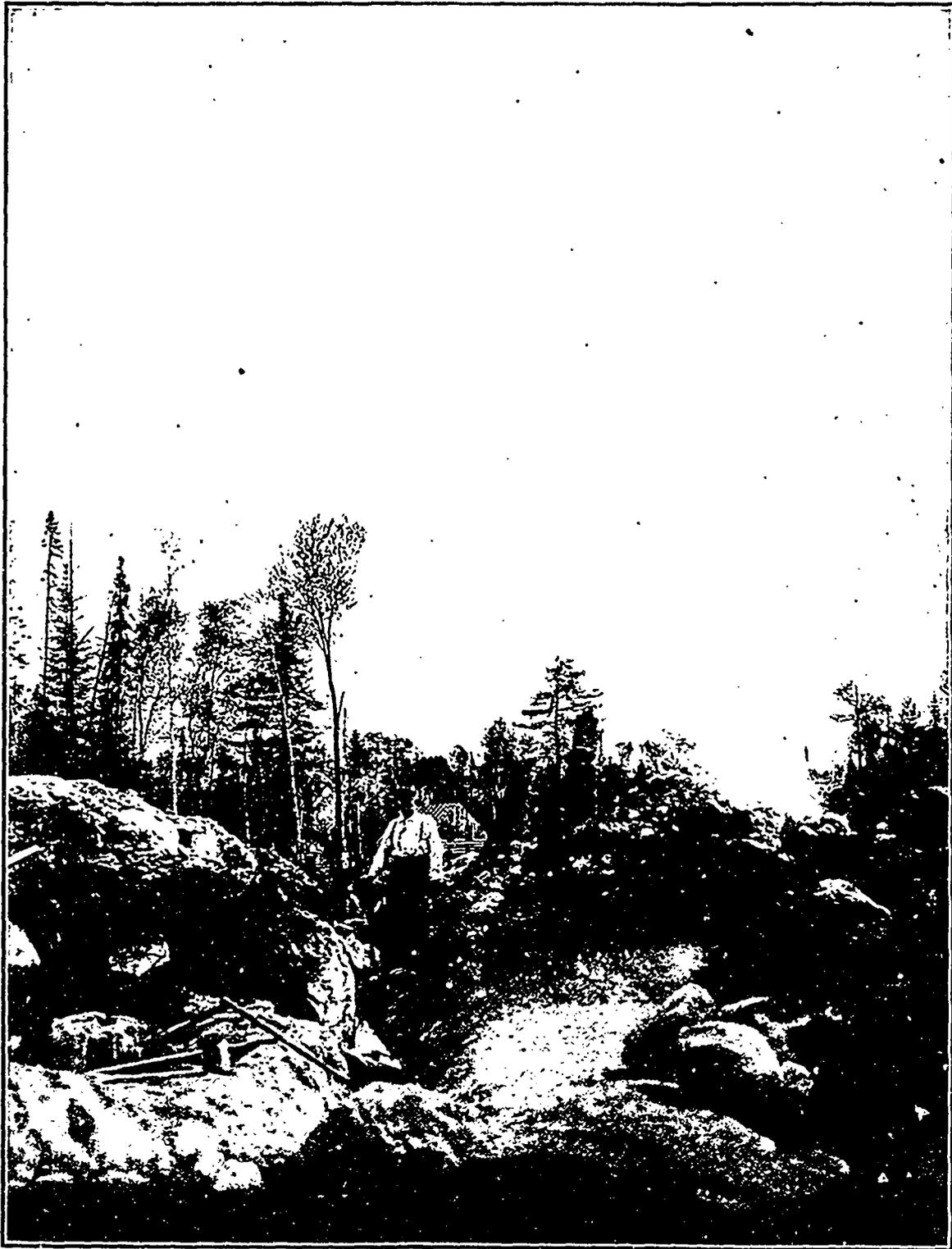
One of the Daigle Camps.



First Vein, stripped. Daigle Mine.



Vein widens at the point marked "+" from a mere crack on surface to several inches in width immediately below Daigle Mine.



Outcrop of vein on Daigle Discovery ; width 10 inches.



Shaft, now down 35 feet on Dnigle vein.

atively small area originally discovered. All these discoveries, with the exception of one, are the result of work undertaken before the prospector had received title from the Government, by virtue of "inspection of discovery." Each and all of these discoveries either have been or will be undoubtedly passed, and encouragement will hence be given to those who intend to retain their identification with the district. The unfortunate condition of affairs which, however, exists is that many men of note in the mining world, representing knowledge and large amounts of capital have already left the country in sheer disgust at the chaos which reigns—principally in reference to title—a result of the Mines Act, each and all agreeing that business under present circumstances is impossible.

The result of this depopulation of New Ontario, of the very men who are essential to its forging rapidly ahead, is that, while a few new discoveries will create local interest and benefit the individual, the large amounts of capital required to open up a new mining field will be kept out of the country, and Ontario (in the mining sense) become a by-word among the very people upon whom its success depends, for no reason other than the acts of its legislators.

The expressions of opinion at the meetings of miners held at Latchford, New Liskeard, Haileybury and Cobalt, during the last week in June, were sufficient in themselves to demonstrate to the Government that the present condition of affairs is intolerable. Every meeting except that held at Cobalt, was unanimous in its demand for the withdrawal of inspection of discovery, and security of title—and it is upon those two points that the battle is to be fought out.

It is agreed upon all hands that if title were to depend upon "work"—even if continuous for a reasonable period—instead of upon "discovery," miles of stripping, and hundreds of feet of underground prospecting would be done, which will never be attempted as conditions exist. The loss to the province and particularly to this portion of it, through this extension of development being withdrawn, is enormous in a business sense, apart from the possibility of numbers of valuable deposits being exposed, which recent events seem to justify.

Delegates drawn from the miners and prospectors are to meet Premier Whitney, it is hoped early in July, and their credentials will be in the form of a petition stating their demands and bearing the signatures—it is anticipated at the time of writing,—of over two thousand mining and business men. It is sincerely to be hoped that the Government in this case will not turn a smiling face and a deaf ear, as they have done heretofore to both petitions and the findings of the mining convention—which latter was of their own creating.

ROSSLAND MINING.

By Alfred W. Dyer.

The mining industry has shown much progress, and this is notably the case in Rossland, in the Boundary and, also, among the smelters. Rossland, in particular, is showing up very well. There are over nine hundred men employed at the mines, and, in addition, there are 550 men at Trail engaged in smelting the ore coming from Rossland camp and from the lead camps of East Kootenay and of the Slocan. Such economies have recently been effected that it is no longer held in Rossland that the day of concentration cannot be postponed. Indeed, the opposite idea now prevails. It is true that the late manager of the Centre Star-War Eagle properties declared that the mines of Rossland could not go on without concentration, but subsequent events show that the \$300,000 concentrator built by Mr. Kirby at Trail, is abandoned and the ore instead of being shipped at the rate of 300 tons a day from his mines is to be shipped at 1,000. It is maintained that the experience of water concentration has shown that the recoveries are only 55 to 60 per cent. This, your correspondent declared some time ago to be the case, but a far higher percentage was claimed, and several concentrators were built upon the strength of these exaggerated estimates. It

is true that the oil process will give a better recovery, but as it seems that the oil process cannot hope to save one dollar in the ore whatever the grade, then it follows that the lower the grade the greater is the percentage of loss, even if only one dollar. One dollar in \$8.00 ore is but 12½ per cent., but one dollar in \$5.00 ore is 20 per cent. This is better than water but it is more expensive, and, unfortunately, the Elmore people have never seen the necessity of putting up a mill of their own or at least seeing that their trial mills were connected with a mine which had a plentiful supply of concentrating ore of a grade about \$6.00 to \$7.00. This the Le Roi No. 2 did not have, and neither did the White Bear. Hence the process is looked upon with suspicion despite several years of more or less perfunctory trial. Again if the ore to be treated is \$8.00 ore, even if it were \$7.00, under the present methods of smelting with freight and treatment down to \$3.50 per ton, which may yet be lowered, a profit can be made by direct smelting. Hence concentration in Rossland camp has had a set back.

But improved methods of smelting are of little avail if the ore bodies are not present, and it was declared, for the "steenth time" in the history of the camp, that the bottom had dropped out of the Rossland mines. Now, it is true that, as the mines have gained in depth the copper values have decreased, but, on the other hand, the gold values are steady, and the sulphur percentage has so far decreased that at Trail it is now the practice to charge the furnaces with raw ore instead of first roasting it. This has saved one handling, and partly explains the cut in smelter rates.

Yet two great discoveries have recently been made upon the Rossland mines. The first occurred on the War Eagle. The main vein apparently squeezed out at the seventh level, and persistent exploratory work proved unavailing. The new management has discovered that the "squeezing out" was merely a flattening on the dip, and the ore body is now found to be good down to the 13th level. Besides this it must be remembered that the War Eagle vein is but one of a system of what is now known to be seven parallel veins at least, running east and west from the south Centre Star vein to the north vein of the Red Mountain, all belonging to this fine property. Not only this, but it is found that there does not exist an open stope in the mine, but which has ore which is of shipping grade. These minor discoveries are partly due to persistent development, and partly to the fact that ore which was formerly left unstoped is now, owing to cheaper methods of extraction and reduction worth winning.

And what is true of the War Eagle-Centre Star is also true of the Le Roi. Similar minor discoveries are also there playing an important part. But over and above this ore has been discovered west of the great dyke which was supposed to have shut off all mining in that direction. This has not only improved the prospects of the Le Roi, but also of those properties which lie west upon the vein. It would now seem probable that the great ore shoot will be found upon the White Bear, California, Evening, Eureka or even upon claims further to the west. It is now claimed that upon the three chief mines of the camp, the Le Roi, Centre Star and War Eagle, there are over 1,000,000 tons of ore in sight. That is to say there is enough for shipments at the normal rate for the next two or three years.

In the Boundary country preparations are being made to exploit the chief mines upon a larger scale, and, moreover, along the North Fork of the Kettle River activity is greater than had yet been witnessed in that district. The smelters are being enlarged, the B.C. Copper starting this month and the Dominion Copper soon to follow. The greater the tonnage handled, the cheaper the smelting, and the greater the quantity of ore available; a cycle that promises to make the Kootenays and Yale yet more flourishing and famous.

Looking at the copper-gold side of mining in this province all seems rosy, but such is not the case, despite the bounty, in lead-silver mining. Here, the smelters complain that they cannot get the tonnage, and some pessimists openly declare that it is not to be had. This is foolish.

There is plenty. The Trail smelter has greatly increased the capacity of its lead side. So has the Hall Mines smelter. Pilot Day has recently restarted, and there is Marysville. Four smelters where not long ago there was but one!

TEACHING GEOLOGY.

The Michigan College of Mines is required by law to make and keep a collection of rocks of Michigan. Such a collection has been in process of formation for many years, and now the College has decided to make this work of the widest possible usefulness to the people of the State. In order to do this in a most practical manner, the College of Mines has undertaken to make up a number of subordinate collections or sets of minerals which shall contain a series of the more typical rocks and minerals of the State. These loan sets, which consist of thirty-eight minerals and sixty-seven rocks, are being distributed through the State, and in addition each set is furnished with one copy of notes on "Rocks and Minerals of Michigan," issued from the Department of Geology of the College of Mines. These sets are lent to the different schools upon application from the superintendent or principal, and after being retained a certain time they must be passed on to some other applicant. Prof. A. E. Seaman, head of the Department of Geology, has taken an enthusiastic interest in the scheme and to him and Dr. Fred. E. Wright, formerly instructor in petrography, (but now on the staff of the United States Geological Survey), must credit be ascribed for what is evidently destined to be a most successful and popular departure.

THE HANCOCK JIG IN THE MISSOURI LEAD AND ZINC DISTRICT.

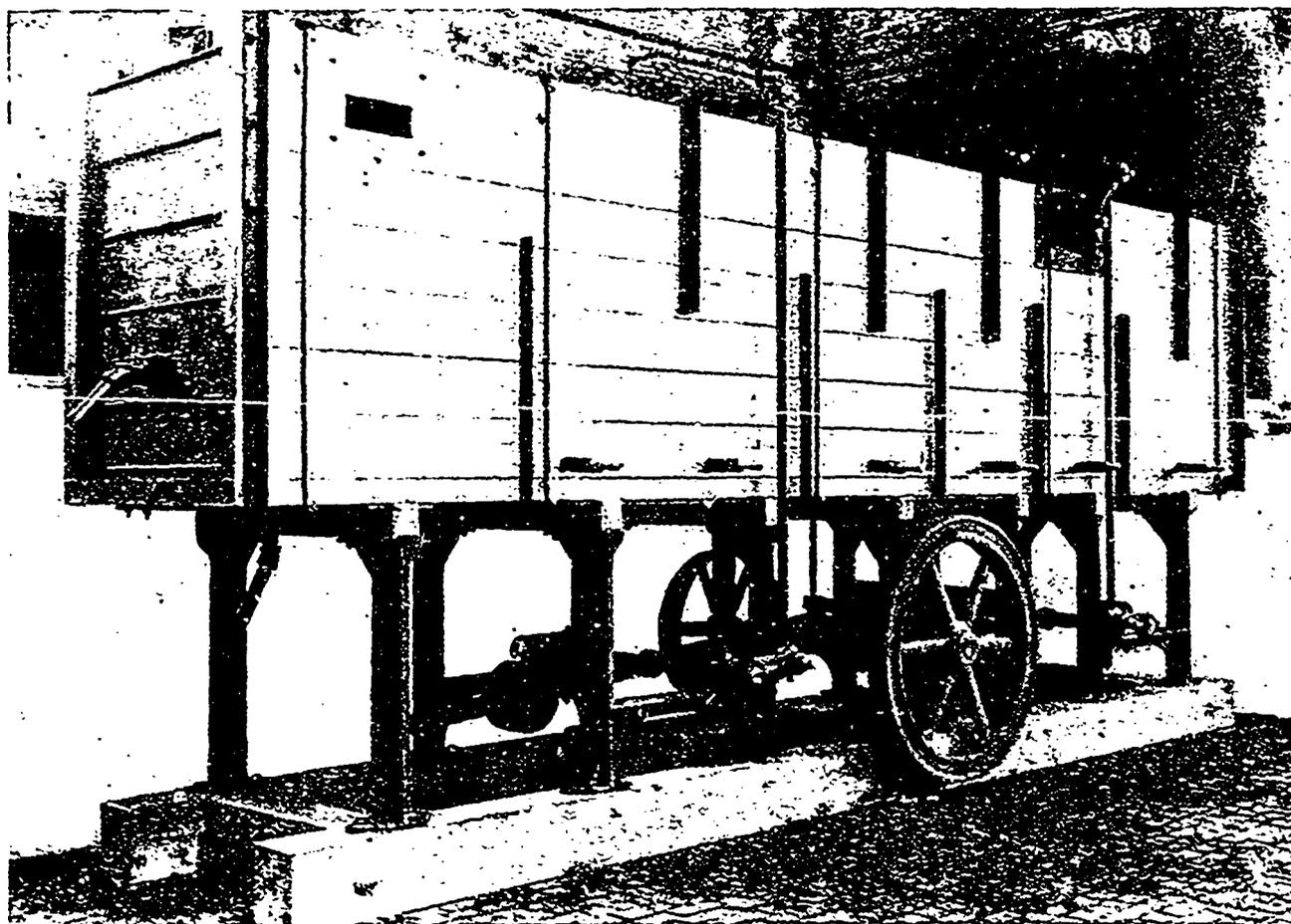
For the purpose of practically doubling the present capacity of its plant, the Wheeling Milling Company, controlled by Wheeling, W. Va., and Bellaire, Ohio, capital, and at the present time working over Mine La Motte tailings dumps, Mine La Motte Station, Mo., has purchased a 25 ft. Hancock Jig complete, from the Allis-Chalmers Company, Milwaukee, Wis., represented in Canada by Allis-Chalmers-Bullock, Limited, Montreal, Que.

The company has an equipment consisting of four 36 in. x 16 in. crushing rolls, concentration tables and jigs, having a capacity of about 300 tons. By the addition of the Hancock Jig, this capacity will be practically doubled, without the necessity of adding to the present power plant or water supply.

The Hancock Jig is of Australian origin and designed particularly for the treatment of low grade ores. It is the invention of Mr. H. R. Hancock, who, on assuming control of the Wallaroo Mines, South Australia, found great heaps of low grade ores on the surface. This ore was considered too refractory for any method of water concentration. He at once installed his jigs and converted these so-called waste heaps into a valuable asset.

The special features of this machine are: A very small amount of power to operate a very large production, ability to handle an unsized feed, requires 50 per cent. less water than the ordinary plunger jig. The Hancock Jig, because of its marked advantages over other kinds, has come rapidly into favor in the various mining industries of this country. This type of jig is proving especially valuable in the zinc and lead mines in Missouri and Wisconsin.

The St. Joseph Lead Company of Boone, Terre, Mo., will also install a standard 25 ft. Hancock Jig.



A Hancock Jig.

THE NORTH AND ITS GOLD.

The reported discovery of a rich deposit of free milling gold in Northern Quebec beyond the height of land tends to confirm the prevailing impression as to the mineral wealth of that region and will, no doubt, have the effect of hastening its opening up, writes the editor of the Quebec "Daily Telegraph." Should the find turn out to be anything as important as foreshadowed, we may expect at once a rush of prospectors and miners into the district, the majority of whom will, doubtless, make their way into it with their supplies via the Ontario Government's railway to Cobalt, from which place it is said to be not very distant. The sister province, and Toronto especially, will thus get the benefit of what, properly speaking, belongs to Quebec. This emphasizes once more the urgency of pushing a railway of our own into the James' Bay country without further delay, for, if we are not greatly mistaken, this is not the only valuable discovery of the precious metals that is going to be made there. We have still a vivid recollection of a lecture on Hudson Bay delivered a good many years ago in the old National School Hall on the Esplanade hill, by Dr. Bell, of the Geological Survey, in the course of which he indulged in the prediction that some day gold would be found in plenty in certain parts of that region which he indicated at the time. Since then, Hudson Bay Company factors and trappers have repeatedly reported pieces of native gold in the possession of local Indians, which appeared to have been cut or picked out of the rock with a knife, and which the Indians declared that they had found in the course of their wanderings or hunting expeditions in the region. The alleged discovery now there of free milling gold, that is to say, of the pure metal plainly visible in the shape of specks or lumps in the quartz or encasing rock, would tend to bear out the truth of their statement.

GERMAN CONSUMPTION OF COPPER.

Messrs. L. Vogelstein & Co., New York, state that the German consumption of foreign copper for the months January-April, 1906, as compared with the same period of time for 1905 and 1904 was as follows:—

	1906.	1905.	1904.
Imports	42,946 tons.	32,172 tons.	40,859 tons.
Exports	4,142 "	4,413 "	2,651 "
Consumption	38,804 tons.	27,759 tons.	38,208 tons.

During the month of April, 10,821 tons were imported into Germany, of which 9,350 tons were shipped from the United States.

NOVA SCOTIA MINING.

The following gold mining areas were applied for under lease and license during May, 1906:—

District.	Areas.	District.	Areas.
West Grand Lake.....	33	Lawrencetown	7
Broad River	18	Shiers' Point	24
Montague	18	West River Sheet Har-	
Oldham	2	bour	31
Somerset	72	Near Enfield	12
Renfrew	12	Stormont	6
Millers Lake	24	South Tremont	6
Preston Road	10	Carleton	22
East Rawdon	50	Gold River	35
Fifteen Mile Stream ..	42	Voglers' Cove	6
Cranberry Head	12	Head of Chezzettecook.	6
Cape Porcupine	56	Whiteburn	12

Returns of Nova Scotia crushings during May show:—

	—Yield—		
	Tons.	oz.	dwt. grs.
G. & K. Gold Mining Company Mill, Caribou	2,939	383	6 0
J. A. Crease Mill, Uniacke	11	29	12 0

MINING IN BRITISH COLUMBIA.

(Continued from the June issue.)

There has been produced in the province in 1905 some 56,580,703 lbs. of lead, valued at \$2,399,022, an increase over the preceding year of 19,934,459 lbs., or about 54 per cent. This year's lead production, with the exception of that of 1900, is the greatest ever made by the province.

It is noticeable that almost the entire output of lead is now from the Fort Steele district, while the production of the Slocan is only about half what it was the previous year, and one-third of the amount produced in 1901.

The following table shows the percentage of the total output obtained in the various districts:—

Fort Steele Mining Division.....	86.1 p.c.
Slocan	9.2
Nelson	2.5
Ainsworth	1.8
Other Divisions .....	.4

100.0

The bounty on lead offered by the Dominion Government is certainly responsible for the production of lead in East Kootenay, for, as was pointed out in last year's report, these mines could scarcely be operated without its aid but the bounty has apparently had no effect in stimulating greater production in the Slocan district.

There is again this year a material increase in the output of copper, the production being 37,692,251 lbs., valued at \$5,876,222, an increase over the preceding year of 1,982,123 lbs., or about 5½ per cent., while the increase in value is \$1,298,182. This is the greatest output of copper ever made by the province. The increase is due entirely to the increased tonnage of the Boundary District, as all the other important districts show a falling off in production.

The following table shows the production in lbs. of the various districts for the years 1904 and 1905:—

	1904.	1905.
Boundary District	22,066,407	27,670,644
Rossland District	7,119,876	5,800,294
Coast District	5,960,593	3,437,236
Yale-Kamloops	328,380	680,808
Nelson	220,500	92,663
Various Districts	14,372	10,606
	35,710,128	37,692,251

The average assays of the copper ores of the various camps, based upon copper recovered, were as follows:—Boundary, 1.52 per cent. copper; Rossland, .90 per cent., and Coast District 2.81 per cent.

There has been no iron mined in the province this past year, since there is no market as yet available. For the small quantity formerly used as a flux in lead smelting, an impure iron ore, carrying values in the precious metals, has been substituted.

This year, for the first time, have any important sales of zinc ores to be recorded. Plants for the "enrichment" of zinc ores have been started at Kaslo, Rosebery, and Pilot Bay. These plants are merely concentrators, in which ores, or ordinary zinc concentrates, are more carefully separated, with the elimination of minerals undesirable in the smelting of zinc ore, such as iron pyrites or carbonate, galena and gangue matter.

The resulting "enriched" zinc concentrates, thus rendered saleable, have found a ready market, at prices varying according to the zinc contents and freedom from impurities, from \$25 a ton for 53 per cent. zinc in a pure ore, to about \$10 a ton for a 40 per cent. zinc ore not so free from impurities.

Approximately, 9,413 tons of zinc ore or zinc concentrates were sold this past year, having a value at point of shipment of about \$139,200.

Almost all of this zinc ore comes from the Slocan district, but has not been all mined this past year, as the sales include zinc concentrates which had accumulated and for which only this year has a market been found.

As yet, most of the zinc ore sold has gone to the

United States, but a zinc smelting plant having this year been erected at Frank, Alberta, just east of the British Columbia boundary, in all probability the larger part of the British Columbia output will in future be treated there.

A Commission appointed by the Dominion Government, and including Mr. W. R. Ingall, New York, and Mr. Philip Argall, Colorado, spent the season of 1905 in investigating the possibilities of zinc ore mining in British Columbia, and methods of treating the ore. The report of this Commission has not yet been published.

Practical demonstrations of smelting zinc-lead ores by electricity were upon two occasions attempted at Vancouver, to witness which the Provincial Government was invited to send a representative. Mr. Carmichael, the Provincial Assayer, who was present, reports that the demonstration did not succeed, for reasons which, he hopes, may yet be overcome.

Of the undeveloped properties carrying strictly zinc ore, those on Pingston Creek, in the Arrow Lake Mining Division, present the greatest surface showing.

The actual production of platinum is very small, although its occurrence in the placer gravels is so widespread through the province. About \$500 worth was obtained from gravels near Granite Creek, Similkameen, while the Consolidated Cariboo Hydraulic Mining Company of Cariboo, and the Berry Creek Mining Company of Thibert Creek, Cassiar, each recovered small quantities in an experimental way, as mentioned in the reports on these districts.

A number of finds of platinum "in place" have been reported. Some of these were assayed by Baker & Sons, platinum refiners, of Newark, N.J., who reported finding considerable amounts of platinum, but upon close examination by this Bureau, confirmed by the Laboratory of the Canadian Geological Survey, of the identical ore assayed by Baker & Sons, no platinum could be found. As this has happened two or three times before, the conclusion is forced that assays made in a platinum refinery are apt to get contaminated by the dust produced by processes of manufacture.

Attention is drawn to the mention in the report of the Provincial Assayer of the finding of appreciable quantities of platinum in a number of samples of Yukon and Cassiar gold, the platinum being actually in the gold, and not a separate mineral associated therewith.

The quarrying of building stone as an industry is as yet confined to the coast, such stone as is used in the interior being obtained from some of the numerous rock exposures to be found in almost all parts of the Province.

On the Coast, in the cities of Vancouver and Victoria, particularly the former, have used an increased amount, in building, of granite, andesite and sandstone.

While no exact statistics are available, it is estimated by a leading architect that four times as much brick and stone were used in Vancouver in 1905 as during the preceding year.

Victoria brick-yards turned out in 1905 some seven and a half million brick, while about the same quantity was made in the vicinity of Vancouver. Grand Forks made two and a half million, while a number of smaller yards scattered over the province, together contributed some ten million more.

The manufacture of drain pipe at Victoria by the B. C. Pottery Company amounted in value to between \$80,000 and \$90,000.

The product of the Vancouver Portland Cement Company at Tod Inlet, during the past year, is estimated at \$150,000, which production will be about doubled next year, by the increased capacity of the plant.

Indications of oil have been found in various parts of the province in the form of oil seepages or of shales carrying oil, but to date no oil in commercial quantity has actually been struck. In the Flathead District, on the oil seepages of which a report has already been made by the Provincial Mineralogist, some further prospecting has been done, and it is reported that a boring plant has been brought in from just across the U. S. boundary, where it has been lying for some years, but, from the best informa-

tion obtainable, no drilling to any depth has yet been done.

As mentioned in last year's report, black carbonaceous shales carrying a small percentage of oil have been known to exist in the Beaver Valley, Cariboo, and this past year these shales have been taken up by a company which proposes next season to put down bore holes to test the existence of oil under the shales.

Nothing has yet been done on the Queen Charlotte Islands towards testing for oil in the vicinity of the seepages which exist there.

It cannot be said that the year 1905 has witnessed any new departures or developments in mining in the province.

The increased production in metalliferous mining is due entirely to the increased tonnage of low grade ores treated in the East Kootenay and Boundary Districts, while the other districts—Slocan, Nelson, Roseland, and the Coast—each shows this year a decreased production.

In the Fort Steele Mining Division of East Kootenay, the St. Eugene mine has this year more than doubled its output of the previous year, despite the fact that several months were lost at its most important opening, through the head works being completely destroyed by fire. The property is a large low grade concentrating proposition, galena, low in silver, in a silicious gangue. This year's output was nearly 150,000 tons of ore, producing about 900,000 ounces of silver and 36,500,000 lbs. of lead, the largest lead production of any property in British Columbia, and about 65 per cent. of the total production of the province. The North Star, which has been for many years one of our largest and steadiest producers of silver-lead ore, has been worked out and practically abandoned, as development on an extensive scale failed to disclose further ore bodies, and the small shipments made this year are only the results of the cleaning out of the old workings.

With the passing of the North Star, an adjacent property, the Sullivan, has taken its place, and is to-day the second largest lead producer in the province, producing nearly 11,500,000 lbs. of lead, or 20 per cent. of the production of the province.

Fort Steele District this year produced over 86 per cent. of the total lead production, 33 per cent. of the silver, and 50 per cent. of the coal and coke sold by the province, but no copper nor lode gold.

In the Nelson Division the tonnage of ore mined has decreased about 33 per cent. as compared with the previous year, but the gold produced has decreased only some 12 per cent., indicating that there is a proportionately larger amount of the higher grade gold ore being mined.

The copper production of the Division has decreased more than 50 per cent. a result of the inactivity of the Silver King mine, but the lead output has increased 50 per cent., owing to the resumption of the work at the Mollie Gibson (La Plata Mines) and the operating of the Alice near Creston.

At the Ymir mine, although the tonnage of ore treated is less, the amount of gold produced is greater than in 1904.

Some of the smaller mines in the district have done exceedingly well in a small way.

The plant erected at the May and Jennie has been found upon trial to require some adjustment and enlargement, and has in consequence not as yet accomplished the results which were expected, and which will, in all probability, be eventually accomplished.

In the Slocan District there was a greater number of mines shipping this past year than in 1904, but the production of lead has decreased 50 per cent. and of silver 30 per cent., due to the shutting down of some of the larger mines, such as the Payne and Ivanhoe, and the decreased production of other large properties, such as the Rambler, Slocan Star, Idaho, Wakefield, and others.

Many of the mines formerly operated under company management are now worked in a smaller way under lease or "tribute."

The market obtained for zinc ore or concentrates has been of some assistance, some 9,413 tons having brought \$139,200.

The "Lead Bounty" does not seem to have had the same stimulating effect upon the lead output of the Slocan that it has had upon that of East Kootenay.

In the Rossland Camp there has been about 5 per cent. more ore mined this year than last, and while there has been but a slight depreciation in the gold and silver contents, there has been a very considerable falling off in the copper contents of the ore.

The average assay of the ores of the camp were this past year: Gold, 0.39 oz.; silver, 0.44 oz.; copper, 0.9 per cent.

In the Boundary District the tonnage of ore mined has increased about 20 per cent. over the preceding year, and now amounts to 965,628 tons, being over 56 per cent. of the total tonnage of the province.

The increase is due to the constantly increasing operations of the Granby Co., the other large companies about holding their own. The number of smaller high grade properties being operated, while not contributing any appreciable percentage to the tonnage, have helped to keep up the average grade of the ores.

The costs of mining and smelting have been gradually reduced in this section, thanks to as fine equipments as money could buy, in the hands of intelligent and scientific men, until they are now reported to be about the lowest in the world. To quote from a recent editorial in a leading American scientific journal:—

"Ten years ago the idea of smelting for a dollar a ton and mining for \$1.10 would have been scouted as impossible. Yet this has been done at the Granby mines, with an exceptionally favorable ore and exceptionally well applied skill. In Tennessee, with low priced labor and fuel, they smelt a copper bearing pyrrhotite for \$1.30 per ton."

On Texada Island the Marble Bay mine has sustained regular shipments, but the Copper Queen and Van Anda properties have only been prospected for further ore bodies, with little shipping. The iron mines have not been operated.

In the New Westminster District the only property working to any extent is the Britannia at Howe Sound. This company, reported on last year, has finished equipping its tramway and concentrating plant, and in December, 1905, began the shipping of crude ore and concentrates to the company's smelter at Crofton, formerly owned and built by the Northwestern Smelting Company. This plant is being remodelled, under the superintendency of Mr. Thos. Kiddie, to meet the requirements of the mine.

In the Atlin District, the placer mines held their own exceedingly well, considering the dryness of the season. No lode mines have as yet developed in this district, although on Windy Arm, just north of the boundary and in the Yukon Territory, several most promising prospects have developed, the details of which are contained in a special report herewith. From the location of these discoveries it seems probable that the mineral belt will be found to extend south into British Columbia.

Of the northern districts, the vicinity of the Portland Canal seems to promise the greatest likelihood of becoming a producing camp in the immediate future, as it is near deep water transportation.

There have been a number of discoveries in the vicinity of the Telkwa River of mineral deposits, which, if transportation was provided, might have considerable promise, but which at present, and until such facilities are provided, must remain unworked.

On the Queen Charlotte Islands a little prospecting has been done, and an examination made of the coal fields by the Dominion Geological Survey, which, it is reported, is to be followed by active exploration of the properties of a private syndicate, but as yet no definite work has been attempted.

Mining on the West Coast of Vancouver has been at a standstill; a little prospecting has been going on, but little more. The only two properties shipping were the Hetty Green, about 200 tons of 7 per cent. copper ore, and the Cascade, 30 tons of 15 per cent. copper ore.

In the Mount Sicker District of the Victoria Mining Division the Tyce Mine has maintained average monthly shipments of between 2,500 to 3,000 tons of ore, which

has been smelted with some custom ores in the company's smelter at Ladysmith. The development of this property has been carried to a depth of over 1,000 feet, but has as yet not proved up any commercial body of ore below the 300-foot level, although, since the close of the year, an exposure of ore was made on the 1,000-foot level carrying a high percentage of barytes, the gangue of the upper ore bodies, which gave much encouragement, but which there has not as yet been time to develop.

Some development has been carried on, on other properties, in the neighborhood of the Tyce, but as yet no ore bodies have been encountered.

The King Solomon mine, at Kokasilah, has made a small shipment of 40 tons of 8 per cent. copper ore, and some other properties in the vicinity are being prospected.

At Hedley, in the Osoyoos Mining Division, the Nickel Plate mine, owned by the Yale Mining Co., has been successfully operated, and there has been treated in the mill of an allied company, The Daly Reduction Co., over 30,000 tons of ore, which yielded between \$12 and \$14 to the ton, chiefly in gold.

In the Nicola District active prospecting operations have been carried on in the coal areas, with, it is reported, gratifying results.

The Luce or Live Yank hydraulic mine, just above the Hayward mine, on Snowshoe Creek, (of which the late W. F. Anderson was foreman and principal owner), and from which but meagre returns had been received the past three years, had this year got on to the gold run and was paying handsomely, when Mr. Anderson was taken suddenly ill and died, after which mining operation ceased. This claim will give a good account of itself in future years.

The Cariboo District, including the Cariboo and Quesnel Mining Divisions, was very much hampered throughout the season of 1905 by a scarcity of water. The Consolidated Cariboo Hydraulic Mining Company found that there were but 45,000 miner's inches available, whereas in 1904, which was also considered a dry season, there were 225,000 miner's inches of water for sluicing purposes. This scarcity of water was, of course, experienced by all other hydraulic mines, the result being that the yield of gold was very much less than had been anticipated and much less than it will probably be during the present year.

River dredging was not prosecuted during the year, though many Cariboo men have been watching many of the dredges elsewhere, as they realize that if successful dredging can be accomplished on such streams as the Lower Fraser, it will probably be very successful in Cariboo.

Very little quartz mining is attempted, W. Stevenson, Recorder for the Quesnel Mining Division, states in his report:—

"This is the third dry season in succession in this section and owing to the very light snowfall last winter, many of the small creeks and gulches ceased to flow after the snow was gone. The small surface mines located on, and others depending on, those streams, did nothing for the season, while the hydraulic mines had a very limited supply of water, for the reason that there was not enough melting snow to make and considerable amount of water in the lakes and reservoirs, which had been drained to the utmost the preceding season, and consequently, the water supply was of very short duration and the output of gold light. Hydraulic and other surface mining is our chief dependence in this section, and the shortage of snow for the last three winters has been a great drawback. The rainfall during the summer months was very light; in fact, it might be said that we had no rain from the first of May to the last of August."

Under such conditions, of course, nothing like a satisfactory yield, from these northern mining divisions, is to be anticipated unless some system superior to any in vogue at present be found for impounding the water from the melting snow.

The "Canadian Mining Review" has already published a report of the Provincial Metallurgist, dealing with the Atlin Mining Division, which now includes the boundaries of the old Teslin Mining Divisions, Mr. James Porter, of

Telegraph Creek, acting as Deputy Mining Recorder for the Atlin Mining Division.

The Northern portion of Cassiar District, which is, of course, included in the Teslin, as well as in the Liard and Stikine Mining Divisions, depend for their prosperity upon three companies, the Berry Creek Mining Company, the Rosella Hydraulic Mining and Development Company, of Rosella Creek, and the Seattle Prospecting and Development Company, working the hydraulic and creek leases on McDame Creek. Of course, the operations of the Berry Creek Mining Company were by far the most important.

The placer finds on the Clearwater, thirty-five miles west of Telegraph Creek, have not as yet shown important results.

Skeena Mining Division was marked by several new discoveries, notably on the Telkwa and Copper rivers and on Portland Canal. In the development of the former transportation difficulties will retard matters for the present, but on Portland Canal no such difficulties exist, most of the discoveries being near salt water, and the canal offering safe anchorage in all weathers.

The Queen Charlotte Islands have attracted more attention than in the past. A number of claims have been staked on Graham Island, and Moresby Island is thought to contain some seams of coal that may become of economic importance.

At Princess Royal Island considerable work is being done by an English company owning the Princess Royal group.

In southern British Columbia the Boundary District makes a strong showing. The Granby Mines had an output of 645,000 tons; the British Columbia Copper Company Mines, 189,000 tons; the Dominion Copper Company Mines, 88,000 tons; the Oro Denoro, 3,000 tons and sundry small shippers an extra 5000 tons, giving a total of 930,000 tons.

BOOK REVIEWS.

With the rapid spread of interest in producer gas, and the furnaces for its production, the appearance of a volume treating authoritatively of this important production by Mr. Samuel S. Wyer, M.E., is opportune. The work consists of thirty chapters and describes minutely the important advances and industrial developments up to the present time. The author's ability will not be questioned, as he is acknowledged to be one of the highest experts on the subject on which he writes, and the result of his numerous experiments must prove interesting and useful to all chemists, metallurgists and gas engineers. The work is published by the Engineering and Mining Journal, New York. Price, \$4.00, postpaid.

Industrial Furnaces, by Prof. Emilio Damour, translated and augmented by A. L. Queneau, has been issued by the Engineering and Mining Journal of New York. Price, \$4.00 postpaid. It is an exceptionally intelligent treatise on the subject, and also an advantageous companion volume to the recently issued work on Producer Gas and Gas Producers, by S. S. Wyer. The above manual has been translated with remarkable ability from the original French of Prof. Emilio Damour by A. L. Queneau, and incorporates a vast amount of fresh and comprehensive data in relation to industrial furnaces—their deficiencies, possibilities and the various advances and improvements made in the principal contrasted types. The present treatise represents the combined efforts and experiments of two distinguished experts in their especial practice, and no chemist, metallurgical engineer or other workers in the industry can afford to be without it.

PERSONALS.

Mr. Smith Curtis, of the Denoro Mines, has been in Eholt, making examinations.

Mr. H. P. Dickinson, Rosslund, agent for giant powder, was in the Boundary last month.

Mr. Robert Deusler, of Spokane, has been visiting Phoenix Camp, B.C., where he has extensive interests.

Mr. D. C. Johnson, of Spokane, formerly ore buyer for the American Zinc Company, was in Nelson recently.

G. G. S. Lindsay, K.C., of Toronto, General Manager of the Crow's Nest Pass Coal Company, has been in Nelson representing his company in a case on trial at the Assizes.

Sidney Stockton Taylor, of the city of Nelson, barrister-at-law, has been appointed the attorney for the Dundee Gold Mining and Milling Company in the place of Joseph Duhamel.

Mr. Roland Machin, British Columbia agent for the Bennett Fire Company, has returned to Victoria, after a tour of the Kootenays and Boundary. He found conditions very encouraging.

Announcement is made by the Power and Mining Machinery Company, Milwaukee, Wis., of the appointment of Mr. W. A. Lieblein as manager of their Salt Lake City branch with offices at Room 215, Commercial Club Building.

Mr. James Cronin, of Moyie, B.C., and Mr. J. C. Hodgson, of Hodgson, Sumner & Company, Montreal, have been elected to the Board of Directors of the Consolidated Mining and Smelting Company of Canada, Limited.

Mr. W. C. MacDowell, formerly connected with the mining department of the New York office of the Power and Mining Machinery Company, Milwaukee, Wisconsin, has recently been appointed manager of the El Paso, Texas office of that company.

Among the passengers leaving New York for Liverpool, June 19th, on the Cunard steamer Caronia, was President W. H. Whiteside of the Allis-Chalmers Company, his wife and daughter. Mr. Whiteside and his family will visit various points of interest in England, Germany, Switzerland and France.

Mr. N. B. Roper, formerly chief engineer for the Cananea Consolidated Copper Company, Cananea, Mexico, has recently been engaged by the Power and Mining Machinery Company, Milwaukee, Wisconsin, as mining engineer to represent them at their New York sales office, No. 52 William street.

Mr. Samuel W. Traylor, President of the Traylor Engineering Co., has just returned to New York after an extended business trip to Mexico. One of the most important results of Mr. Traylor's trip was the conclusion of negotiations by which the firm of Victor M. Braschi & Co., of the City of Mexico, have taken an exclusive agency for the products of the Traylor Engineering Co., in Mexico.

MINING NOTES.

During the annual meeting of the American Institute of Mining Engineers which is to be held in London this year, commencing on July 23rd, those in attendance are cordially invited to make their headquarters at the London offices of the Allis-Chalmers Company, 533 Salisbury House, Finsbury Circus, where mail may be directed in care of Mr. J. W. Young, manager of the offices, who also is a member of the Institute.

The Dominion Steel Company received \$674,800 in bounties last year and topped the list. The Algoma

Steel Company came second with \$404,900, while Nova Scotia Steel got \$125,768. Here are the bounties received by Dominion Steel in detail:

	Tons.	Bounty.
Pig iron (c.o.)	216	\$ 487.01
Pig iron (f.o.)	131,878,814	197,818.22
Steel ingots	113,893,325	256,259.98
Steel ingots	825	229.42
Steel rods	36,680	220,085.62

\$674,880.25

The bounties paid to all Canadian concerns totalled \$1,540,203.

NEWFOUNDLAND.

The work of the opening of a new iron mine at the eastern end of Belle Isle, Newfoundland, began last month, several men being engaged on the work. There is a big deposit of ore, but the companies are short of men and the work cannot be rushed as they would wish.

NEW BRUNSWICK.

It is not often that New Brunswick has a mining excitement, but there seems to be one on just now. On June 27 some men boring a well for the I.C.R. at Chatham, struck what they believed to be gold bearing sand. Next day there were 470 applications for areas made at the Crown Lands Office, Fredericton. Dr. L. W. Bailey has been shown samples of the sand, but is understood to have declined to commit himself as to the value of the sand.

QUEBEC.

The Canadian Chrome Co. of Thetford Mines, are installing an additional ten stamps in their stamp mill, which will bring it up to 20-stamp capacity. Since commencing operations about a year ago, this company has met with excellent success in marketing their product, which is of an especially fine grade of chrome iron concentrates; hence the present increase of plant. The additional equipment was furnished complete by the Jenckes Machine Co., Limited, of Sherbrooke, Que., who were also contractors for the first ten stamps.

According to a press despatch from Timiskaming, dated June 29, a wonderful discovery of free gold has been made about seventy miles north of Ville Marie at the Narrows on Opasatica Lake, two miles south of the height of land. The finders, A. Renault and A. Ollier, are now en route to Quebec to perfect their discovery. One sample they are bringing with them is about twenty pounds in weight, and is covered with free gold. They say there are not many prospectors in that vicinity. The best and cheapest route is via Timiskaming Station, on the C.P.R., thence by boat to Ville Marie, portage to Gillies Depot and boat to Quinze Lake, and destination.

The hoisting engine equipment of the Asbestos and Asbestic Co., Limited, Asbestos, Que., near Danville, has been increased this spring by the addition of four 9 x 12 special cableway hoisting engines, as built by the Jenckes Machine Co., Limited, of Sherbrooke, Que. This hoisting engine was designed especially for cableway service, having one drum for hoisting purposes, and a separate independent drum for operating the carriage on the cable. It has been extensively adopted by the asbestos mines in the Province of Quebec, also to considerable extent by the coal mines in Alberta. The Johnson's Company of Thetford Mines, have lately installed two of these engines.

COBALT.

Operations with a view to the partial draining of Peterson and Cart lakes, are now in progress.

On June 23rd, two new veins were discovered on the Jacobs mine. They are reported to be exceedingly rich in silver.

Haileybury is receiving its share of the benefits derived from the mining development, and is rapidly forging ahead.

It is reported that from four to five inches of high grade silver and smaltite ore has been struck in the 65-ft. level at the Silver Queen Mine.

Almost all the well known mines are in active and successful operation, although in the case of the Foster work is principally confined to further prospecting.

A complete air compressor plant was shipped last month from Argentine to the Silver Bar Company's property, and is expected to be in operation shortly.

The Kerr Lake Mining Co., Cobalt, Ont., is installing a 60 horse-power 54 inch x 14 foot tubular boiler, purchased of the Jenckes Machine Co., Limited, Sherbrooke, Que.

Except in the case of stock in the well known shipping mines, sales are comparatively few and far between; and financial and general business is by no means so brisk as it was two months ago.

Up to the time of writing the Temiskaming and Northern Ontario Railroad Commission have not dealt with the mineralized section of the right of way. It is stated that some good offers have been received.

A rich strike of argentite in calcite has recently been made on the McKinley and Darragh property at the extreme south end of Cobalt Lake. This mine has just been reopened after a lengthy period of inactivity.

Prof. W. G. Miller, provincial geologist for the Province of Ontario, is still in the field collecting data for his report upon the Gilles timber limit, which the Government decided to mine themselves.

A move is being made—with Haileybury as the central point—to hold meetings of the miners and prospectors at different points of the district, with a view to gauging exactly their feelings in regard to the new Mines Act.

The inspectors are still throwing open claims wholesale, and consequently "legalized claim jumping" is the order of the day, much to the dissatisfaction of those who have spent time and money in development and prospecting.

Dr. Drummond, of Montreal, spent a fortnight at the Drummond Mines, Kerr Lake, from which large shipments of ore were made during June. Diamond drilling is still in progress at the mine, with, it is stated, satisfactory results.

Cobalt is rapidly assuming the proportions of a town. Many new and important buildings having been built during the past few weeks, while several others are in course of erection. The streets are much improved by the work which has lately been done on them.

The institution of the new machinery at the Jacobs Mine (Kerr Lake Mining Co.), has been successfully accomplished, and work is now progressing at full blast under Manager Robert Jacobs and Supt. Cohen, who state the mine is looking better than ever.

The extension of the known area of where the characteristic ores of the district outcrop is highly encouraging. Discoveries have been made north, south and east of the boundaries as they were believed to exist. The finds to the south in the Third Concession of Coleman are of particular interest.

The Warner-Leith prospecting outfit which employs from 20 to 35 men, is busily engaged in trenching and other work on the "open" claims in Coleman Township, which lie between the boundary of the Gilles timber limit and the Township of Lorrain. It is reported that they have made at least one good discovery of cobalt and silver.

Mining men will much regret to hear of the accident to Superintendent Harris, late of Sudbury, but now in charge of the La Rose Mine. Believing that three holes had been fired, he returned to inspect the result. As a matter of fact, only two had fired, the one that had temporarily missed exploded when Capt. Harris was too near. His head was badly cut, and he has lost the sight of an eye.

A petition to the Government has been extensively signed by the leading business men, who attribute the falling off in business to the objectionable clauses in the Act. Hundreds of men who were prepared to spend money in the district, in prospecting and development, have left without acquiring any interests, on the grounds that they consider the Ontario Government's demands unreasonable and unfair.

A valuable discovery of native silver has been discovered on Lot 3, Concession XI, in the Township of Lorrain, by two prospectors by name Burk and McMillan. It is stated that a Mr Fortier, of Montreal, is interested in the claim. The vein matter is calcite, in a formation of diabase. This discovery has given a considerable impetus to prospecting in the vicinity. The inspector passed the discovery immediately on examination.

A new vein about an inch and a half wide was discovered on June 18th, on the property known as the McLeod and Glendenning; it is rich in smaltite and native silver. This vein outcrops at the greatest elevation on the claim, and it is stated that it has been traced diagonally right across the 40 acres. This makes the third discovery upon this property within the last six weeks, one of the others being a silver-smaltite vein, approximately fourteen inches wide, where exposed.

Large numbers of prospectors have gone into the townships north of Liskeard, up the Montreal River, and into the unsurveyed territory north of the Height of Land, but so far no rich discoveries of silver have been made, which can be authenticated. Most of the veins discovered have been in diabase and are narrow, the principal minerals present being galena and chalcopryrite.

Reports of gold discoveries of economic importance are, however, continually coming in by way of the Montreal River, and there seems reason to accept one or perhaps more of these reports as correct.

Cobalt mines are like the Toronto public in the sense that they are rich and easily worked, says the Toronto Telegram. One Cobalt property has already yielded \$300,000, at a working cost of \$18,000. Properties that can be worked so easily and cheaply need not be stocked for a million dollars and offered to the public at so much per share. A million dollars is a lot of money, even if it comes from the pockets of a multitude of small investors. The owners of a proved property in Cobalt can work their mine without the help of the share buying public. And the before-mentioned public should make sure that it is not worked by the vendors of stock in every unproved property.

Two gasoline launches and a steamboat are now carrying freight and passengers from the new townsite of Argentite (between Cobalt and Haileybury) up Cross Lake. Argentite is the natural outlet to the railroad for the ores of the Kerr Lake and the southeast section of the district. All three boats are exceedingly busy.

Mr Smith, Mining Recorder at Haileybury, is still kept busy issuing mining licenses, over six hundred hav-

ing been issued since the new Mines Act came into operation. There is, however, a marked falling off in the number applied for during the last month, prior to which some fifty per day were granted. This in some measure appears to be due to the fact that the new Mines Act is by no means meeting with approval, the more intelligent class of prospector objecting strongly to some of the restrictive clauses, particularly those relating to "inspection" and "discovery."

The Cobalt Townsite Mining Co. have discovered a new vein of almost solid smaltite and silver, about three in. wide. Illustrative of how close one may be to fortune and yet miss it, this new vein had almost been exposed by the railroad contractors in the gravel pit south of Cobalt Station, where thousands of yards of ballast had been removed. An employee of the Townsite Company, on June 22nd, while digging sand for use, came across the vein by accident.

This company owns about 40 acres in the Cobalt townsite, which is held under a long lease from the Temiskaming and Northern Ontario Railroad Commissioners. Work has only been in progress for less than a month, but discoveries already warrant the belief that the property will develop into one of the important producers of the camp.

Work has re-commenced on the Hunter claim, in the first concession of Bucke Township. Development was begun upon a small stringer carrying chalcopryrite, but in the shaft smaltite and native silver in quantity were struck. The shaft is now about 45 feet deep.

BRITISH COLUMBIA.

Mr. T. J. Ferguson, of Phoenix, has been appointed superintendent of the Iron Mask at Kamloops.

It is understood that \$100,000 will be spent in development on the B.C. Copper Co.'s Mother Lode mine in the next few months.

At the Mountain Rose the Dominion Copper Co. is running a tunnel, from which a raise will connect with the shaft already sunk.

Mr. T. W. Thomas, M.E., of New York, consulting engineer to the B. C. Copper Company, has been visiting the coast and was recently in Greenwood, B.C.

The British Columbia Copper Company has just completed negotiations for the B. C. mine, in Summit Camp, a few miles from here. The ore is a good flux and runs high in copper values.

George A. McLeod has just returned from making a personal inspection of the Maple Leaf group in Franklin camp. He corroborates the report of the recent strike of copper ore on this group.

The ore from the Jersey mine, on the West Fork of the Kettle River, is said to be rich in cobalt. This is the first cobalt recorded from that district and considerable interest is being taken in the find.

There was a small placer gold excitement on the Tulameen recently. During the progress of work on a road the laborers uncovered a body of rich-looking sand. Everyone around took a hand in locating.

The English syndicate that bought the Mallory copper claims on Howe Sound a few weeks ago, are already beginning operations. So far \$300,000 are said to have been spent in purchase and supplies.

The Boundary district continues the scene of ever increasing activity, properties of known value continue to pass into the hands of people with plenty of capital, who are making arrangements to develop their new holdings.

Mr. Charles T. Hancock, of Dubuque, Iowa, is back on the coast. This is thought to indicate the resumption of operations of the Iowa-Lillooet Dredging Company at Lillooet. This company has been tied up with litigation for some time.

The profits of Le Roi for May reached the very respectable sum of \$50,000. This mine has made a profit of from \$30,000 to \$50,000 for every month of the present year. Le Roi No. 2 is making large profits—larger than ever before in its history.

The Big Copper, Copper Camp, has changed hands and is to be developed. It is a medium to low grade property but capable of yielding a big output of ore. Last winter six hundred tons were shipped to Greenwood, and gave returns of about \$14 a ton.

Manager Hand of the Ymir mine, has made a favorable report of this famous property. Since June 6 thirty stamps have been dropping, and forty stamps could be supplied if labor were more abundant. The daily output of the mill is 90 tons, or 630 tons a week.

Two diamond drills are not sufficient for the management of the McKinley, Franklin Camp, B.C., mine, in consequence of which contractor Dave Evans has just hauled another diamond drill to the property, so that the three drills will be working in a few days.

The latest claim acquired by the Granby Company is the Bank of England. This is a fraction of 29.57 acres, adjoining the Monarch, Tamarack and Rawhide, each owned by the Granby. By acquiring the Bank of England it is expected that the development of the Monarch at depth will be facilitated.

For the three months ending 31st March, 1906, there were 86,647 tons of different kinds of ore received at the Consolidated Mining and Smelting Company's Smelter at Trail. Of this 32,599 were smelted. The output of the smelter was as follows:—

Gold	34,434	ozs.
Silver	619,013	"
Copper	1,226,567	lbs.
Lead	8,340,000	"

The gross value of which at the full quotations for the metals was \$1,622,242.

Dredging on the Fraser River for gold is an enterprise which goes steadily on. In past years a large number of machines have been at work at different times, and a very considerable amount of money has been expended. There is under construction at Yale a dredge which will operate in the river near that place. Mr. Walter Williamson, who has had experience in dredges in New Zealand, is looking after the interests of the company. Near Lytton another dredge is in operation. This is in a quiet part of the river just below the point, which has long been one of the favorite locations for dredges.

The areas of the claims held by the Granby Company are as follows:—

Old Claims.—Knob Hill, 19.09 acres; Old Ironsides, 20.18; Victoria, 46.60; Myrtle Fraction, .07; Phoenix, 29.94; Aetna, 24.91; Fourth of July, 29.44; Grey Eagle, 33.80; Banner, 47.59; Tip Top, 44.32; Triangle Fraction, .66; Old Ironsides Fraction, 42.12; total, 338.73.

Claims Bought Last Year.—Monte Carlo, 51.60; Monte Cristo, 22.00; Monte Cristo Fraction, 2.50; Gilt Edge, 49.80; Gold Drop, 35.00; Gold Drop Fraction, 13.50; Nuggett, 46.13; Phillipsburg Fraction, 1.50; No. 13, 22.10; Monarch, 51.13; Tamarack, 49.60; Tamarack Fraction, 2.50; Missing Link, 6.70; total, 354.06.

Claim Just Acquired.—Bank of England, 29.57; total acreage, 722.36.

It is the intention of the management of the Granby Smelter to close down the works for two days for repairs. When operations recommence, No. 2 furnace will be enlarged to the same capacity as No. 1. The work will probably be accomplished in fifteen days. This will be followed by the enlargement of the other small furnaces as rapidly as possible. The increased furnace capacity necessitates more blast, and two new Jumbo blowers of the No. 10 type will be installed. They will be placed in a blower room which will be built on to the converter blower building, the foundations being almost ready now. Four new motors of 150 horse power each will be placed in commission. To meet the additional demand of the furnaces three new electric motors have been ordered for the charge cars, also a new duplex pump with a capacity of 750,000 gallons per 24 hours. A third converter stand will be placed in position in the course of three or four days, the foundations having been completed during the past week. Masons are a scarce quantity and several more could be used to good purpose in the general work at the Granby.

ATLIN.

The Northern Mines, Ltd., R. D. Fetherstonhaugh, manager, have completed the construction of a wing dam on Spruce Creek. A number of men have been employed in mining and sluicing the rich draw which extends through the company's pit.

Work on the N.C.G.M. Company's dam at Surprise Lake has progressed very favorably. Although considerable frost was encountered while excavating, that part of the work was completed a month ago, since which time the workmen have been busy on the sluice-ways and foundation.

COAL NOTES.

Shipments from the Springhill, N.S., collieries for the month of May were 33,912 tons.

The Rand Drill Co. is introducing a new undercutting machine in C.B., and is meeting with much success.

Some fifty old country coal miners under engagement with the Dominion Coal Company arrived recently from Scotland.

The Drummond Colliery has a daily output of 1,200 tons. The distance from surface to face is 6,880 feet, actual measurement.

Shipments from the Cumberland Railway & Coal Company's collieries, at Springhill, N.S., for the month of June were 33,259 tons.

The contract for supply of coal for the Prince Edward Island Railway goes this year to the Gowrie and Blockhouse Collieries, Ltd.

Mr. Russell, who went from Nanaimo last fall to have a look over the Inverness collieries, has left and gone to other McKenzie and Mann properties.

About 500 new mine boxes—mostly two tonners—have been built at the Dominion Coal Company's car shops and sent to the mines during the past two months.

A Stanley header will be put in operation at No. 2 Allan Shaft as soon as the new compressor is erected. The compressor has been shipped and should be in position in a few weeks.

Notwithstanding the influx of strangers to the Cape Breton mines, labor is by no means plentiful in Cape Breton, and latest accounts indicate that it is getting scarcer. The Newfoundland fisheries are draining Cape Breton of natives of that Island.

Preparations are in progress for the sinking of yet another lift in the main slope at the Drummond Colliery. The lift will be 500 feet. When completed the total length of the main slope will be 7,380 feet.

Twenty men are working in the Williams coal mine and five men at the Seimer coal mine, on Coal Creek, Yukon. Thousands of tons of coal will be taken out there this summer for shipment to the Dawson market.

Sinking of the slope at Mabou has been suspended for the present. The pit is being worked double shifted. The coal at present is being banked, and put into the pockets. It is expected to get an average of about 226 tons per day in June.

The 32 coke ovens of the Intercolonial Coal Co. turn out 1,100 tons of superior coke monthly. The coke is in large demand; the Londonderry Iron Works being anxious to get all of the product. The coke takes seventy-two hours in burning.

The mines of the International Coal & Coke Co., of Coleman, B.C., are turning out for shipment over 1,200 tons of screened coal per day. Besides the coal shipped from that point about 125 tons of coke per day is made and shipped to B. C. points.

A "Scaife" trough washer is being erected, at the Drummond, with elevators, conveyors and storage. These are to be run in conjunction with the washer. The capacity of the washer plant will be 150 tons a day, sufficient for all immediate requirements.

The Drummond Colliery now has two steamers in the St. Lawrence trade, the "Havso" and the "Atlas." They will carry some 16,000 tons of coal per month. The Acadia Company have also two boats, the "Unique" and the "Pimes," with a carrying capacity of 21,000 tons. The shipments to the St. Lawrence this season will total a tidy figure from Pictou Co. this season.

Approximate output of the Dominion Coal Company's mines for June, 1906, was:—

Dominion No. 1.....	43,568
" No. 2.....	51,880
" No. 3.....	37,541
" No. 4.....	52,777
" No. 5.....	62,506
" No. 6.....	3,399
" No. 7.....	15,479
" No. 8.....	24,932
" No. 9.....	33,866
Total	325,948

President Howard, of the Western Fuel Company, arrived in Nanaimo, B.C., from San Francisco a few days ago, and after consultation with the local management, the colliery company decided to close the Brechin mine down for an indefinite period. Business in San Francisco has been completely paralyzed by the earthquake, and the consumption of coal has been curtailed to such an extent that with the Frisco bunkers and yards of the company running over with coal this step was found necessary. In the meantime No. 1 mine will be kept working full time as the sale of enough coal has been obtained to guarantee this. There are 800 men working in No. 1 now, and in addition to this work will be found almost immediately for about 150 men from Brechin, leaving about 200 men out of employment.

The west level in the Foord seam of the Allan Shaft is in 600 feet from the bottom. At 1,000 feet from the bottom the first balance, likely, will be driven. On the same side

in the Cage seam the level is in 766 feet. On the east side the level of the big seam is in 375 feet. This level is not driven in the coal, but will strike it at say 400 feet, or in a day or two. The level in the Cage seam, east side, is in 400 feet, and has been driven all the way in coal. Only 7 feet of the big seam is as yet being mined. It is mined about 7 feet from the bottom. About 14 feet of the Cage seam will be worked. The management may make a change in the mode of working when development work is more advanced. On the west side all the coal will come by way of the Cage seam drift and in order to make this successful the drift is being widened.

There is much activity around the Allan Shafts of the Dominion Coal Company. There is a lot of work to be done before the surface works are put in ship-shape order. An open cutting is being made sloping towards the No. 1 shaft, which it will strike at the broken ground. The shaft will be concreted on all sides for fifty feet from the top down. By way of the open drift the timbers will be taken to the shaft the full length required, over thirty feet, without the necessity of cutting them, which would be necessary otherwise. This work will take considerable time, but will be completed before the steel bank head is erected. There will be no hoisting of coal from the No. 1 shaft. Powerful engines will be put up, capable of hoisting at high speed. There will be double deck cages, each deck carrying a box containing a ton and a quarter of coal.

THE MINING AND INDUSTRIAL SHARE MARKET.

(Specially reported for the CANADIAN MINING REVIEW by ROBERT MERRIDITH & Co., Mining Brokers, 57 St. François Xavier St., Montreal.)

In mining stocks business is fairly active. The market has broadened out considerably, and there has been an almost universal advance in prices.

There is nothing of importance to note, beyond the almost daily published reports of the advance of the mining industry, both in the east, as well as the west. Capital is being attracted, and it is now easier to procure funds for a "bona fide" enterprise than has been the case for some years.

In industrial stocks there has been comparatively little doing. The speculative market has been hampered by the stringency of money, causing brokers considerable difficulty in finding loans. Prices are a little lower, and from the limited amount of trading, it would look as though the public is not in the market.

The latest quotations are as follows:—

	Bid.	Asked.
Can. Cons. Mines	135	138
Can. Gold Fields	7	7½
Granby Cons.	10¾	11
Rambler Cariboo	25	26
North Star	5¼	9
Monte Cristo	2	3
White Bear	7¾	8
California	2	...
Virginia	2	...
Deer Trail	1½	2½
International Coal	50	51
Sullivan	2	3
Jumbo	23	25
Cariboo-McKinney	1½	2½
Denoro	8	9
Diamond Vale Coal	19	22
Dominion Copper	2¼	2½
Dominion Coal (common)	76	78
Dominion Coal (pref.) .....	...	...
Dominion Iron & Steel (com.)	25½	26
Dominion Iron & Steel (pref.)	75	78
Intercolonial Coal (com.) .....	...	...
Intercolonial Coal (pref.) .....	...	...
Nova Scotia Steel & Coal	65	66
Nova Scotia Steel & Coal (pref.)	118	...

COMPANY NOTES.

Allis-Chalmers.

Directors of the Allis-Chalmers Company have decided upon a large issue of bonds for the retirement of floating indebtedness and for the construction of new plants and other improvements.

At present the company has no bonded indebtedness, nor has it had any since its organization in May, 1901. In the five years of its existence it has largely increased its facilities and has paid for most of the increase out of earnings. It paid seven per cent. dividends on the preferred stock up to February, 1904.

Officers of the company say that earnings for the current fiscal year will show a large increase.

INDUSTRIAL NOTES.

A new industry is to be located in Victoria, B.C., that of a mining machinery factory. The Canadian Mine and Smelter Co. intend opening a branch here in the near future.

The Los Angeles Railway Co. has ordered from the Westinghouse Electric & Manufacturing Co., at one time, two hundred forty-horse power electric motors, which will be used in the equipment of fifty new cars which the company is adding to its rolling stock.

The Jenckes Machine Co., Limited, have recently shipped to the Alberta Portland Cement Co., Calgary, a complete hoisting plant consisting of 40 h.p. locomotive boiler and 7 x 10 hoisting engine, together with hoisting rope, steam piping, etc. The order was placed with the company's Rosslund office.

The Consolidated Mining & Smelting Co. of Canada have ordered from The Jenckes Machine Co., Limited, Sherbrooke for use at the Centre Star Mine, Rosslund, a 36 in. x 24 in. Farrel Bacon Ore Crusher, of which the capacity is 1,000 ton to 6 in. cube every ten hours. The shipping weight is 60,000 lbs.

The "Iron Age" says:—"The flow of orders in the finished trade continues very large. No better proof of this can be furnished than the fact that during the first twenty-two days of the current month (June) the United States Steel Corporation booked orders at the rate of 37,000 tons per day. This compares with 18,600 tons per day during the corresponding period of 1905, thus showing practically double the quantity. The pressure from buyers abroad is particularly noteworthy, and foreign markets have been responding.

The Rosslund office of The Jenckes Machine Co., Limited, Sherbrooke, Que., has closed a contract with the Dominion Copper Co., Boundary Falls, B.C., for one of their 42 x 30 Farrel Bacon Ore Crushers, also for a 10 x 16 Crusher of the same pattern. The capacity of the larger machine is 1,500 ton to 6 in. cube in a day of ten hours, and the shipping weight is 125,000 lbs. It is the largest pattern jaw crusher so far built anywhere. Several of these crushers have been put in use by the Granby Smelter of Phoenix within the past three years.

The new rubber cement factory of the Canadian Rubber Company of Montreal, Limited, is now in full operation, and exclusive contracts for the supply of rubber cement have now been concluded with some of the principal manufacturers of the Dominion. This industry promises to be a very important one, and the plant of the Canadian Rubber Company is equipped with all the latest appliances for the production of high grade cement.

Mr. A. D. Thornton, Technical Superintendent of the Company, devotes a good deal of his time to this special branch of manufacture.

MINING INCORPORATIONS.

QUEBEC.

The Cobalt Exploration Company, Limited. Capital, \$30,000, in shares of \$100 each. Head office: Montreal.

ONTARIO.

Cobalt Securities Company. Capital not to exceed \$50,000 in Ontario. Mr. Robert Irwin Towers, Sarnia, Ont., attorney.

Manitou Mines Company, Limited. Capital not to exceed, in Ontario, \$40,000. Mr. Hugh D. Ralston, Wabigoon, Ont., attorney.

The Soo-Cobalt Mining Company, Limited. Capital, \$50,000, in shares of \$1.00 each. Head office: Cobalt, Ont. Provisional directors: Messrs. Clifton Henry Moore, Charles Maitland Tilkie and Creighton DeWolfe.

Gallagher Iron Mining Company, Ltd. Capital, \$500,000, in shares of \$1.00 each. Head office: Sault St. Marie, Ont. Provisional directors: Messrs. Francis Patrick Sullivan, John Joseph Gallagher and Francis Houghton Hughes.

The Cobalt Smelting and Refining Company, Limited. Capital, \$250,000, in shares of \$1.00 each. Head office: Toronto, Ont. Provisional directors: Messrs. Thomas Henry Miller, Clarence Howard Gowman, Joseph Henry Schlund, William Richard Cavell and Henry Alfred Wright.

North Ontario Reduction and Refining Company, Limited. Capital, \$500,000, in shares of \$1.00 each. Head office: Toronto. Provisional directors: James Alexander Young, jr.; Henry Billings Ritchey, John Jennings Wright, Donald Gunn Bremner and Joseph Scott Tomenson.

The Cobalt Central Silver Mining Company, Limited. Capital, \$500,000, in shares of \$1.00 each. Head office: New Liskeard, Ont. Provisional directors: Messrs. Thomas McCamus, Donald Stewart, Arthur Wentworth Roebuck, Fergus Lawrence Hutchinson and Donald Harrison Walkinshaw.

BRITISH COLUMBIA.

The A. R. Williams Machinery Company of Vancouver, Limited. Capital, \$100,000, in shares of \$100 each.

Northern Ventures, Limited, Victoria, B.C. Capital, \$10,000, in shares of \$100 each.

Britannia West Copper Company, Limited. Capital, \$500,000, in shares of \$5.00 each.

Boundary Mining and Exploration Company, Limited. Capital, \$200,000 in shares of \$1.00 each.

The Otter Creek Development Company. Head office: Toledo, Ohio. Capital, \$20,000, in shares of \$1.00 each. Head office in Canada is at Atlin, B.C. Alfred Carmichael, Atlin, attorney for the company.

Bullion Hydraulic Mining Company. Head office: Wilmington, Delaware. Capital, \$250,000, in shares of \$100 each. Head office in British Columbia is situated at Bullion. Attorney for the company John B. Hobson, Bullion.

Cornell Operating Company. Head office, Seattle, Washington. Capital, \$14,000, in shares of \$1.00 each. Head office in British Columbia is situated at Van Anda, Texada Island. Attorney for the company, Mr. A. G. Deighton, Van Anda.

CATALOGUES.

A pamphlet on the Westinghouse Alternating and Direct-Current Motors, No. 7049, has been issued by the Westinghouse Electric & Manufacturing Company, Pittsburg, Pa.

Northern Electrical Manufacturing Company, of Madison, Wis., have issued a pamphlet descriptive of the Northern Single Voltage Variable Speed Systems. All the motors manufactured by this Company are illustrated and the mechanism carefully explained.

Canadian Westinghouse Company, of Hamilton, Ont., have issued a circular No. 1128, descriptive of the small power motors they manufacture. Some of these small motors are merely of sufficient power to run a neostyle or other small machines needing but 1-20 horse power.

Vertical engines of the Class VS5, are treated of in the Sturtevant Bulletin No. 125, recently issued by the B. F. Sturtevant Company of Hyde Park, Mass. These engines are high speed and automatic, and are adapted for all classes of work requiring maximum power in minimum space.

The Allis-Chalmers Company, represented in Canada by Allis-Chalmers-Bullock, Limited, of Montreal, have issued Bulletin 1413, dealing with cyanide plants and their equipment. This is much more comprehensive than the usual commercial catalogue, and should be in the hands of all who are interested in the cyaniding of ores.

Westinghouse Electric & Manufacturing Company of Pittsburg, Pa., have sent out Circular No. 1134, describing the electrical and mechanical brakes for Westinghouse Type K Motors. Also Circular No. 1129, describing Westinghouse No. 119 Railway Motor for Direct-Current Service.

The Carter Auto-Magnetic Ore Separator Company, 123 Liberty street, New York, are sending out a pamphlet descriptive of the Carter Auto-Magnetic Ore Separator. This separator will not only operate on iron ore but is also specially adapted for the separation and removal of iron from gold or platinum bearing sand, or in fact from any substance where an admixture of iron is objectionable or injurious.

Sturtevant Mill Company, Harrison Square, Boston, Mass., has issued a well illustrated descriptive pamphlet of their Rock and Ore Crushers. These include coarse breakers having capacities from 8 to 80 tons per hour, when the jaws are set to 2 inches, as well as Roll Jaw Fine Crushers, crushing to half inch without screens. It

is claimed that no other single machine can reduce large blocks of hard rock to half inch without screens, and that they never clog.

The De Le Vergne Machine Company, of New York, has just put out a very handsome descriptive catalogue and price list of the Hornsby-Akroyd Oil Engine. Fourteen thousand of these engines are now in use, showing that this is an honest engine at an honest price. It is claimed that these engines have no equal for small and medium sized power and lighting installations, and the United States Government is using hundreds of horsepower Hornsby-Akroyd engines in connection with the wireless telegraph stations, fortifications and light-houses, where hundreds of lives might be sacrificed by a momentary failure of power.

A very handsome, well illustrated bulletin (No. 1504) has been issued by Allis-Chalmers-Bullock, Limited, Montreal. It describes the Allis-Chalmers steam turbines and generators. There is a great deal of interest in this subject just now, and these turbines should attract more than usual attention owing to the balance pistons and the arrangement of the blading. The balance piston is a simple yet effective device which will be found fully described in the pamphlet under consideration. The Allis-Chalmers system of blading differs from the older methods in that each blade is individually formed by special machine tools, so that at its root it is of angular dovetail shape, while at its tip it has a projection.

The B. F. Sturtevant Company, Hyde Park, Mass., has issued Bulletin 131 descriptive of its horizontal engines. The Sturtevant Horizontal Centre-Crank Engines of Class H. C. 1 have all the features desirable for the driving of direct connected generators, for which purpose they were particularly designed. Modifications insure successful operation, as independent engines. Ample bearing surfaces, abundant lubrication, and light, but strong parts, all admit of very high speed, which may be closely regulated by the automatic governor.

The B. F. Sturtevant Company has issued Bulletin 128 descriptive of their Economizers. The Sturtevant Economizer has the pipes arranged "staggered" instead of in straight rows, thereby greatly increasing efficiency. A saving of 10 per cent. to 20 per cent. in fuel is effected by supplying the boiler with water at a temperature above boiling point. The boiler capacity is practically increased from 20 per cent. to 40 per cent., for practically all the heat passing through the boiler heating surfaces is used for vaporizing the water. The Sturtevant Economizer is made in two classes, the "Standard" and "Pony." The smaller type is commonly used in plants from 50 to 500 h.p., while the Standard is better adapted for capacities of 350 h.p., or over. The general office and works of the B. F. Sturtevant Company are at Hyde Park, Mass.

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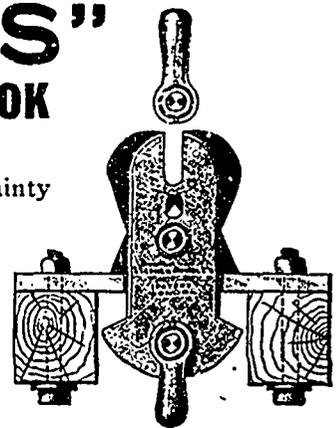
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Gold, Silver, Copper, Iron, Asbestos, Mica, Plumbago, Phosphate,
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ORNAMENTAL AND STRUCTURAL MATERIALS IN ABUNDANT VARIETY.

The Mining Law gives absolute security to Title, and has been specially
framed for the encouragement of Mining.

All mines belong to the government of the Province on all unsold lands and on all those sold since the 24th of July, 1880, but gold and silver are always reserved, whatever may be the date when the land was sold, unless it be otherwise mentioned in the patent.

The government grants PROSPECTING LICENSES for lands on which the mines belong to it, giving the holders of such licenses the first right to purchase the mines. In the case of lands where the surface alone is sold, the owner of the surface may be expropriated if he refuses an amicable settlement.

The price of prospecting licenses is \$5.00 per 100 acres on surveyed lands and per square mile on unsurveyed lands. If the surface has already been sold, the price is only \$2.00. They are valid for three months and are renewable at the discretion of the Minister.

When mines are discovered, they can be bought or leased from the government. The purchase price is as follows :

Mining for superior metals on lands situate more than 12 miles from a railway in operation, \$5.00 per acre, and on lands situate less than 12 miles from such a railway, \$10.00 per acre ;

Mining for inferior metals—the price and the area of the concessions are fixed by the Lieutenant-Governor in council.

The words "superior metals" include the ores of gold, silver, lead, copper, nickel and also graphite, asbestos and phosphate of lime ; and the words "inferior metals" mean and include all the minerals and ores not included in the foregoing definition and which are of appreciable value.

MINING CONCESSIONS are sold in entire lots in surveyed townships or in blocks of not less than 100 acres in unsurveyed territories.

Patents are obtained subject to the following conditions :
The full price must be paid in cash : specimens must be produced

and accompanied by an affidavit ; a survey at the cost of the applicant must be made on unsurveyed lands ; work must be bona fide begun within the two years.

Mining licenses giving the right to work the mine and dispose of its products, are granted on payment of a fee of \$5.00 and a rent of \$1.00 per acre per annum. Such licenses are valid for one year and are renewable on payment of the fee and of the same rent. They may cover from 1 to 200 acres for one and the same person and must be marked out on the ground by posts. The description or designation must, however, be made to the satisfaction of the Minister.

Persons working mines must send in yearly reports of their operations to the government.

The attention of the public is specially called to the new territory north of the height of land towards James Bay, which comprises an important mineral belt in which remarkable discoveries of minerals have already been made and through which the New Grand Trunk Pacific Railway will run.

The government has made special arrangements with Mr. Milton L. Hersey, 171 St. James Street, Montreal, for the assay and analysis of minerals at very reduced rates for the benefit of miners and prospectors in the Province of Quebec. Tariffs of assays can be obtained on application to him.

The Bureau of Mines at Quebec, under the direction of the Superintendent of Mines, will give all the information asked for in connection with the mines of the Province of Quebec and will supply maps, pamphlets, copies of the law, tariff of assays, etc., to all who apply for same.

Applications should be addressed to :

THE HON. MINISTER OF COLONIZATION, MINES & FISHERIES,

PARLIAMENT BUILDINGS, QUEBEC

Ontario's

MINING LANDS

THE Crown domain of the Province of Ontario contains an area of over 100,000,000 acres, a large part of which is comprised in geological formations known to carry valuable minerals and extending northward from the great lakes and westward from the Ottawa river to the Manitoba boundary.

Iron in large bodies of magnetite and hematite; copper in sulphide and native form; gold, mostly in free milling quartz; silver, native and sulphides; zincblendes, galena, pyrites, mica graphite, talc, marl, brick clay, building stones of all kinds and other useful minerals have been found in many places and are being worked at the present time.

In the famous Sudbury region Ontario possesses one of the two sources of the world's supply of nickel, and the known deposits of this metal are very large. Recent discoveries of corundum in Eastern Ontario are believed to be the most extensive in existence.

The output of iron, copper and nickel in 1903 was much beyond that of any previous year, and large developments in these industries are now going on.

In the older parts of the Province salt, petroleum and natural gas are important products.

The mining laws of Ontario are liberal, and the prices of mineral lands low. Title by freehold or lease, on working conditions for seven years. There are no royalties.

The climate is unsurpassed, wood and water are plentiful, and in the summer season the prospector can go almost anywhere in a canoe.

The Canadian Pacific Railway runs through the entire mineral belt.

For reports of the Bureau of Mines, maps, mining laws, etc., apply to

HON. FRANK COCHRANE,
Commissioner of Lands and Mines.

or
THOS. W. GIBSON,
Director Bureau of Mines,
Toronto, Ontario.

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Copies of the Mining Law and any information can be had on application to

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HALIFAX, NOVA SCOTIA.

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DOMINION OF CANADA

SYNOPSIS OF CANADIAN NORTH-WEST MINING REGULATIONS.

COAL—Coal lands may be purchased at \$10 per acre for soft coal and \$20 for anthracite. Not more than 320 acres can be acquired by one individual or company. Royalty at the rate of 10 cents per ton of 2,000 pounds shall be collected on the gross output.

QUARTZ—A free miner's certificate is granted upon payment in advance of \$7.50 per annum for an individual, and from \$50 to \$100 per annum for a company, according to capital.

A free miner having discovered mineral in place, may locate a claim 1,500 feet x 1,500 feet.

The fee for recording a claim is \$5.

At least \$100 must be expended on the claim each year, or paid to the mining recorder in lieu thereof. When \$500 has been expended or paid, the locator may, upon having a survey, made, and upon complying with other requirements, purchase the land at \$1 an acre.

The patent provides for the payment of a royalty of 2½ per cent. on the sales.

Placer mining claims generally are 100 feet square ; entry fee \$5, renewable yearly.

A free miner may obtain two leases to dredge for gold of five miles each for a term of twenty years, renewable at the discretion of the Minister of the Interior.

The lessee shall have a dredge in operation within one season from the date of the lease for each five miles. Rental \$10 per annum for each mile of river leased. Royalty at the rate of 2½ per cent. collected on the output after it exceeds \$10,000.

W. W. GORY,

Deputy of the Minister of the Interior.

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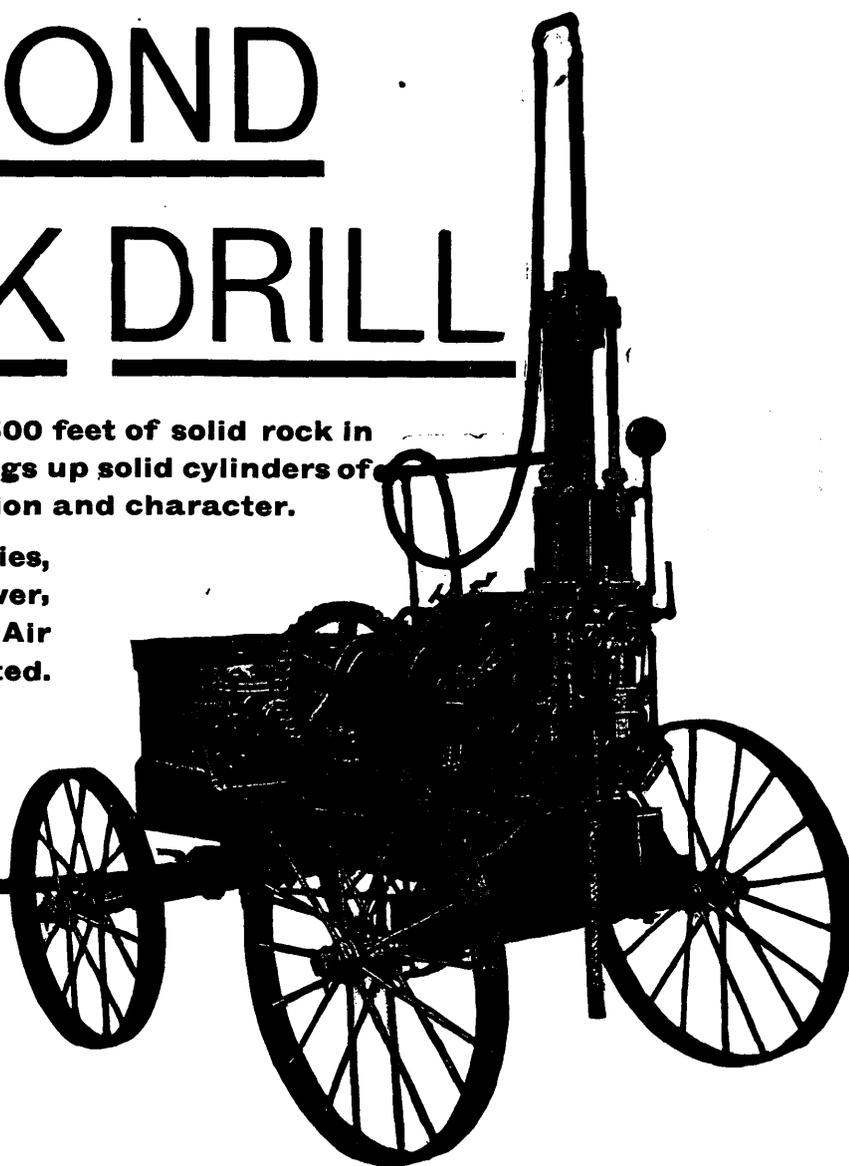
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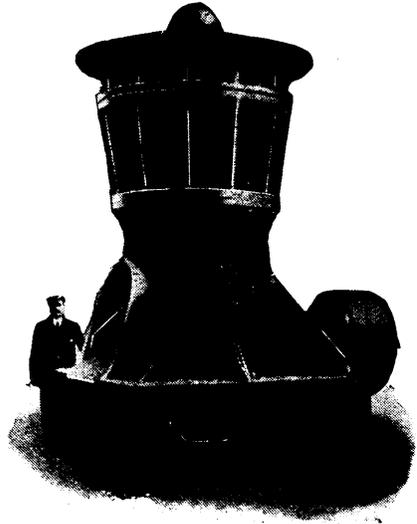
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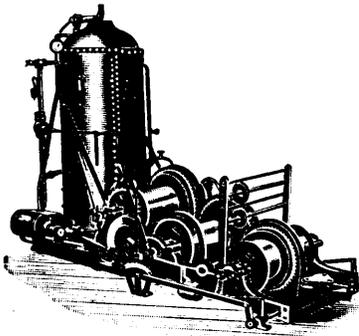
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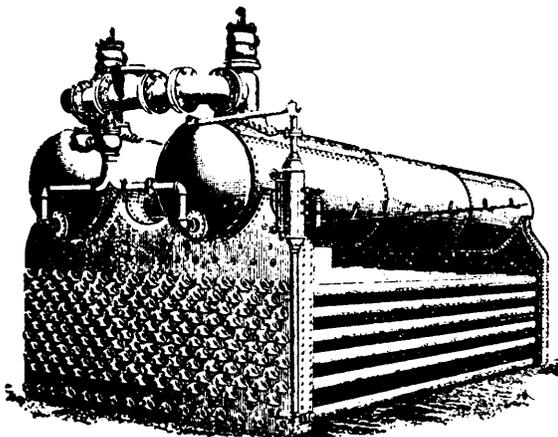
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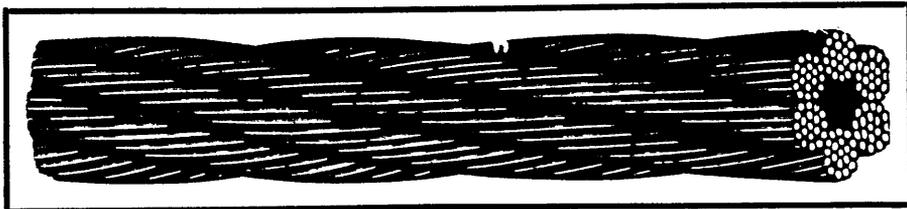
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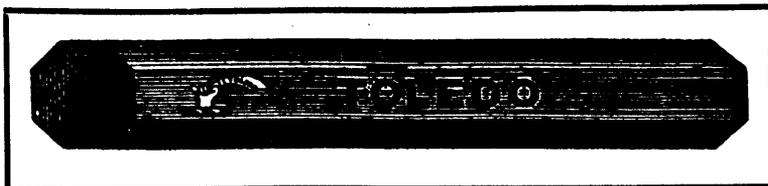
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