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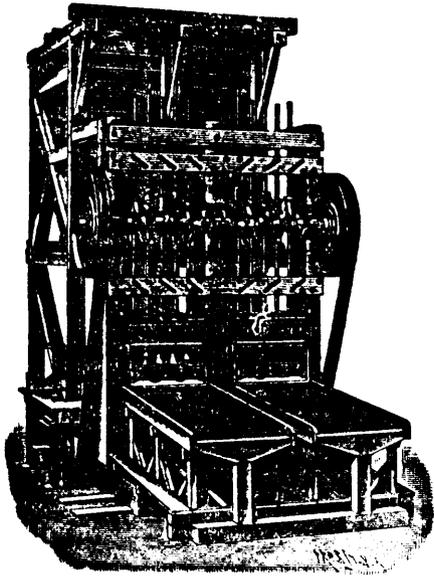
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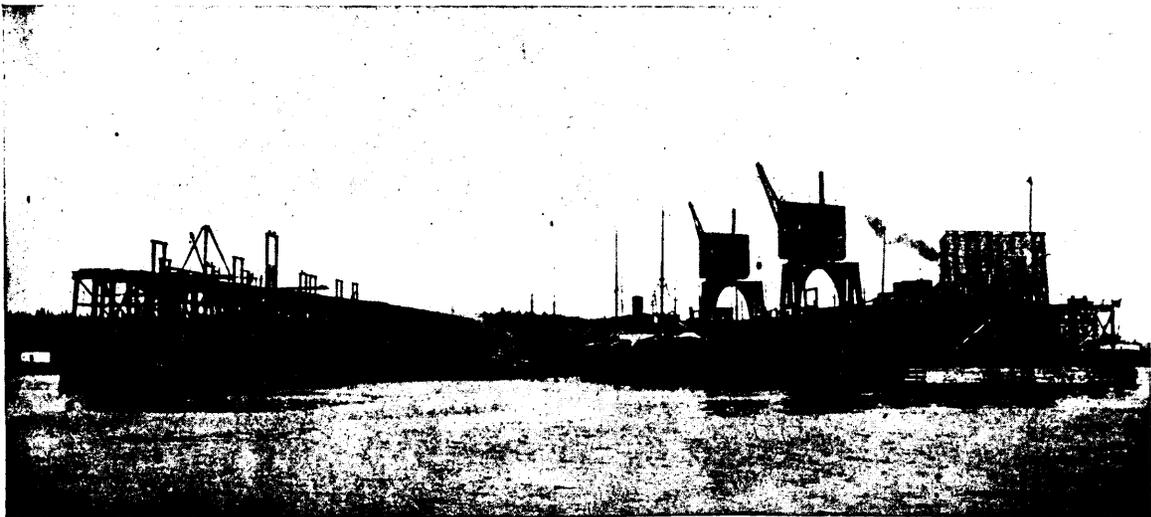
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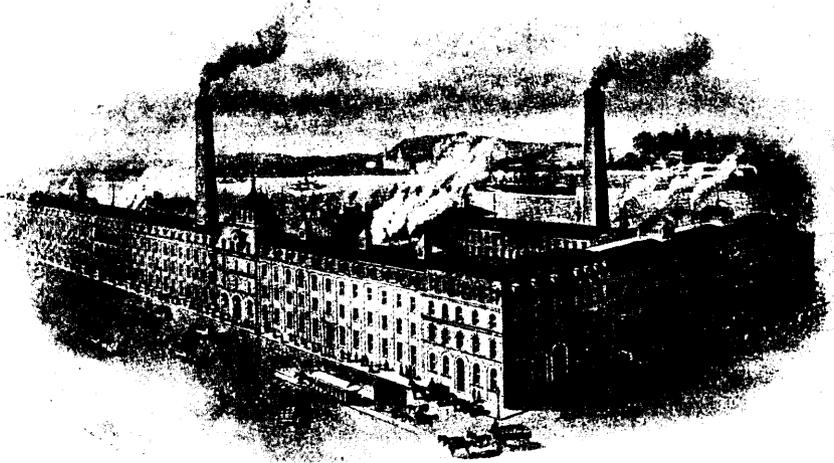
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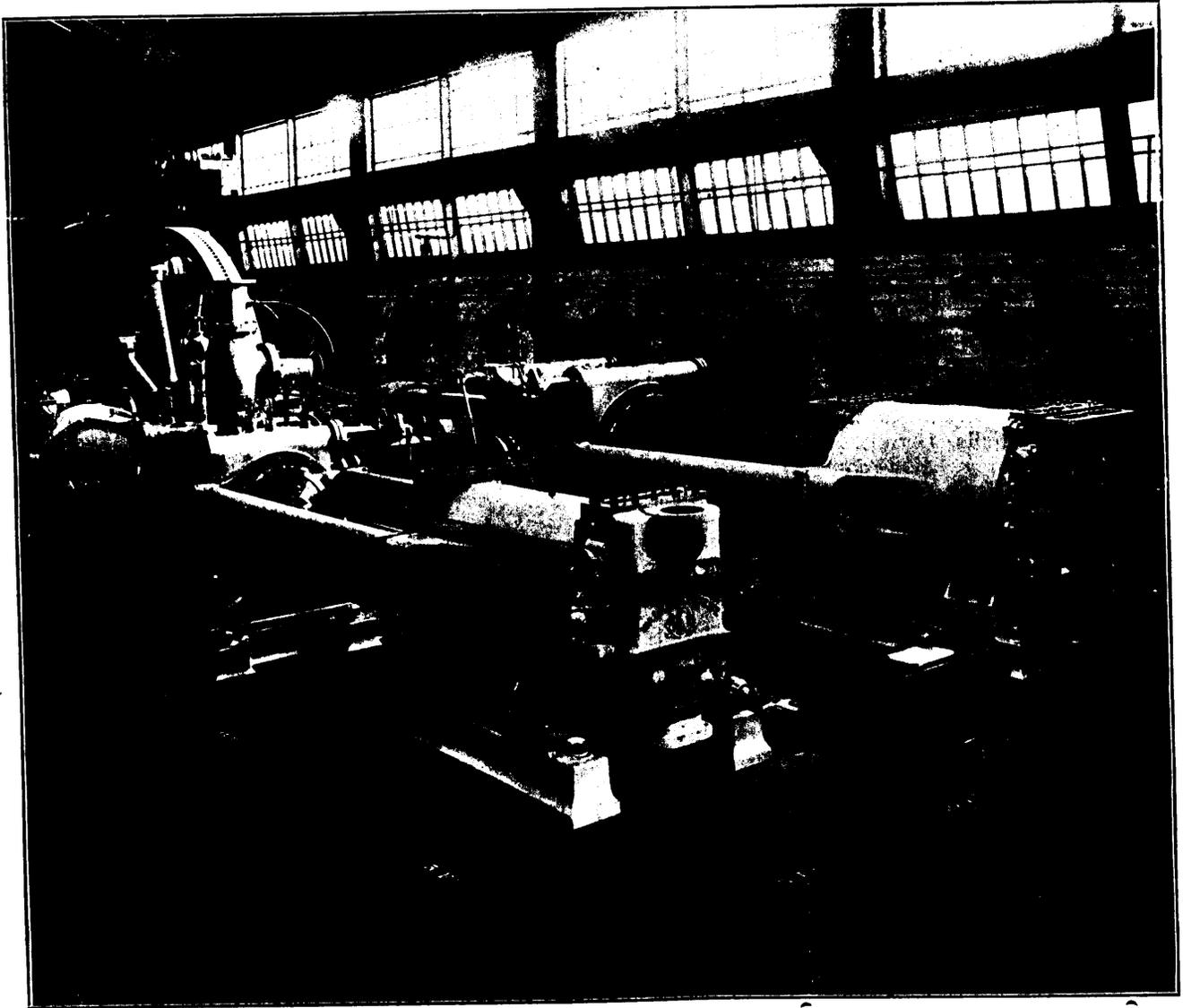
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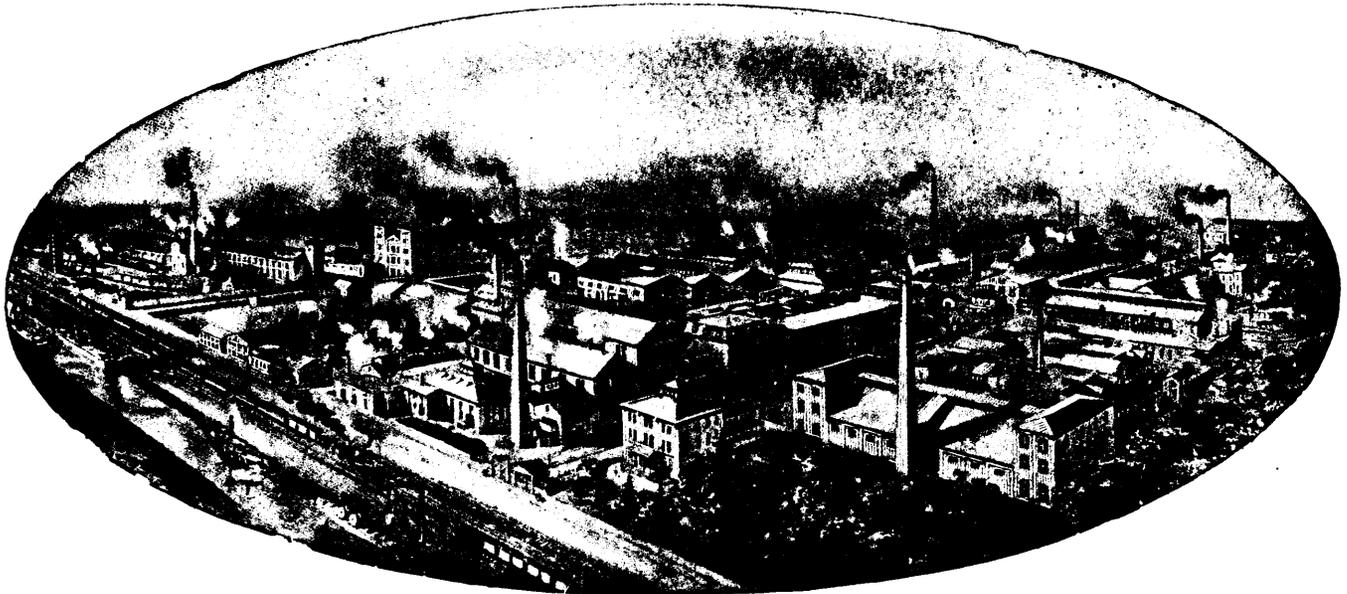
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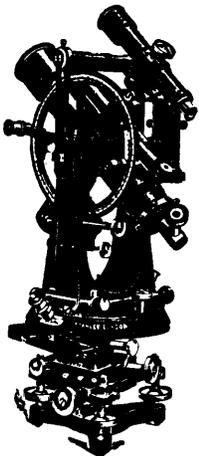
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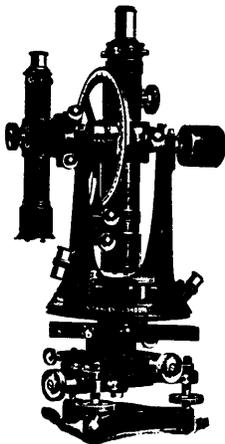
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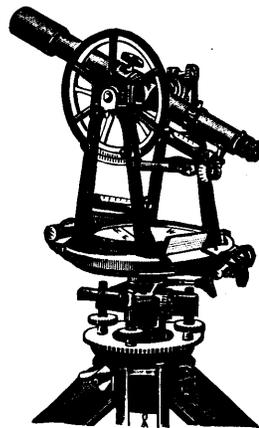
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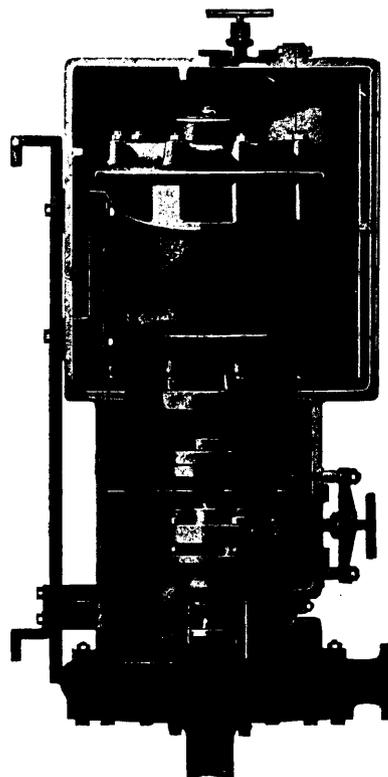
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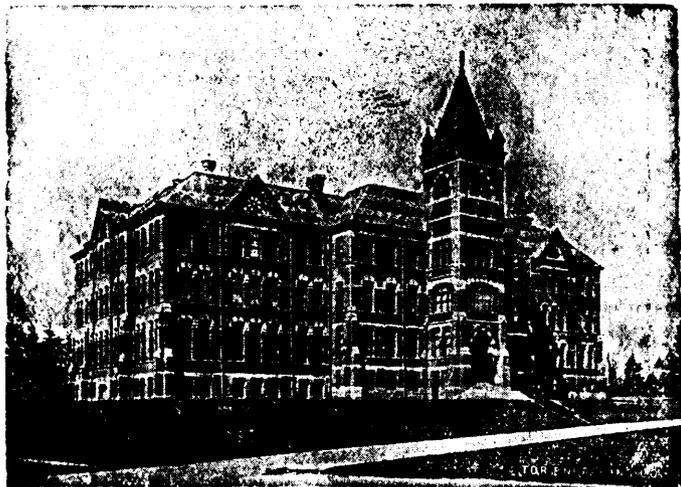


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Incorporated by Act of Parliament 1898

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(B) The establishment of a central reference library and a headquarters for the purpose of this organization.

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(D) To encourage and promote these industries by all lawful and honourable means.

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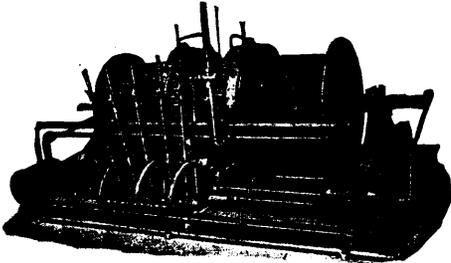
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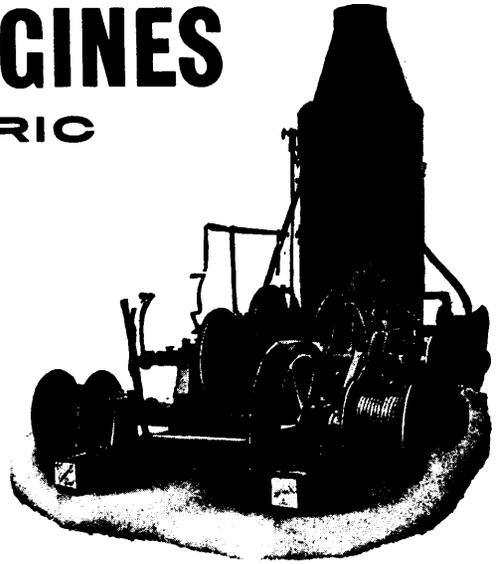
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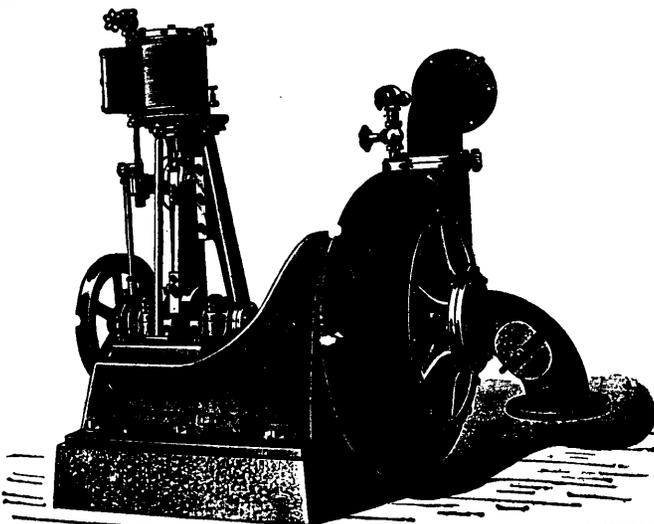
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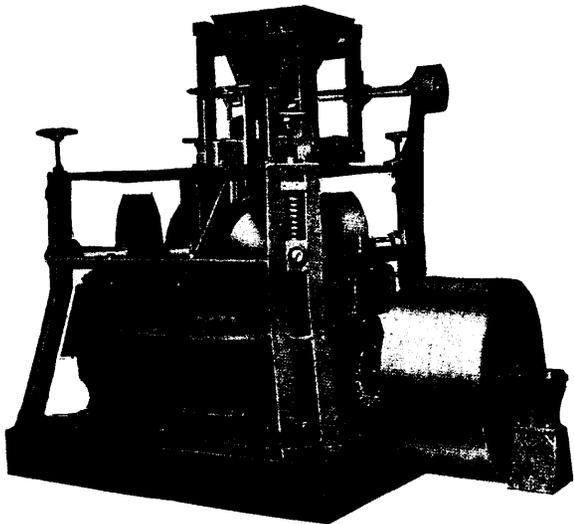
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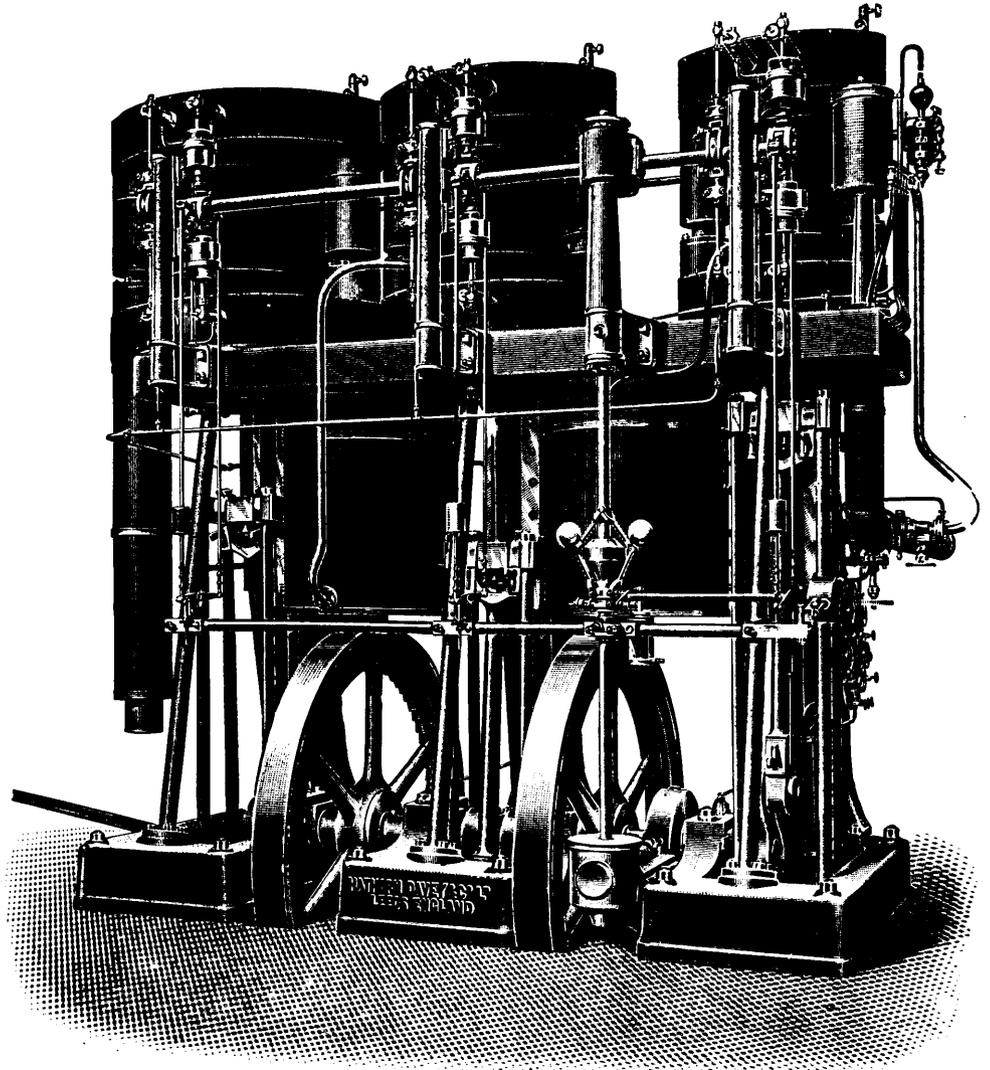
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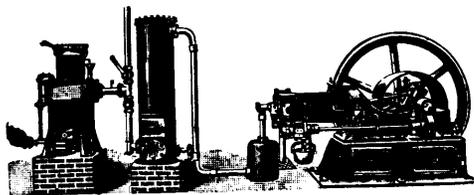
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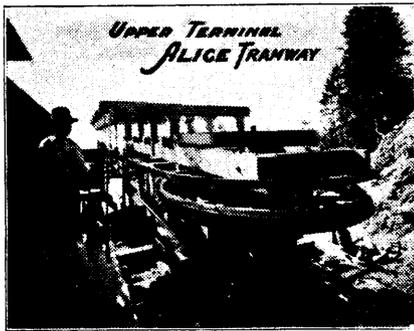
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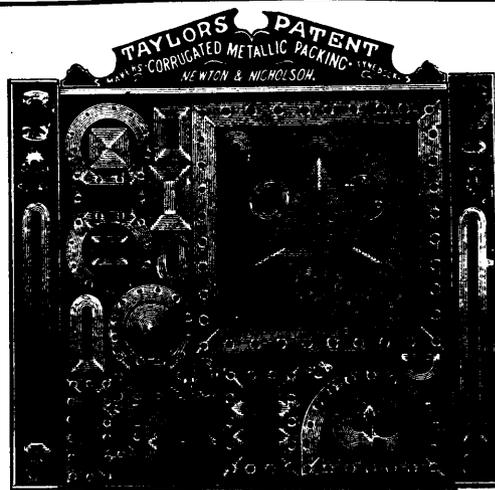


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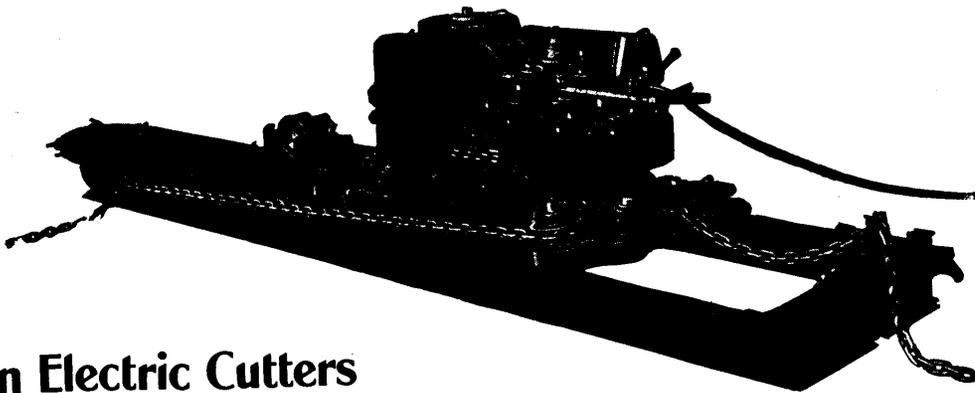
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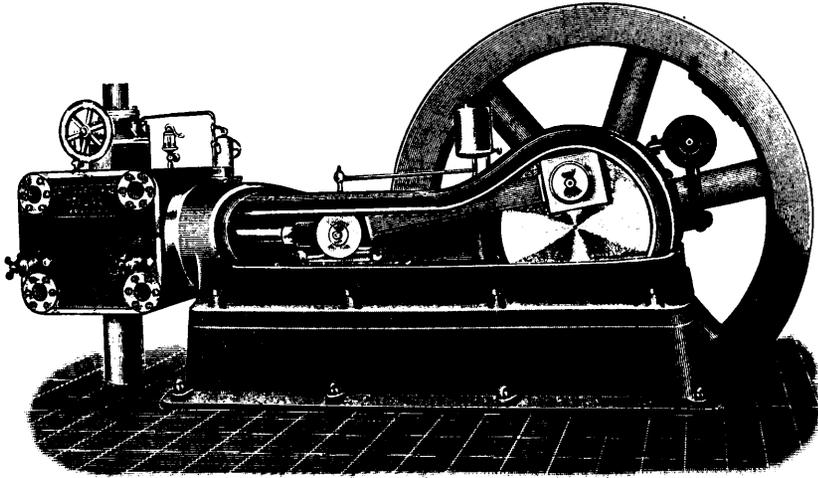
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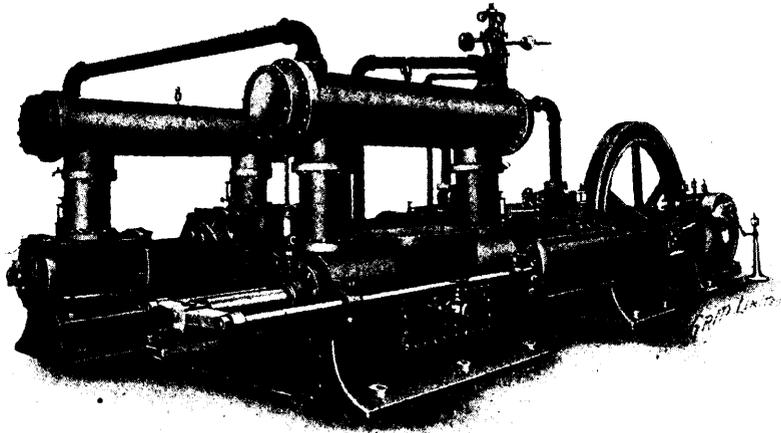
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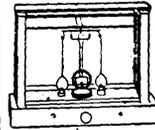
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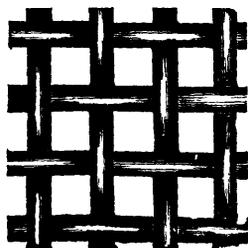
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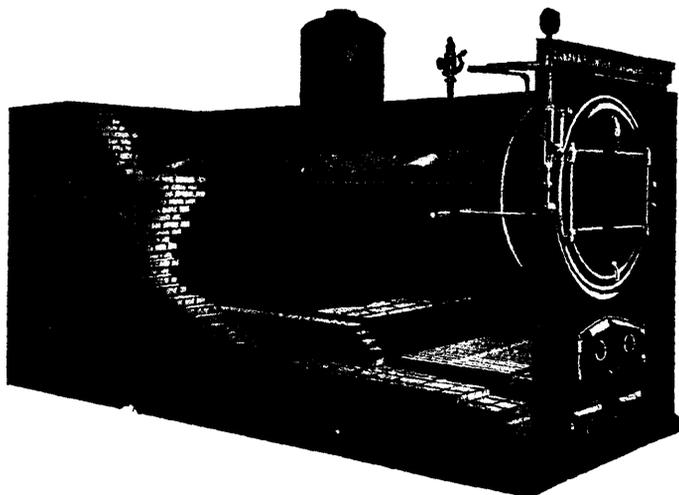
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# THE CANADIAN MINING REVIEW

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### CONTENTS.

	PAGE
EDITORIAL COMMENT.....	107
EDITORIALS:	
The Revival in Canadian Mining.....	111
Some More Le Roi Circulars.....	112
Oil in the West.....	113
The Proposed Revision of the Ontario Mining Law.....	114
Asbestos Mining in Quebec.....	116
PAPERS:	
Occurrence of Hematite North of Little Current, Georgian Bay. By S. Dillon-Mills.....	119
Reported Resumption of Operations at the Pilot Bay Smelter, B.C.....	122
Canadian Graphite Developments.....	123
On the Examination and Valuation of Mines (continued). By John E. Hardman, S.B., M.A.E., etc.....	124
The Retirement of Mr. Graham Fraser.....	126
CORRESPONDENCE:	
The Proposed Revision of the Ontario Mining Laws.....	127
Ontario Miners' Meetings.....	128
The Month in British Columbia.....	129
Ontario Mining Intelligence.....	130
Nova Scotia Mine Intelligence.....	131
Book Notices.....	131
Mining Men and Affairs.....	132
Dominion Government Bounties.....	133
Mining Statistics.....	133
Company Meetings.....	134
Coal Mining Notes.....	137
Mining Notes.....	138
The Zinc Commission.....	141
U.S. Coal and the Ontario Market.....	141
Company Notes.....	141
Mining Incorporations.....	141
Industrial and Machinery Notes.....	142

issue, but from a casual glance through them, they appear to us to contain much exceedingly useful information, concisely put together. It is now many years since we first urged on the Department the importance of undertaking a work of this character, and it is therefore gratifying to know that our constant advocacy has at length borne fruit. We congratulate Dr. Haanel on his initiative.

"Fairy tales, fairy tales, beautiful fairy tales." Such was the refrain of a comic opera ditty, popular a year or so ago. But as one reads the local newspapers of the country, the great fundamental truths this charming song teaches, hid though they be under a flippant expression, come deeply home to us, and extract from a heaving bosom the regretful sigh. The dear gullible public dearly loves to be gulled, and like the good caterer that it is, the press serves up its little odoriferous and spiced delicacies of fiction in and out of season. Then comes a disagreeable dyspeptic interloper, by disposition unromantic, and forthwith besprinkles that fair dish with the carbolic acid of truth, so that it may no longer be swallowable. What a shame, then, to declare that the great discovery of diamonds in New Ontario is but a mere canard!

The *Suburban*, published at Rockingham, N.S., strongly advocates the appointment by the Nova Scotian Government of a duly qualified official to "look after the iron interests of the province with a view more especially to encouraging the development of native ores." Our contemporary suggests that it is not sufficient to make a mere temporary appointment to admit of an enquiry as to existing conditions and resources, but that the discovery, exploration and utilization of local iron ore deposits, in addition to those now known to occur, is a matter of such paramount importance that money would be well spent in retaining the services of a competent iron expert as a permanent member of the staff of the Mines' Department. The suggestion of a permanent official at this stage is hardly a happy one, but an investigation by a disinterested competent "outside" man would no doubt serve a good purpose.

The Mines Branch of the Department of the Interior, under Dr. Haanel, has commenced the publication of a series of monographs on the economic minerals of Canada, of which the first two, just issued, deal respectively with mica and asbestos, and are prepared by Mr. Fritz Cirkel, M.E., of Montreal, who has devoted much attention and special study to these subjects. We have not the time nor the space to review these reports in this

Reports from the Atlin gold area in Northern British Columbia indicate that the past season has again afforded exceptionally good results, the gold yield having, it is estimated, largely exceeded last year's production of \$530,000. The day of the individual miner is now, however, practically over, and the future of the district is entirely dependent on successful operation by big corporations using the most modern and economical gold-saving methods. The success of dredging appears meanwhile to be reasonably well assured, the British America Dredging Company having obtained, it is stated, this season promising results,—as much as \$3,000 having been recovered in a run of twelve hours. Another dredge commenced work in September; while much is hoped from the use of steam shovels, a first plant of this character having been installed by the Northern Mines, Ltd., during the summer. Some large clean-ups were also made by hydraulic companies operating in the district during the season, one undertaking being credited with a recovery of \$150,000, and another of \$60,000.

As a number of erroneous or inaccurate reports have been circulated in connection with the offer made by the Dominion Government to Dr. F. D. Adams, to assume the Directorship of the Geological Survey of Canada, it is perhaps advisable to mention the circumstances which compelled him, to the great regret of so many of his friends among the mining men of the country, to decline the appointment. Dr. Adams occupies as, of course, is well known, the Chair of Geology at McGill University, and enjoys in a high measure the confidence of the Faculty and the respect of the students who are privileged to take his course of lectures. He himself realizes that in this capacity he is performing a work of great usefulness and he therefore feels that he would not be warranted in resigning a duty which is interesting and congenial, to undertake the trust offered him in the Government service, unless he were assured that the conditions were such as would enable him to achieve a notable success in that field. After, therefore, giving the matter careful thought, Dr. Adams has finally decided to remain at his present

Outsiders, it is a well known saying, often see more of the game than the players thereof. We consider it therefore worth while to extract the following paragraph from a recent leading article published in the *Mining Reporter* of Denver, Colorado: "The rehabilitation of the mining industry in Canada is being accomplished rapidly and there are many instances of a progressive spirit in this respect. Not the least of these is the announced decision of the Ontario Government to revise the mining laws for that province. While this will be no slight task, it will be no less welcome to those in the mining industry. Indeed the recent discoveries of rich cobalt and silver ores in the Timiskaming

district have given rise to some incidents which seem to make such a revision imperative and the readiness with which the task is taken up is commendable. That there are many other opportunities for improvement and reform is of course apparent to many who have been closely identified with mining in different parts of the Dominion, but we believe that we may safely rely on the evidences of an alert and progressive spirit to remedy these difficulties in the order of their relative importance."

It is a matter of regret to note that The Port Hood Coal Co., in Inverness County, C.B., is in the hands of the Eastern Trust Company, as trustee for the bondholders. The company's trouble in the past, was that the cost of production was so near the selling price that there remained no margin of profit, sufficient even for payment of fixed charges. In consequence debts accumulated and formed a burden under which relief was only possible by putting matters in the hands of a receiver. The present manager, Mr. R. J. Bell, is represented to be efficient, economical and energetic, and under his administration the condition of the mine has greatly improved in all respects. It is now able to maintain a continuous daily output of 500 to 600 tons, at a cost price so far below selling price as to yield a fair profit if the accumulated fixed charges were removed. Some criticism has been made, and perhaps justly, that the size of the staff was disproportionate to the output, and should be cut down. All such matters will undoubtedly be dealt with when reorganization is attempted. Other properties in Inverness County are likewise suffering from insufficient capital or deficient plant, so that the production for 1905 will fall far short of the yield made in 1904.

Ever since the seventies of the last century there have been occasional newspaper references to occurrences of oil on Manitoulin Island and, sporadically, holes have been bored in the hope of finding an oil field. During the last six or seven years this boring has been more or less continuous, without satisfactory results, until this last midsummer, when the hole bored on the Wikwimakong Indian Reserve showed a good quality and a large quantity of crude petroleum. Three or four holes were drilled to the south, and were all dry, but recently a hole was put down to the east of this first hole and the result is that a small gusher has now been struck that flowed several hundred barrels of oil in a few days. The oil was accompanied with a large volume of gas under high pressure, so that the well, in the language of the oil region, was both a "roarer" and a "gusher." The bulk of the gas has now escaped and the flow from the well is averaging between fifty and one hundred barrels per day. This well is important as indicating a probable addition of oil bearing lands to the oil fields of Canada. The shallow wells of the peninsula have been averaging

perhaps two to three barrels of oil per day each, by pumping; and during the last two or three years many wells have been sunk to a greater depth than formerly, in the hope of finding a second reservoir of oil at greater depth. This new field, if found to be permanent, will add greatly to Ontario's petroleum resources and will undoubtedly lengthen the life of the province as an oil producing country.

An unconfirmed rumor has it that the two deposits of hematite which are now working on Bell Island, Newfoundland, by the Nova Scotia Steel & Coal Co., and the Dominion Iron & Steel Company, respectively, have been found in place on both sides of Conception Bay, in which is situated Bell Island. It is understood that the first discovery was accidental, and was made near Clarke's Beach. Samples taken from this discovery, when examined at the works of the Nova Scotia Steel Company, are said to have been pronounced richer in iron than the seams now being worked. The two beds now working on the Island average approximately fifty per cent. of metallic iron (running, as a matter of fact, from 48 to 54 per cent.); the samples from the new find are reported to average 55 per cent. of metallic iron. The importance of this report, should it be proved true in every particular, can not be over-estimated in its influence upon the future of the iron and steel trade of the Dominion. The present satisfactory condition of the two plants situated on the Atlantic seaboard is evidence of the demand in Canada for the class of material they manufacture. The weakness of both corporations has always been that the character of the chief supply of ore necessitated an admixture of foreign ores in order to produce commercial brands of pig iron, so that the importation of many thousands of tons of foreign ore in the past has formed a conspicuous item in the annual reports of both companies. The advent of a higher grade of ore, of possibly different composition, will be most gratifying to the management of both companies. We hope in our next issue to be able to give fuller details of this alleged find.

The Lake Superior Corporation, as our readers are aware, is the successor to the Consolidated Lake Superior Corporation, which was proclaimed bankrupt about two years ago. The affairs of the re-constructed undertaking have, under new and conservative management, been put in good order, and the directors have just issued a report, published in another column, with which the shareholders have every reason to be satisfied. With the exception of a few disputed claims, the old indebtedness has now been liquidated, and the company will have, after the final settlements shall have been made, the balance of the treasury bonds in hand, amounting to probably over a million dollars, for the uses of the corporation. In the commendable desire to restore confidence in the undertaking and avoid even a semblance of "making a showing,"

have even erred on the side of over-cautiousness, and we are justified in stating that income might quite properly have been credited with an additional amount of approximately \$100,000. Again, the valuation at which the assets have been placed is the lowest possible one, and in this year's statement have been included and charged against the year's operations all the extraordinary expenses incidental to re-organization and the rehabilitation of works and property. We regard the future of the Company as being exceptionally promising, and with the high prices now obtainable for steel, and the present considerable demand for that product, the company starts a new year under peculiarly favorable auspices. It is also satisfactory to learn that recent developments at the Helen mine have appreciably increased the value of that property.

In a recent letter to one of our readers, who is greatly interested in the subject of electro-metallurgy of iron, Professor Jos. W. Richards, the head of the department of electro-metallurgy of Lehigh University and President of the Electro-Chemical Publishing Company, writes.—"I believe you are on the eve of some surprising results in electric furnace work. All that is now needed is the perfection of the electric furnace, so that it will run regularly and produce a steady quality of iron on a large scale. Perfect the furnace so that it runs as regularly as a blast furnace and you have the latter beaten, even *where fuel is cheap*. The reason. only  $\frac{1}{4}$  ton of fuel is theoretically needed in the electric furnace per ton of pig iron, the issuing gases can all be used in gas engines to produce power and  $\frac{1}{4}$  ton of fuel can be saved per ton of pig iron, including the fuel burnt for power. The only stumbling block now is the imperfection of the electric furnace as a metallurgical apparatus—its efficiency is all that could be desired."

The views of so eminent an authority are necessarily interesting and valuable; and it is worthy of note that Prof. Richards at once places his finger on the weak spot in regard to the immediate successful application of electric smelting to commercial uses. Meanwhile, it is unquestionably advantageous that all the possibilities entering into the commercial production of pig iron by the electric process should be proved, and as the commission appointed by the Dominion Government was not in a position to have made at the time several experiments, which suggest themselves as likely to settle certain important points, the erection of the experimental plant at Sault Ste. Marie upon the recommendation of the Superintendent of Mines is well justified. The results of the experiments that are to be made, will, it is believed, settle authoritatively some points that were not touched on by the commission, and whatever they may prove to be, cannot fail to add to the general knowledge of the subject of electro-metallurgy.

The report of the Directors of the Granby Company for the year ending June 30th last, makes very pleasant reading, and it affords us great satisfaction to be able to offer the Board most hearty congratulations on so excellent a showing. The Directors, it is true, could have exerted little effect in influencing the market price of copper, to which the increased profits are partly attributable, but they—with, of course, the loyal co-operation and assistance of a highly efficient mine and smelter staff—are directly responsible for the noteworthy economies in administration and production by which these costs have been reduced to the extraordinarily low figure of about \$3.04 per ton of ore mined—a record which two or three years ago would have been regarded as fringing on the impossible. Nor under the policy now being followed by the Company, do we believe the limit in this respect to have yet been reached, since smelting charges may yet be lowered, as a result of the further increase in the capacity of the works, which is now being made. We have referred to the general efficiency of the staff in British Columbia, but it is only fair in this connection to make special reference to the debt the company owes to the administrative abilities and technical skill which the general superintendent, Mr. A. B. W. Hodges, has displayed in the discharge of his duties. As we mentioned in a previous issue, the use of the automatic chargers in the smelter, a labor-saving device of great ingenuity invented by Mr. Hodges, represents a saving of many thousands of dollars a year, and this is but one instance of many of his very considerable capacity and devotion to the interests he serves. The output of the mines during the period reviewed has been maintained at practically the same level as in 1904, but the amount of copper, silver, and gold recovered appears to be less. This, however, does not imply that the values in the ore have decreased, but is explained on the grounds that no foreign matte was treated at the smelter. It is, in fact, interesting to note that at the average price at which the copper was marketed this year, namely, 14.36 cents, realized on a recovery of 2.41 per cent. Cu, a return of \$6.05 in this metal was realized alone. Meanwhile the company has materially increased its holdings by the purchase of several valuable adjoining properties in the Phoenix Camp, and has a cash surplus in hand of \$1,554,875.27. A few more showings like this and who shall have the temerity to question the mineral potentialities of British Columbia?

For many years Dr. Drummond has been systematically developing—with what successful results the world knows—a rich vein of poetry, which is among the gifts Nature has bestowed upon him. Having of late turned his attention to mining he is exploiting an equally rich vein of, however, a rather different character, in the Cobalt region. It is satisfactory to note from the following delightful lines, which we are permitted to publish, that in fol-

lowing the prosaic pursuit of the miner, the Doctor has not quite abandoned the pursuit of the Muse:—

BLOOM.

### A Song of Cobalt.

O! the blooming cheek of beauty, tho' it's full of many a peril,  
Where's the miner doesn't love it, for he thinks he knows the girl,  
While the bloomer, O! the bloomer! of emancipated She,  
May it bloom and promptly wither every seventh century.

O! the early bloom of blossom on the apple tree in June,  
Is there mortal having seen it, can forget the picture soon?  
And the wine of red October where Falernian juices flow,  
I have sipped the blooming beaker (in the ages long ago!)

O! the bloom along the hill-side shining bright among the trees,  
When the banners of the Autumn are flung out to every breeze,  
How it blazes—how it sparkles, and then shivers at a breath,  
What is it when all is spoken but the awful bloom of Death?

O! I've watched the roses' petals, and beheld the summer sun  
Dipping down behind Olympus when the great day's work was done,  
But to-day I'm weary, weary, and the bloom I long to see  
Is the bloom upon the Cobalt—that's the only bloom for me!

W. H. D.

Kerr Lake, Cobalt.

Some of the leading newspapers published in the Nelson and Slocan districts of British Columbia continue to criticise the work of the zinc commission. Thus the Kaslo *Kootenarian* remarks that having ascertained the opinion of local mining men, it is in a position to say that "the report of the zinc enquiry commission will be of no practical benefit to the industry and may result in positive injury. The advice of those who were most interested and are best capable of sound judgment was ignored by the permanent official—in the absence of the minister; the field examination has only skimmed over the country and the sampling of the larger deposits has become a farce; mine owners and claim owners have become indifferent to the work of the commission, its members are received politely but there in-

terest ends," while the *Nelson Daily News*, confirming these allegations, adds that no sampling, still less any adequate preparation for the separating tests promised, have been attempted.

It is further alleged that necessary data, which should constitute "a most important branch of the enquiry," is being sought by means of a circular letter to mine operators and others, "propounding a multitude of questions, many of which can only be properly answered by a technical expert when supplied with the necessary information which only the large operating companies possess;" and that it would appear impossible to complete, "even the casual examination now being conducted within the time set." On the other hand, the same newspaper contains an interview with Mr. Philip Argall, in which that gentleman is reported as having stated that the commissioners had practically completed the examination of zinciferous ore bodies of the Sandon and Slocan districts; that he was not sure, although he had at first held a different opinion, that it would be necessary to continue the enquiry beyond the time originally contemplated; and that he would "not be surprised" if the field work were practically completed before the approach of settled winter weather. Regarding the endeavour to secure information from persons interested in the investigation, by the sending out of circular letters, it may be remarked that this is no novel idea but a method adopted with excellent results under similar conditions by the United States Geological Survey. Of course, there may be real cause for grievance, apart from the fact that the Dominion Superintendent of Mines has refused to be governed by the recommendations or advice of certain mine owners, and if so, it is to be hoped they will be remedied. But surely, to attempt to discredit the work of the commission and attempt to discount the value of the report, before it has been made, is unwise and decidedly against the self-interests of those who hope most to benefit as a result of the enquiry. Both Mr. Ingalls and Mr. Argall are men of high professional standing, and it is unlikely that they will therefore subscribe to a report that is incomplete. In consequence, they should be relied on to suggest to the Government the advisability of extending the scope of the investigation should it appear to them that the present provisions are inadequate to admit of the subject being thoroughly dealt with.

#### THE REVIVAL IN CANADIAN MINING.

The mining situation in Canada is at the present time a great deal more promising than it has ever been. In Nova Scotia the outlook for the iron and steel industry has considerably improved, as is evidenced by the recently issued report of one of the big undertakings, the Dominion Iron & Steel Co., which, although handicapped by a load of liabilities formerly incurred, is now earning very satisfactory profits. The condition of the coal trade in this province is also encouraging, and it is anticipated that

business this winter will be exceptionally good. In Quebec asbestos mining is very active in the Eastern Townships, it being estimated that the profits of three companies alone will be approximately three-quarters of a million dollars, while the new discoveries of gold, copper and asbestos in the Chibogamou region should, provided the mining laws of the province are amended to afford proper encouragement to prospecting and development, stimulate renewed endeavour along these lines and help revive interest in the mineral resources of what is undoubtedly a rich country. In Ontario a period of unprecedented mining development may be anticipated for the near future, as a result not only of the important new discoveries at Cobalt—and from information in our possession we are strongly inclined to the belief that this rich mineral belt will be found to extend beyond the limits of the present explored area—but in other mining sections of the province, notably the western gold fields, a noticeable change for the better has, during recent months, taken place, as regards the re-habilitation of concerns which had come to grief in consequence of former mismanagement and other disabilities incidental to stock jobbery or over capitalization, while, also, there appears to be an increasing disposition on the part of capitalists to invest money in the opening up of undeveloped properties. There can be no doubt that the promised revision of the mining laws, in accordance with the views and wishes of those chiefly concerned in the development of the mineral resources of the province, will be the one thing required to place the industry on a sound and substantial footing. The outlook in British Columbia is equally gratifying. Production is generally on the increase, so much so that the smelting works, we understand, are being taxed to their utmost limits, and arrangements are now being made for the re-operation of the long disused works at Pilot Bay, Kootenay Lake, as well as the smelter at Crofton on Vancouver Island. The most convincing proof, however, of improvement is the gradual increase in the number of profit-earning mines, and within the past few weeks dividends have been declared by the Le Roi No. 2 at Rossland, the Lucky Jim in the Slocan, the St. Eugene at Moyie and the Crow's Nest Pass Coal Company, while, during the month, the Granby Company has been able to announce most substantial profits on the past year's operations. In nearly every district new mines are being opened and the productive area is being steadily extended by the construction of railways into sections heretofore unprovided with adequate means of communication. Although the Yukon gold yield has of late years steadily diminished, by reason of the gradual working out of the rich creeks in the vicinity of Dawson, it is by no means unlikely that the prospecting now being systematically carried on in the territory will not fail to discover new gold areas. While, too, the inauguration of dredging; the preparations for working ground, not sufficiently remunerative to reward individual effort, but capable of yielding good returns if worked on a large scale; the step contem-

plated by the Federal Government of providing a system to afford miners a constant and ample supply of water for operating purposes; and last, but not least, the promising results attending the development of the copper mines in the White Horse district and of the new discoveries at Windy Arm may well be taken into consideration when the outlook is decidedly hopeful. On the whole, therefore, we can scarcely think that we are unjustified or over-optimistic in entertaining the belief that the mining industry in Canada is about to commence a new chapter in its history, which will be noteworthy as recording a period of remarkable prosperity and considerable expansion.

### SOME MORE LE ROI CIRCULARS.

The Le Roi controversy has already been waged *ad nauseam* and so far as the MINING REVIEW is concerned, we are anxious enough to drop the matter and allow the shareholders to form their own conclusions from the lengthy arguments with which they have been supplied by both parties to the dispute. However, for the sake of record, it may be noted that Mr. McMillan has issued another circular, in which certainly he makes out a very plausible case. He claims first, that his strong opposition to the amalgamation scheme is purely disinterested, as it would have been to his direct and immediate personal benefit to have endorsed the plan, since various inducements were held out for him to do so. He next contends that if the directors had followed the advice of Mr. J. H. Mackenzie, in April, 1904, by August the Company would have owed the Bank of Montreal between thirty thousand and forty thousand pounds in excess of the liquid assets. His other points are that the technical officials of the Le Roi Company agree with him in opposing the scheme, and that they were not consulted at all in the matter; that although the directors now express themselves dissatisfied with his management of the mine, that up to the time he left Rossland for England, two months ago, no complaint was made; that he has been kept in the dark concerning negotiations that have been in progress; and he regards as peculiar the fact that both Mr. Waterlow and Mr. Rolt, whose interests in the Company appear to be very small, should now disclose such anxiety for the scheme to go through. He condemns as a half truth the directors' statement that Mr. Mackenzie resigned last year because he disapproved of keeping the Northport smelter open, since Mr. Mackenzie was only temporarily employed, and in his letter to the Company recommended that the smelter be closed until there was sufficient ore to keep at least "four furnaces in operation, as economical smelting was impossible with only two furnaces running" Mr. McMillan states that since that time, important changes have been made at Northport, and cheaper smelting was done last year with two furnaces than was formerly effected by the operation of four furnaces. And he concludes a clever argument by express-

ing his willingness to recommend the payment of a dividend, for the year ending June 30, 1905, adding: "You will, no doubt, be told that if you consent to reduce your capital, you will, to quote from the Directors' Circular, have regular dividends in the future. This is a matter of opinion, and many competent observers in the West think otherwise. Let me remark here that if considered desirable the capital of Le Roi could be reduced without taking in these outside companies." The directors, in reply, point out that the professional officers referred to by Mr. McMillan, as joining with him in opposing the proposed amalgamation of the Le Roi, were Mr. Astley, an appointee of Mr. McMillan, who has all along been more or less in an infirm condition of health, and was thus unable to accompany Professor Brock in his examination of the mine; and the foreman, Trevorrow, who, "as Mr. McMillan is not himself a mining engineer," thus became the chief mining officer in the Company's service. It is further stated that Mr. Mackenzie, who has always been in favor of amalgamation with other mines, endorses the proposed arrangement, "If," as he points out in a letter addressed to the Board, and dated September 22nd last, "you receive your just proportion of the new consolidated company." This proportion, it is stated, will be left to Messrs. Bradley and Mackenzie to arrange. Mr. Mackenzie also states in the same letter regarding the Trail smelter contract, that, while exact figures have not yet been compared, "the present contract will save the Le Roi Company about seventy-five cents per ton, over and above the cost of shipping to Northport during the present year"; in other words, if Mr. Aldridge's offer had been accepted in August, 1904, the Company would have been saved in the meantime about eighty thousand dollars.

Relative to Mr. McMillan's attitude concerning the matter of a dividend, the directors regard that such a dividend could only be paid by the Company by borrowing the amount from the bankers upon the security of the floating assets. Furthermore, that it would be to the interest of the directors to recommend a distribution of profits, since under the Company's Articles of Association, they, with the exception of the Managing Director, receive no fees for their services, but are entitled with him to five per cent. of the amount of any dividend that may be paid. We have no wish to introduce the personal element; but as the public will find it difficult to discriminate in an argument which deals essentially with technical questions, the alternative suggests itself of considering what opinion should be given to the opinion of disinterested experts, such as Professor Brock and Mr. Mackenzie, than to the views of a less well-known engineer, such as Mr. Astley, or to those of a mine foreman, however clever a practical workman he may be. It seems that the directors have very prudently preferred to listen to the advice of the bigger men, while Mr. McMillan supports his contentions by quoting the opinions of, in sporting parlance, the "light weights."

## OIL IN THE WEST.

It would be a remarkable thing if the deposits of mineral oil, whose development has been of such importance to Kansas, Texas and California, had not their counterpart in the Western provinces of Canada. But it is one thing to presume the existence of petroleum and quite another thing to locate it in commercial quantities. After all, it is not so long since the production of crude oil anywhere in commercial quantities, except from the distillation of shale, was accomplished. There are plenty of men alive to-day, who can go back to the time when oil was skimmed from the seepages in Pennsylvania, and peddled as a lubricant and for medicinal purposes. If the discovery and utilization of petroleum has spread over the United States with extraordinary rapidity, there is still time for a similar development in Western Canada, when once a point has been discovered producing oil in paying quantities, where it can be readily marketed.

Petroleum was apparently first collected and used in Burmah on the banks of the Irrawady. Wells have been discovered there of great antiquity. They were dug by hand and the oil collected in vessels and hauled to the top. Of what the mortality from gas fumes must have been, there is no record, but as the oil business was a royal monopoly and the operators probably slaves, a high rate of mortality would not count. When this oil region was opened up under British rule no pressure of oil was got upon the sites of these old wells, but at a higher altitude in the same neighborhood. So that they were in all likelihood simply developed seepages, the oil having first been forced up through fissures, and having then spread down to lower levels through the surface soil.

The first recorded experience of Europeans with petroleum was in the time of Alexander the Great, some three centuries before Christ. We are told that in the district of Ecbatana, Alexander greatly admired a "gulf of fire which streamed continually as from an inexhaustible source, also a flood of naphtha not far from the gulf which flowed in such abundance that it formed a lake." He amused himself by sprinkling it over the ground and watching the fire spread without consuming anything. It occurred one day to one of his courtiers that it would be an excellent idea to anoint a human body with the naphtha and set fire to it. This interesting experiment was tried on a boy who submitted to it joyfully. The consequences were disastrous to the boy. The historian relates that he was an ugly boy but a good singer. What he looked like or how he sang afterwards he does not mention. But he does say that it was lucky the business took place in a bath where there was plenty of water. "As it was," he winds up, "they found it difficult to extinguish the fire, and the poor boy felt the bad effects of it as long as he lived." "Such digressions as these," as our ancient chronicler himself remarks, "the nicest readers may endure, provided they are not too long."

In Western Canada oil was first collected at what is known as the Aldredge seepage. Aldredge had a system of sluice boxes with riffles made of gunny sacks or woollen material and by this means used to collect some oil which he sold for axle grease and other purposes. The seepage is located on Cameron Falls Creek, in South-Eastern Alberta, a few miles from the British Columbia boundary line. The seepage is described as follows by Dr. Selwyn, who visited it in 1891:

"Cameron Falls Brook is a rapid mountain stream eight or ten yards wide. After following it up about a mile and a half on the left bank, Mr. Fernie, my guide, remarked that we must be close to where the oil had been found. He had scarcely spoken when, while still in the saddle and on the trail eight or nine feet above the brook, I noticed a powerful odor of petroleum. Descending to the edge of the water and stirring the stones and gravel in the bed of the stream, considerable quantities of oil at once rose to the surface and floated away. Crossing to the right bank it was again seen coming out of the bank some inches above the then level of the stream. Here, skimming it off the surface of a shallow pool, a wine bottle full was soon collected. This can now be seen in the Geological Survey Museum. Sixty or seventy yards below where the oil was seen, a rocky reef of grey siliceous dolomite crosses the creek and rises into a steep bluff on the left bank; on the right bank, seven or eight feet above the creek, a broad, thickly timbered flat extends for 150 yards to the base of the bordering mountains which culminate six miles to the south west at the boundary monument 6,000 feet above sea level."

The Rocky Mountain Development Co. and the Western Oil & Fuel Company, are now boring in this neighborhood.

On the British Columbia side of the range there are numerous and certainly very remarkable seepages of petroleum. The Flathead Valley Oil Lands Development Co. and the Dalles Oil Company of Portland, Oregon, are operating on the B. C. side. A good deal of the land in the Flathead Valley is tied up in one of those interminable and inextricable legal tangles in which British Columbia takes delight.

It might naturally be expected that definite developments would be obtained in this neighborhood first, and encouraging results are reported to have accompanied the small amount of boring that has been done. There are five organized companies operating in this district, two with headquarters in Victoria, B.C., one in Portland, Oregon, one in Vancouver, and one in Calgary. Practically no eastern capital, however, is interested, and all the companies are more or less hampered by shortness of funds.

Still another company is being organized in Vancouver to bore for oil in Cariboo where oil shale has long been known to exist in great quantities, but where seepages of petroleum have lately been discovered.

There is another company boring for oil near Edmonton, and a group of Winnipeg men have secured some territory in Athabasca where some work was previously done by the Dominion Government.

Thus it may be seen that interest in the petroleum resources of Western Canada is gradually extending. Some day the hit will undoubtedly be made, where, when, or how, has not yet definitely emerged. But when the time and occasion do arrive the growth of production and of the capital value of these resources may be expected to be both great and rapid.

### THE PROPOSED REVISION OF THE ONTARIO MINING LAW.

While we are not prepared to admit that the policy of the Ontario Government in respect to the administration of the mining affairs of the province is invariably sound or far-seeing, it is but common justice to credit not only the present administration but its predecessors in office with a keen desire to promote the best interests of the industry; and, in certain directions, more has been done in Ontario to aid and encourage legitimate endeavour than, perhaps, in any other province or territory in Canada. This very attitude, however commendable in itself, has in some instances produced results that were neither contemplated nor desired; and, we are, we think, not unjustified in attributing the present by no means flourishing condition of the industry in general, the lack of systematic prospecting effort, and the scanty developments, to a policy that has been a curious combination of generosity untempered by prudence, and a paternalism governed by selfish interest. Men who have made a life study and a business of mining have time and again during recent years pointed out the defects of this system, but the deficiencies were never really strongly brought home to a public, heretofore largely apathetic or sceptical, until the extraordinary richness of the new discoveries at Cobalt, and the rush to locate claims in that district called attention to the deplorable inadequacy of the mining law and of provisions at once irksome and arbitrary. That this had not been so apparent in the past is attributable to the fact that little, if any, previous attempt had been made to apply the law as it stands or insist on a rigid adherence to its requirements from those who were supposed to be governed by it, with the none-the-less deplorable consequence that thousands of acres of mineral lands in Ontario are held by speculators who neither develop the properties themselves nor by the prohibitive prices they demand, allow others to do so. It was unquestionably in the legitimate desire to prevent a repetition of this condition of affairs in Cobalt, that the Ontario Government decided on exercising its prerogative of passing Orders-in-Council to cope with the situation, in the particularly drastic and arbitrary fashion which we have felt it our duty to criticise in these columns. But a law that can be, at one and the same time, either too lenient or too stringent, is a bad law. Also

a law that places in the hands of a few men autocratic powers which are easily liable to be abused, is not a desirable law; and no mining country, however rich, can permanently prosper under conditions of a law that is not favorable to its development. Our attitude meanwhile in respect to the policy of the Ontario Government as affecting the Cobalt district has not been clearly understood in some quarters. It has been construed as an attack on the provincial administration and as a slur on the integrity and capacity of the officials whose duty it has been to carry out their instructions. We are at a loss to understand how such an impression could have gone abroad, more especially as the *MINING REVIEW* has, we are proud to assert, earned in the twenty-three years of its existence, a well established reputation for disinterestedness, which it is not proposed to jeopardise. It should hardly then be necessary to assert that our attack is not aimed at either the Government, Legislative Council or the Inspectors, whose honesty of purpose is neither questioned nor impugned for a moment. The Government has acted under a clear sense of duty, in accordance with the authority that the Act affords; the Inspectors have acted under instructions, and have performed their task in the thorough manner which was to be expected of them. But that is not the point which we have been desirous of emphasizing. It is not a question as to whether the Ontario authorities have or have not exceeded their constitutional right in the administration of the Mines Act in this section; that is purely a side issue; but the crux of the matter is the fundamental unsoundness of a law which is not direct in its operations and whose whole sense may be perverted at the discretion of individuals vested with autocratic authority.

It is, however, but common justice to point out that, following the acceptance of office by Mr. Cochran, as Minister of Lands and Mines, the Government were brought to realize the futility of the present Mines Act, and no more politic step could have been decided upon than that which has been adopted to ascertain the views of the mining communities regarding the necessity for, and the direction of, the proposed reform. Comparisons are proverbially odious, but one can hardly refrain from contrasting this wise and broad-minded attitude with that of other provincial governments in Canada, where, at any rate in the case of British Columbia, concerted action on the part of men engaged in developing the mineral resources has been discouraged, and recommendations made by representative organizations contemptuously ignored. Already, we understand, meetings are being held in the important mining centres of Ontario to discuss the revision of the law, while in a few weeks a general convention representing the several mining and metallurgical interests will assemble in the capital of the province to offer a final expression of opinion on the subject. In view of this it may not be out of place to discuss some of the points that appear to us to be of paramount importance in the framing of a law that, while aiming to be

generous and thus encourage both exploration and investment, still in every way possible shall render the acquisition and tying up of large areas of potential value by speculators, a matter of extraordinary difficulty. In framing such a law, it is well first to bear in mind the fact that for the development of our mineral resources in Canada we are very largely indebted to, and are still dependent on, American energy and capital. This is especially true in the case of British Columbia, and the conditions in Ontario are not dissimilar. For many years we must continue to look to the United States for considerable assistance in this regard, and consequently it is essential that our law should at least not compare unfavorably, in the sense of affording protection and encouragement to the miner, with the law which has contributed so much to the great mineral and industrial developments in Montana, Colorado and other mining States of the Union. In the United States, we believe we are correct in stating, the principle recognized is that an adequate expenditure of time and money in the development of a property is a sufficient evidence of bona-fide intention, and so this is the condition invariably insisted upon before title can be secured. Stringent provisions on these lines, rigidly enforced, in the Ontario Act, would strike at the root of some of the worst evils under the old system. It has been urged that in such an exceptional case as Cobalt, a working condition would prove ineffectual in checking the speculative acquisition of ground, as, owing to the high speculative value of even barren land in this rich area, many men would willingly enough undertake to carry on a sufficient amount of work to qualify them to hold such claims with the prospect of selling them again at considerable profits to fraudulent promoters or schemers. But in addition to the fact that, according to a well known axiom, it is impossible to make men moral by Act of Parliament, this argument is obviously weak since it is clear that it is to the interest of the locator of a claim to prove actual value when he can, and it should be left to him and not (as has been the case) to a Government official to declare whether or not the value is there. The latter course, as we have already maintained, not only savours of gross paternalism, but it leaves the door open for all manner of abuse and injustice.

Another point, which we trust will be discussed at the forthcoming convention, is the necessity for an uniform mining law applicable to the whole province; and a law so simple, concise and clear as to leave no excuse for misinterpretation. Prospectors are in general an intelligent class of men; but it is asking rather much to require that they should obey regulations that are enforced in one locality and not in another, and in addition become subscribers to the official Gazette that they may keep themselves informed as to whether or not the Lieutenant-Governor-in-Council has seen fit to spring on them some new Order. The miners' license or certificate, moreover, should give holders the right to explore for mineral in any section of

the province and not, as now, restrict him to a circumscribed area.

The cry in Ontario is that the public has derived little direct benefit from the mining industry; that the miner asks much and gives in return practically nothing. There is, perhaps, some truth in the contention, but the public and not the industry is to blame. Frame a good mining law, impose conditions that will encourage development and not retard it, and the indications are such to-day, as to promise that the industry will in the next few years, be in a position to contribute appreciably to the revenue of the province. But no cow will give much cream if you first feed her with unwholesome food and then purge her with non-curative drugs. We are informed, meanwhile, that the Government is determined that the industry shall at least contribute sufficiently to the revenue to defray the costs of administering the Mines Department, and also provide a fund to assist toward the expense of opening up new districts by roads and trails, and it is proposed therefore to levy some form of taxation on producing properties, either in the guise of royalties or otherwise. In the present state of the industry it will be easy to make a false step here, and we trust, therefore, that the matter will be approached with the greatest circumspection and only finally dealt with after the most full and careful consideration. There are, of course, several ways in which even now the industry may be made to bear its fair share of taxation without imposing undue hardships on mine-operators: and, while this interesting subject is worthy itself of a special article, we may here suggest one means by which this may be brought about and at the same time go far towards remedying an evil resulting out of the old order. In a paper entitled "Suggested Improvements to the Mining Law in Canada," read by Mr. Eugene Coste at the Toronto meeting of the Canadian Mining Institute, in March, 1904, the author makes the statement that "in the years 1897-1902 (inclusive) the reports of the Bureau of Mines of Ontario gave, as having been granted by a full purchase or lease, . . . 3,922 locations of a total acreage of 411,190 acres," while in the year 1903 only about 100 mines approximating 4,000 acres were being worked. Last year's report of the Bureau shows a further increase in sales and leases made by the Government, the sales amounting to 6,437 acres and the leases to 33,427 acres; and we are unable to find that there was any great corresponding increase in actual mining activity. If these inoperative lands, held for presumably speculation purposes only, can be turned to profitable account in providing the Government with the necessary funds to assist legitimate industry, it will be a step very far in the right direction. The manner in which this can be done is very simple, for it would merely mean the imposition of a heavy tax on unworked lands, which, if unpaid, would enable the Crown to seize the property and either throw it open to re-location or offer it for sale under similar conditions. In any event the province must of necessity benefit from such a measure.

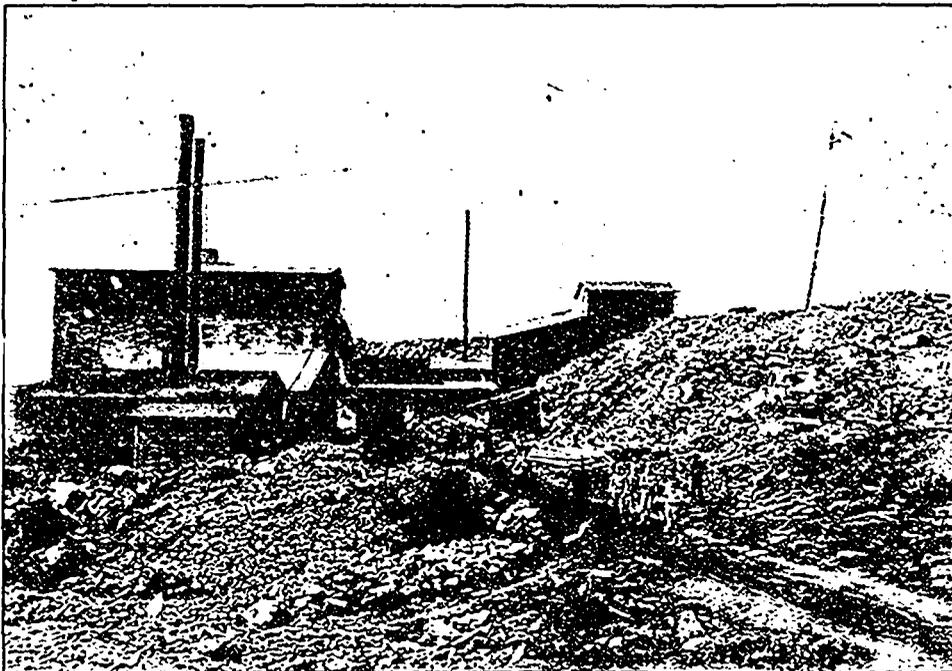
## ASBESTOS MINING IN QUEBEC.

(No. 2.)

THE STANDARD ASBESTOS CO., LIMITED.

The Standard Asbestos Company owns one of the largest asbestos properties in the Black Lake

in the different localities varies in hardness, so that at one mine No. 1 and No. 2 grade is extracted by hand, in another only No. 1 grade, while others again do no hand cobbing, the entire output of the mine being treated in the mill. In some mills two qualities of material are produced, while in others



The Standard Company's Milling Plant.

district, having taken over, some years back, the 325 acres or so, formerly owned by the Anglo-Canadian Asbestos Company, Ltd., by whom operations were carried on from 1890 to 1895, during which time several thousand tons of crude material were extracted. Two years ago, however, an extensive

there are as many as four or five grades. In the monograph recently prepared by Mr. Fritz Cirkel for the Mines Branch of the Department of the Interior, contains an interesting account of the mills in use at Thetford and Black Lake. In brief the process is as follows:—



A General View of the Property.

milling plant was erected to prepare the asbestos fibre in the form now required by the trade. The mills in this district practically apply the same system for fiberizing of the material, but none of them are exactly similar in construction. The serpentine

**First Part of Separation.**—All the asbestos rock and fines produced at the mine goes first through a Blake crusher; then, through a rotary dryer, and is raised by means of a bucket elevator, to the third story of the mill building. It passes then through a

rotary crusher, into a big cylindrical fiberizing machine. The material is then raised by a bucket elevator and falls on a shaking screen, with 1-16 inch

charge of which is placed with the shaking screen, in an air-tight chamber. An exhaust fan, connected with the latter and leading to the open, creates a



View of Pit No. 1.

holes. All the loose fibre is here taken up by a fan, and is deposited in a collector. The sand from the shaking screens, falls into a hopper, where it is

suction in the cyclone, thereby facilitates its discharge and, at the same time, takes up all the dust emanating from the shaking screen. All the fibre



Another of the Company's Quarries.

loaded into cars and sent to the dump. All the remaining rock and fibre from the shaking screen falls through a chute into the cyclone apparatus, the dis-

separated in the cyclone and going over shaking screen falls into a hopper and is loaded into dumping cars.

Second Part of Separation.—All the fibre extracted from the rock is now placed in collector I, from here it passes through revolving and grading screen, with arms moving in opposite direction. In this screen two grades are made, the quality of which is regulated by means of a grading board turning on hinges. In order to eliminate the sand, both No. 1 and No. 2 grades are passed over screens.

Two suction fans take up the fibre and place the same in the collectors, the first quality in No. II and the second in No. III collector. The tailings of the shaking screens pass again over another screen, where all the longer fibre still in the sand residue is taken up by a fan and deposited in collector III, which now contains the marketable article known as paper stock. No. I fibre deposited in

of the crude material has been obtained. In the western extension of the first pit a number of veins yielding a first class milling material have been developed by openings and cross cuts. These veins intersect the rock in every direction and range in points from one-quarter to one and two inches. About sixty per cent. of all the rock mined is sent to the mill, the extraction of fibre from the milling rock being as high as ten and twelve per cent.

The main pit is equipped with two inclined cable derricks and two boom derricks, three air drills, one double and two single drum hoists.

Air for the drills is supplied by a five-drill air compressor. The mill is in close proximity to the mine and the derricks dump the ore close to the ore bins. A section through the mill is given in Fig. 26



View showing Distribution of Asbestos Veins in one of the Standard Company's Pits.

collector II is further cleaned on a shaking screen and is then ready for the market.

All the tailings resulting from the screenings fall into a hopper and are ground in a horizontal emery mill for the manufacture of asbestos finishing plaster.

Meanwhile, at the Standard Asbestos Company's property large exploratory and development operations have been carried on to prove the extent of the asbestos-bearing formation, with results that have been highly satisfactory. At the present time work is being chiefly confined to the development in the serpentine at the northern extremity of the property, where several pits have been opened. The main quarry has a length of 120 feet, a width of 70 feet and a depth of 40 feet, and connection is made with another large adjoining quarry, where the bulk

and a description of the same on pages 64, 65, 66 and 67. The boiler plant consists of three horizontal boilers with a total capacity of 240 horse power. A 150 horse power side valve engine drives the mill and dryer, while the first Blake crusher between ore bin and dryer is driven by an extra 25 horse power high speed engine, the works are all lighted by electricity furnished by a 150 light dynamo.

Mr. Cirkel states that this company, with its extensive asbestos-bearing area should be able to contribute largely to the output from Black Lake, especially when it is considered that the work so far conducted has exposed a great number of places from which to draw ore, while the capacity of the mill, which is at present only 150 tons per day, can easily be doubled with a few additions to the present machinery.

## OCCURRENCE OF HEMATITE NORTH OF LITTLE CURRENT, GEORGIAN BAY.\*

By S. Dillon-Mills, Toronto, Ont.

Late in last summer I was commissioned to examine and report on a supposed gold property in the above district. The result of the examination was unfavorable; though at first sight the place looked as if there might be something of value in it, careful examination, assisted by numerous analyses of samples taken from different points, showed such low gold value as to oblige me to condemn the proposition.

The small amount of work done in securing the samples for gold estimation served, however, to indicate that the property, though valueless as a gold proposition, might be worth developing as an iron prospect. The Ontario Bureau of Mines Reports 1901 (Report of Iron Ranges of the Lower Huronian, by Dr. A. P. Coleman), contains the following statement: "The wide band of Huronian between the 'Soo' and Sudbury is not known to contain any rocks of the iron formation, though the large numbers of bright red jasper pebbles in the conglomerates of the Upper Huronian must have a source somewhere in the region." (P. 201.) I had therefore the pleasure of proving the correctness of Dr. Coleman's deduction, as will be seen later on, by locating this source of the jasper pebbles, and, further, have the hope that we may yet find ore in workable quantity in this practically untried locality. I feel, however, the great necessity for caution in the matter, as the district has been thoroughly explored in search for gold many years ago without any large deposits of iron being noticed, so that it looks as if we would have to go to some depth to find them. I therefore contented myself with stating to the parties interested in the matter, the facts so far known to me then, and advising some further exploratory work before abandoning the property. My suggestions were adopted with results as follows.

I have appended to this paper a rough sketch map, not strictly accurate, but sufficiently so for the purpose of reference. The greater part of the ground, even on the rocky hills, being covered with dense, low second-growth trees, birch, poplar, spruce, etc., except where the rock showed in scattered patches, rendered sighting from one place to another, or the taking of compass bearings, in most cases impossible, and some slight attractions enhanced the difficulty, by causing the different readings to contradict each other. Those of the members who have tried making sketch maps of our Huronian hills will appreciate the difficulty.

By referring to the map, you will see that the topographical features are as follows. Commencing at the south, we have first a rocky ridge, probably thirty chains or over in width, extending south beyond the limit of the map; then a swamp with a thick growth of alders, etc., about 300 feet below the highest point of the ridge; then, northward, an

isolated rocky butte, much of it covered with drift material, boulders and loam; then cleared land, and then another ridge apparently consisting of boulders, gravel and loam, at the west end, but becoming more rocky towards the east. If we turn now southeast from the narrow part of this latter ridge, we descend an almost precipitous rocky face, cross a narrow valley or gorge covered with broken rock, ascend a similar rocky face, cross a narrow ridge, and descend again to a wider valley, dry and gravelly with some loam, and arrive at the foot of an almost perpendicular cliff at G. This ridge G is partly separated from the first south ridge by a depression running about southeast between them, but keeping probably 100 feet above the level of the other valley, a set of finger-like promontories extend from the south ridge easterly into it.

Turning to the geological features, we find the most interesting in a belt of jasper of irregular width, varying probably from fifty to over one hundred feet. It is of various colors, red, brown, green and white, much fractured, and showing more than one period of disturbance, the older fractures being re-cemented by infiltrated quartz, mostly white, while the more recent are stained or filled with soft red hematite, and have left the rock in such a condition that it is very difficult to drill for blasting, yet possible to work out with a pick. The strike of this belt is about E. N. E., the dip is doubtful, but appears to be perpendicular with a slight southerly inclination in places; there is no trace of bedding, and its banded structure looks as if due to flow under pressure; on the whole, it bears a resemblance to an intrusive dike, forming as it does the nor-nor-west scarp of the heavy ridge, just as we shall find the greenstone dikes forming the face of other ridges later on. The northern edge of the jasper belt is concealed by the debris along the edge of the swamp. The southern limit, which is on the first step of the ridge, is also mostly concealed, but in a couple of places is seen in contact with the felspathic quartzite, which forms the body of the ridge. This quartzite passes in places into an arkose, and in others becomes somewhat schistose, it is distinctly bedded and strikes about parallel to the course of the jasper, the dip varying in places from about 75° N. N. W. to perpendicular or even 85° S. S. E., as nearly as can be seen by the exposed faces at the surface. It varies in texture from coarsely granular; to almost vitreous, with conchoidal fracture. This belt of mixed quartzite and arkose is traversed in a direction about 20° N. of E. by what appears to be a continuous dike of greenstone, showing in separate exposures approximately in line; some of these outcroppings show a width of not more than fifteen feet, in others the width is much greater, but either one or both contacts are concealed by debris (owing to the small scale of the map it was necessary to exaggerate these outcrops, the intention is merely to show their mode of occurrence).

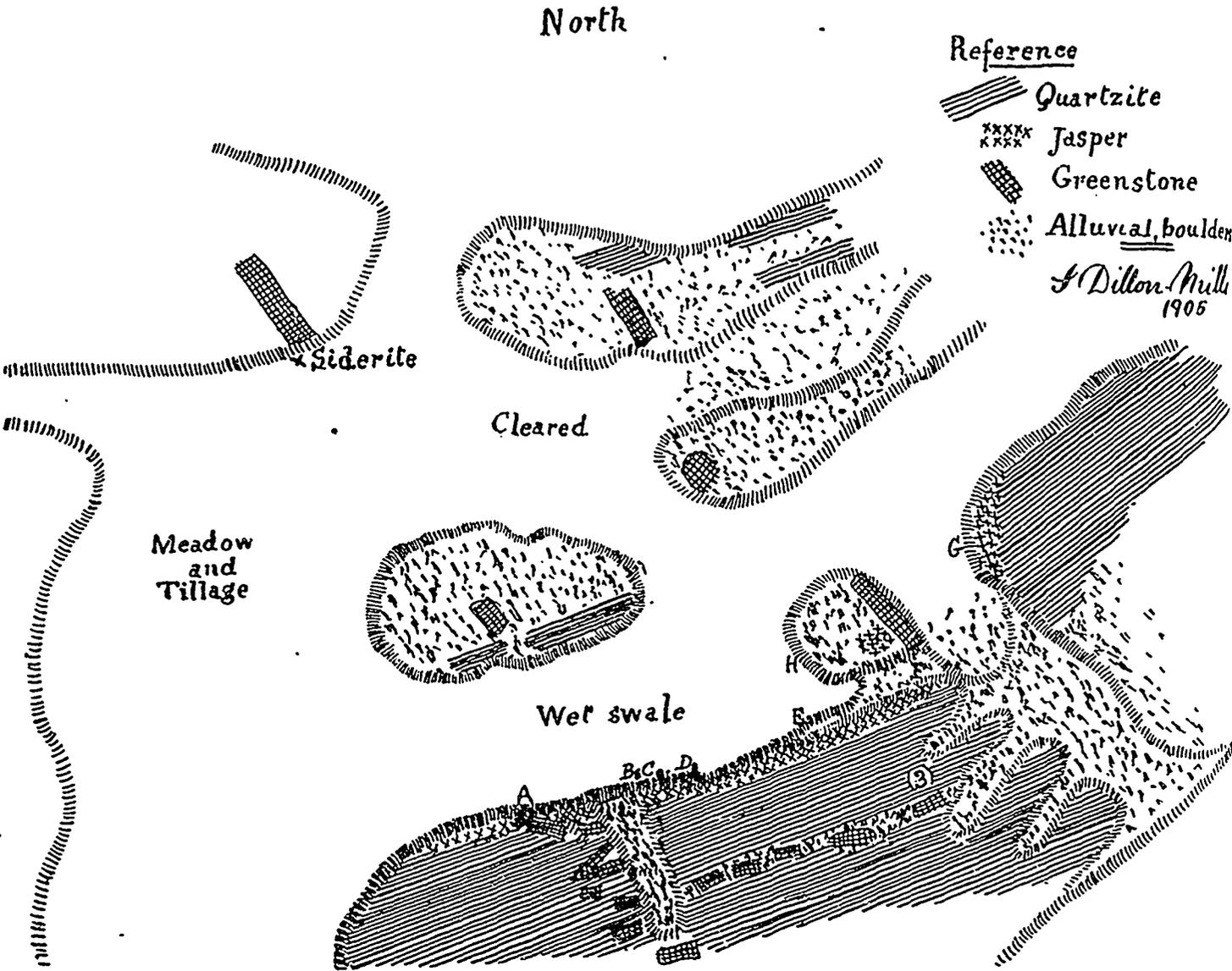
To the westward this line of outcropping runs into what is either a set of short dikes running in directions varying from about east to northeast, or else the outcropping of one heavy dike striking

\*Trans. C. M. I., March, 1905.

about S. S. E. across the course of the first one, in which case it cuts the belt of jasper below the present surface, which may account for the different appearance of the rock at this point, which is here a specular iron jaspilite. The appearance of this set of dikes is very peculiar, the outcrops are only to be seen on rounded knolls or the edges of the successive steps which are met, as one, going south, climbs the flank of the main ridge. In one place, two short dikes come together in V-shape, enclosing a wedge of quartzite, which at the point is much altered by

dike, which have been forced up through, or rather along, the bedding planes of the quartzite; the close texture of the greenstone also lends color to this view of the case.

At a distance of about thirty-two chains north-east from this another dike shows on the east flank of the knoll, it runs about 55° W. of N. across the bedding of the quartzite, cuts through the jasper of another belt, and approaches the first belt, but does not seem to cut into it. The eastern side of this knoll formed by the greenstone is in most places



the contact effect; while the other end, where both the dikes and the quartzite are cut off by a precipitous drop to a ravine, shows a width of thirty feet about of the ordinary quartzite, unaltered, except at the contact edges. Neither these two nor the other short dikes can be traced further east than this ravine, the bottom being covered with masses of rock and some loam, and beyond it they do not reappear. To the westward they run out apparently to nothing in a short distance, so that at present I am disposed to look on them as a set of protrusions from a main

precipitous, and the jasper cannot be positively traced beyond it, as there has evidently been considerable disturbance along the line of the depression to the southeast, and the jasper marked on the edge of the cliff (G) eastward of the low ground probably belongs to the south belt. The western side of the knoll slopes gently to a low swale, and is covered almost to the summit with loam and drift material, consequently I was unable to trace this jasper outcrop any further, and at first supposed that it marked the north boundary of the first belt,

which would thus have a width of over 300 feet at the least, but this proved not to be the case, as will be shown later on.

The rest of the neighborhood shows chiefly quartzite, etc., similar to that already noted, and in many places dikes of greenstone, some of which come barely to the surface; in one case where I put in a shot in a quartz-vein, I found the greenstone beneath the quartz capping.

About three-quarters of a mile northeast from the jasper belt there is a heavy greenstone dike carrying a small vein of pyrrhotite with some chalcopyrite, and just southwest of it a pit has been sunk about thirty-five feet on a seam of talc, which, however, proved worthless, owing to the quantity of quartz mixed with it. The pit was full of water at the time of my visit, but on examining the dump I was much pleased to find that a large proportion consisted of spathic iron, a matter of much interest in this case, as it indicated the possible existence of this mineral at a former period in large quantities, the decomposition of which would have furnished the material for the deposits of iron of which we were now in search. It is also interesting as furnishing another point of resemblance to the Penokee and other iron ranges of Wisconsin and Michigan, to which the dikes of the feldspathic quartzite and jasper existing here evidently correspond in many points. The following difference must however be noted, namely: In the Penokee range, especially, the feldspathic quartzite-slate member is non-ferriferous, in fact it forms the impervious bed by which the iron deposits retained, in some cases being carried down along it till they strike a dike of greenstone cutting through the quartzites and forming a trough in which the ore is deposited. This feature is ably demonstrated by Van Hise and others in the U. S. Geological Survey reports. Here, on the contrary, the quartzites are often highly ferriferous, carrying iron both as oxides and sulphide, and are so shattered as to afford easy passage to atmospheric waters. When sampling some quartz veins which cut through the quartzites at a spot fully 300 feet from the jasper belt, I found that after the surface had been removed the rock was stained with hematite in all the joints, (these joints in many cases showed the effects of attrition produced by movement). At the depth of four and a half to five feet below the surface the rock seemed less solid than on top, and the mud from the drills looked almost pure hematite, so that judging from the general appearance I would not be surprised if the rock gradually became more decomposed further down, and perhaps, ultimately gave place to a deposit of hematite extending under both jasper and the quartzites.

When starting to examine the place for hematite, I commenced by digging in the swale, at the point indicated by the letter B, thinking I was in line with the jasper at H, but struck boulders and stiff clay and soon cut into a strong spring of water which drove the men out of the pit, I then moved them to a spot (D) on the steep slope of the ridge near its base. Here the indications of hematite

showed very strongly. I had a trench cut down to swamp level, and ran it to the face of the jasper rock, which here rose to a height of about thirty-feet perpendicularly. Just about the level of the swamp we struck a decomposed feldspathic quartzite in direct contact with the jasper about six feet from the face of the cliff; we proceeded then to sink a pit in the trench next this face, going down on the jasper which here showed seams of soft clay and hematite, and next the quartzite a thin seam like decomposed soapstone. We got down about five feet on this, the indications improving rapidly, the jasper becoming more shaky and decomposed, and the seams of hematite clay increasing in width, and going down perpendicularly with the rock. We were now down ten feet below the surface, and could not do more without timbering and providing means of hoisting, which was beyond the limit of my instructions for the work. I was therefore obliged reluctantly to quit this point.

Arkose or quartzite rock was afterwards traced at three other points (marked C, E and F), in the same position relative to the jasper, thus showing that there are two belts of jasper separated by it from each other. This explains our failure to find any iron indications in the first pit, and the centre of the swale where the probable continuation of the second belt is, being under water, we could do nothing further in the way of tracing it.

In view of these facts, I recommended the sinking of the prospecting pit to a further depth of twenty-five feet, and if results are still encouraging to employ the Government diamond drill to further test the ground and if possible locate the ore body. At the time I promised to give this paper, I hoped to have these additional tests completed before the time arrived for its delivery, but some difficulty respecting the title to the property prevented this, so nothing more has been done. I decided to give the paper, incomplete as it now is, on account of the geological interest attaching to the corroboration of Dr. Coleman's forecast respecting the jasper belt. Another reason for introducing the subject in its present unfinished condition is that now is the time when it furnishes the best illustration of the uncertainty, interest and mystery which surround an untried field. After a matter of this kind has been proved and developed, it becomes impossible by an effort of memory to place oneself back again amidst the uncertainties which have been left behind; we unconsciously assume to some extent the attitude of having known all about it, good or bad, long before; forget that there ever was any uncertainty, and are like the artist trying to recall the tints of sunrise under the heat and glare of noon. First impressions, unless at once noted, can never after be accurately recalled, or the bygone conditions seen in their former aspect.

To the younger student members, it may also be of interest in calling attention to the necessity of a careful consideration of geological facts and a guarded conservative use of the imagination as one finds it necessary to picture what may be the condition of things beneath the surface.

We have here shattered jasper, quartzite, and arkose, the permeability of which is calculated to render possible the carrying down, by the atmospheric water of the dissolved pre-existent iron carbonate. We have also dikes of greenstone, which may at certain unknown depths, either by themselves or in conjunction with other formations, make impervious basins which serve to retain the iron precipitated as peroxide from the solution. At these depths, the water charged with carbonic acid may be expected to have a more or less solvent action on jasper and quartzite, so that cavities would be formed and refilled with hematites. Most of these things are pretty certain to have taken place, but uncertainty still attaches to two important matters. First: Have the dikes formed the requisite trough or

ply as he has also acquired a number of zinc properties which are being developed. The plant, of course, is to be over-hauled and additional machinery installed to provide for efficient working.

A brief description of these works, which have not been in use for a great number of years, appears in the Minister of Mines' Report, 1895, from information supplied by one of the owners, Mr. A. B. Hendryx, as follows:—"The company's work for sampling, concentrating, roasting or calcining, and smelting, are located upon the East side of the Kootenay Lake, ten miles southerly from the peninsula, and directly opposite the Kootenay Lake outlet, through which all incoming waters to the Kootenay Lake discharge. The outlet is the water communication between the works and Nelson, a dis-



The Smelter at Pilot Bay, B.C., formerly owned by the Kootenay Mining and Smelting Co.

catchment basin below? Second: Is that basin at such depth and of such capacity as to make the mining of the ore a financial success?

The diamond drill offers the cheapest means of answering these questions approximately.

#### REPORTED RESUMPTION OF OPERATIONS AT THE PILOT BAY SMELTER, B.C.

It is reported that Mr. Fernau, on behalf of the Canadian Metals Company, recently purchased the Pilot Bay Smelter, which is to be operated as part of the company's plans to bid for the treatment of the Kootenay zinc ores. Mr. Fernau is, however, not entirely dependent on outside sources of sup-

pliment of about twenty miles. The works are so located as to command two great harbours, the neck of land between them being only a few hundred feet wide, being also midway between the north and south ends of Kootenay Lake. The machinery in the various departments is of the latest and most improved type, as shown by the results during the brief period the works have been completed and working, and consist of an automatic sampling works, capable of sampling 250 to 300 tons of ore per diem; a roasting department, consisting of five roasting or calcining furnaces; one 100-ton water-jacket furnace. The concentrating works, blower for smelting stack, and electric plant are each run by a separate engine. The machine shop is completely equipped with lathe, planers, compound drilling machine, bolt and pipe cutting ma-



**MR. GRAHAM FRASER**  
The Father of the Iron and Steel Industry in Canada.

chines, together with blacksmith and carpenter shops all supplied with up-to-date machinery.

"The works were complete enough to commence the treatment of ores in March, 1895. A shipment of bullion was commenced March 16th, and by December 30th, 1895, there have been shipped 3,220 tons of silver-lead bullion, and the furnace or smelting stack was not in blast half the time. From January 1st, 1895, 52,000 tons of ore were mined from the Blue Bell claims and transported to the works, consisting of first and second class or concentrating ore, lime rock for fluxing, etc."

In his bulletin on the Slocan and Aimsworth districts, published in the 1897 Report, Mr. W. A. Carlyle, then provincial mineralogist, supplements this information with a note stating that the plant is located on a small peninsula on the same side (or the east) of Kootenay Lake as the mine, but about eight miles south. There are three main buildings, the roast house, smelter and concentrator, besides the smaller ones for offices, laboratories, workshops, etc. The concentrator contains two Blake crushers, 9 by 15 inches, 4 4-compartment jigs, 2 double collum jigs, 2 two-table slimes tables and two frue vanners, and has a capacity of 200 tons of ore per twenty-four hours. There are four 17 by 65 foot reverberatory furnaces in the roast house of 12 tons capacity each per twenty-four hours, while in the smelter is one 100-ton water-jacketted blast furnace. In the engine room is a 150 H.P. Corliss engine for the concentrator and sampling works, an 85 H.P. engine for the blower, and a 30 H.P. engine for the dynamo, for the electric lighting of the whole works.

## CANADIAN GRAPHITE DEVELOPMENTS.

(Specially Contributed.)

The Calumet Mining & Milling Graphite Company is carrying on operations on its property situated near the village of Calumet on the Ottawa river, Argenteuil County, and expects before long to refine the output from the mines in a modern graphite milling plant, which, it is contemplated, will be erected next spring. The occurrences here have been known for over 45 years: Sir William Logan having referred to them in his report of 1863 as follows: "Workable deposits of plumbago occur in the township of Grenville." The present company acquired the mining rights for 258 acres in the year 1899 from the Hon. J. K. Ward of Montreal. The property is about 1,200 feet wide, and extends from the Canadian Pacific railroad tracks back over the mountains, a distance of about one and three-fourth miles. The graphite in Calumet occurs in the Laurentian formations in beds or seams of from a few inches to two and even three feet in thickness. The country rock is a greyish gneiss, often interrupted by bands of crystalline limestone, the disseminated flake graphite occurring also in the latter. The graphite deposits are often interrupted, giving place to lenticular masses which are sometimes pure

and at other times mingled with carbonate of lime, pyroxene and other minerals. The graphite is, however, not confined to the limestones and gneisses. Large crystalline scales are occasionally disseminated through pyroxene rock, sometimes also through quartzite and diabase. On the Calumet property the graphite occurs either as disseminated flakes, usually in limestone and gneiss, or as true veins, both columnar and foliated; the latter are found frequently cutting the granite and other igneous rocks as well as the gneiss. The mine is on the slope of a hill which raises some 300 feet above the level of the country. At a height of 180 feet from the level a shaft has been sunk to a depth of 85 feet. This shaft follows several veins of graphite of the columnar and foliated variety, which cut the gneiss at nearly right angles. The width of veins varies from a few inches up to 36 inches: the bottom of the shaft is reported to have 30 inches of pure graphite. There are also a number of excavations and outcrops all over the hill, exhibiting the occurrence of graphite, mostly in the disseminated variety, in granular limestone, gneiss and quartzite. At present a tunnel is driving at the foot of the hill with the intention of tapping the veins in the shaft.

The length of the tunnel, up to a point vertically under the shaft, will be approximately 175 feet. Most of the graphite is similar to the Ceylon variety, and in order to experiment with the ore, with a view of determining the best milling process 65 tons have been shipped to the Globe Refining Company of Jersey City, N.J. It is reported that 32 tons of flake graphite have been obtained. Several large sample lots have been shipped to the Morgan Crucible Co. of London, also to I. H. Gautier & Company, Jersey City, N.J., and to Messrs. Baker & Bishater, at Grosse Almerode, Germany. It is stated that these firms, have made crucibles of this graphite and that these have been found equal in quality to those made from Ceylon graphite. One of the firms have placed a large order for material with the company for delivery as early as possible. Electric power for mining and mining operations can be obtained from Rouge river, five miles distant, where Messrs. Rogers & Co. have a water-power capable of supplying some 1,000 h.p. About 25 men are at present employed, with Col. M. I. Keck, of Scranton, Pa., as manager.

The graphite deposit at Olivér's Ferry, in the township of Elmsley, lot 21, Range VI., is being worked at present with a force of 20 men. This property has been worked at intervals by different people for more than thirty years, and here perhaps graphite was first mined in Ontario. Mr. Rinaldo McConnell, of Ottawa, is the present owner. The mineral occurs in rocks of the Grenville series, similar to those in the Province of Quebec. At the principal openings the older rocks are overlaid by Potsdam sandstone. Where first opened the graphite was found in a sandy, greyish, decomposed gneiss, and the graphite was well disseminated throughout a belt of considerable extent. The early operations date back as far as 1872. After working for several years the mine and mill were closed

in 1875-76. With small interruptions the property lay idle until 1901, when Dr. Tyne, of Toronto, secured a diamond drill from the Ontario Government, and bored several holes to test the depth and extent of the deposit. These borings showed the presence of graphite of good quality, in large quantity. The property then passed into the hands of the present owner, Mr. Rinaldo McConnell, who continued boring with the diamond drill in 1902. The value of the property was in this way ascertained and the presence of large bodies of ore determined, and the latter compare favorably with those of the Buckingham District. Mr. McConnell has erected a mill at the village of Port Elmsley, utilizing a water power of about 50 h.p. on the river Tay.

The principal operations are carried on at a pit 250 feet long, with a width of from 8 to 15 feet, and a depth of from 5 to 15 feet. The graphite is found in a bed of limestone, also in gneiss. The dips are generally flat, from 5 to 10 degrees, but at some points, especially on the northeast end, a dip of 40° can be noticed. The openings are made at the crown of the anticlinal. All the graphite appears to be of the disseminated variety, and columnar graphite was not noticed.

All the ore is treated in a mill which is distant about three miles. It is first roasted in an ordinary kiln, to drive off the moisture; then it passes through a set of crushers and thence is treated by pneumatic jigs, where the flakes are separated from the gangue. After grinding in buhrstone mills the product is sized by screens into four grades. It is estimated that the material mined yields an average ten per cent. clear graphite. The mill treats from one to two tons of ore per day.

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## ON THE EXAMINATION AND VALUATION OF MINES.\*

By John E. Hardman, S.B., Ma.E., etc.

(Continued.)

### Valuation of Mines.

To attempt this portion of my subject may seem a very rash proceeding to the majority of my professional colleagues, for while the topic has been touched upon by many engineers who have written, there are but few who have thought any approximate valuation possible.

In what follows, the writer makes no pretence of solving a difficult, if not impossible, problem; he only attempts to show the analogy and to give a method by which a close approximation to the actual value may be obtained.

The problem of valuation is not an exact one, the factors which enter into it being many and diverse in character, and one has also to take into consideration the points upon which capitalists insist.

First, there must be a provision for the ultimate return of all the capital contributed, whether as purchase money, working capital, or otherwise. It is a frequent thing, both on this side of the water, and in the Old Country, to read in annual accounts of various corporations that certain sums have been "written off." Such sums so written off being very rarely deposited in any bank as a redemption fund proper. It is probable that there is hardly one in a hundred present joint stock companies which can show any separate depository account for the different items that are so glibly written off in their annual statements. Depreciation and redemption accounts may be headings of ledger pages, but they are rarely actual accounts whose sums are safely invested in banks or securities.

In the United States it is customary to consider that the investor will make his own provision for the return of the capital out of the large dividends he is receiving, but in England the matter is usually regarded as the duty of the directors. What percentage of the capital must be recouped each year depends, of course, upon the number of years the mine will be in operation.

The return of the original capital *intact* involves the previous consideration of the capitalization necessary to purchase the property, equip it properly, and provide for the necessary expenditures until the property becomes self-sustaining or profitable. Such consideration provides for no "water," the capital must be commensurate with the dividends expected from the scale of working which is proposed.

Secondly, there must be provision for an interest return upon the amount of money invested; as to what this interest return shall be, it may perhaps be difficult to get capital to agree. Manifestly the interest or return must be larger than obtains in financial centres for standard securities, having a long life; there are hazards attending all mining enterprises, which, of course, must be more or less safeguarded against, but which are inherent in the business. Floods and underground fires, crushing of large areas of open ground, sudden and unexpected faults of dislocations, all contribute to demand a higher rate of interest per annum than is necessary for other investments. Since this rate must be higher than for commercial ventures, we may take the extremes as ranging from 10 per cent. where the mine has a long life, and the management is known to be good, to 30 per cent. where the deposit is known to be of limited extent, or the market for the product is variable, or the control is in the hands of people not above suspicion. In addition to the dividend paid to sinking fund whereby provision is made for the return of the original capital, wherever the depreciation, or wear and tear of plant, is not charged off annually to the working cost, there must also be a sinking fund for depreciation. As a matter of

\*Trans. Can. Soc. of C. E.

good mine accounting the wear and tear and repair items are charged usually to expense, so that a sinking fund for the recouping of capital should be the only necessary deduction from profits.

Out of the profits, therefore, there must come (a) a certain definite amount sufficient to return the whole of the original capital before the death of the mine, and (b) a certain other annual amount, varying from 10 per cent. to 30 per cent. for the interest on that capital.

The careful and accurate examination already made has determined the prominent factors of — what the cost of extracting and marketing the ore will be; what the average value of the ore is; and what total amount of ore is certain, and what amount therefore is probable, within the boundaries of the deposit; the average profit per ton is therefore deducible. It will have furnished the data by which we may assume a probable yearly capacity of production, and approximate the yearly profit; it will also bear witness to the enduring, or temporary, character of the deposit. From these data, as already determined, the (a) working term or life of the property is obtained, approximately; (b) the safe annual production can be determined, and (c) the probable annual profit is also known—therefore, we shall have essentially the factors of an annuity, since we know the term, and the probable annual amount received.

Another important item for the solution of the problem is the matter of the proper annual output having regard to the greatest economy of production and the least waste of mineral. American practice has been to work out a deposit as rapidly as possible, extracting the largest percentage possible in a few operations, and permitting, often a very considerable percentage of mineral to remain in the waste or tailings, continental practice on the contrary has been to mine annually a comparatively moderate output, but to discard nothing as waste until all possible values have been extracted therefrom.

The last ten or dozen years has seen a closer *rapprochement* on the part of American mines, due probably to a realization that the assets of any one mine are more or less definite, and that mining is a destruction of assets. This fact is not realized by investors so much as it should be. To paraphrase from some legal judgments delivered: the value of occupation of a mine is only created by the destruction of the property, the owner or worker commits legal waste by working. The tenant practices—not a right to use and *enjoy*, but a right to *destroy*, a part of the actual property.

The process of mining is analogous to the destruction of a landed estate where the landlord, by selling off each year a small plot from a large area, at last finds himself with no freehold left.

As a matter of record, the writer thinks he is correct in stating that the productive life of an average mine runs from seven to fifteen years. It is to be expressly understood that giants in the mining world, like the Calumet and Hecla, the Homestake, Alaska-Treadwell, and others, with large surface areas and enormous widths of ore bodies, are not to be considered as "average," but extraordinary mines. The first step, therefore, is to arrive at the probable maximum average output per year which can be mined with the greatest economy and at the largest profit; this output being found, and the total positive and probable ore tonnage having been ascertained by the examination, the shortest life of the mine in years is easily obtained, thus furnishing the *period* during which dividends may be expected.

Knowing the period, the annual sum to be earned for the sinking fund for the redemption of capital is then calculated, to which must be added the annual sum to be paid as interest on the capital invested, which (as before stated) will depend somewhat on the life period of the mine, but which in any case should not be less than 10 per cent. The annual charges then will be X for the sinking fund, and Y for the interest charges. We may then calculate the value on the basis of an annuity, knowing the life or period and the annual dividend. Or, we may take the total *profit* on the positive and probable ore, and from that sum deduct the sum of the charges X and Y for the number of years of life of the mine, the remainder will be the approximate value of the property.

As an hypothetical case, let us take a property where the engineer's examination showed a net value of \$1,000,000, but with a sufficient quantity of ore reserves for only five years' work, with a proper plant. It is evident that whatever sum be paid for that property must be recouped within the five years' life shown; in addition, it must pay the minimum percentage (or interest) mentioned, i.e., 10 per cent. per annum, or 50 per cent. during the life of the mine. Manifestly then, this property must return 30 per cent. per annum, upon the investment, which is assumed to be \$1,000,000. To do this the mine would have to earn \$500,000 more than the \$1,000,000 shown in the report, and, in all probability, the purchase would be declined. The figures taken in this illustration are, of course, extreme.

As a further illustration, reference might be made to the remarks made by Dr. R. W. Raymond at the New Haven meeting of the American Institute of Mining Engineers, held in October, 1902. In referring to certain matters, it transpired that a certain copper mine had, as "positive ore," a sufficient amount to net the sum of \$2,000,000 for five years, and that the price asked for the property was \$10,000,000. Dr. Raymond said that the property was not actually worth more than one-half that figure.

even if the reports and estimates were true, and for the following reasons:—

The life of the mine should be taken as no longer than the time required to mine all the blocked ore, in that case five years; that the net annual profits should not be less than 20 per cent.; that a sinking fund to return the purchase price would also require 20 per cent. per annum, and that therefore the purchase must be considered as a 2½ years' purchase and not as a five years' purchase.

Each case will require modification and treatment according to its qualities and peculiarities. Almost all mines begin with the payment of small dividends, increasing the same as the maximum capacity of the property is attained, to be followed by a period of constant dividends, after which the amount of the dividend decreases as the mine approaches exhaustion. For the purposes of valuation these crescendo and diminuendo amounts may be averaged at an equal sum for each profitable year of the mine's life, and remember that while it is not pretended that an exact valuation can be made, yet a sufficiently close approximation to guide the investor is possible.

Treated as an annuity, if the period, or life, were 10 years the tables would give the present value of a mine as 7.72 times the annual dividend, when money was worth five per cent. It must be remembered that the shorter the life, or period, of the property, the larger must be the profit per year. So that actuarial treatment of the life and profits of a mine tends to a lower *present value*, the higher the annual rate of interest or dividend becomes.

From these brief statements it will be evident that an approximation to a correct valuation is possible if the valuer has a correct conception of his subject. In many cases one's client does not want the engineer's valuation; he wants *facts*, and will value according to his own ideas and the experience of the particular business he has been engaged in. But when one is acting for a syndicate or corporation such valuation is frequently requested.

Unfortunately, in all legal proceedings connected with mining companies we have had no recognition of the necessity to compel the redemption of capital, and, in fact, it has been held by the high courts of justice in England, that it is not obligatory on the directors of a company to make any reserve of profits for the purpose of meeting the ultimate loss of capital which ensues on the exhaustion of a deposit, or on the expiration of a lease or title. Since there is no law on this subject, the questions of prudence and of interest are not only neglected by most of our companies, but seem to be actually unknown to them, but all will agree that should such a provision ever be made compulsory by law, it will unquestionably tend to check immoderate speculation and to safeguard investments in mining enterprises, and when such a law is introduced, the question of

the practical and proper way of examining and valuing mineral deposits will have to be considered at the commencement of every mining undertaking in a most serious manner.

(To be continued.)

### THE RETIREMENT OF MR. GRAHAM FRASER.

Mr. Graham Fraser, whose latest portrait we have the pleasure of printing in this issue, represents in himself more than any other one man in the Dominion, the beginning, the progress and the present fruition of the iron and steel industries of the Dominion. As a matter of record, and for the information of our readers, we present a condensed sketch of Mr. Fraser's life.

Mr. Fraser was born in New Glasgow in the year 1846, and is now in his 60th year. His father was Mr. Thos. Fraser, and his mother Miss Charlotte Dix, of Pictou. Mr. Thos. Fraser for many years was a shipbuilder in New Glasgow, and the ship-yards then were a great attraction to the younger man who, however, reversed the usual order of learning his trade at home and going abroad for larger fields by learning his trade in the United States, to which he went at the early age of sixteen. In Providence, R.I., he served an apprenticeship of three or four years in one of the large blacksmithing establishments of that city. Afterwards he had a year's experience in ship blacksmithing, in the ship-yard at Maitland, N.S. At the age of 23 he began work on his own account by securing a contract for the iron work of the wooden vessels which were then building by the late Senator Carmichael. With this contract he also undertook the manufacture of all galvanized iron work necessary for ships. Succeeding in the first years of his independence, he took a partner five years later in the person of Mr. G. F. McKay, and together these gentlemen established the Hope Iron Works at New Glasgow, for the manufacture of railway spikes, springs, axles, etc., and for the carrying on of a general forge business. Shortly after a steam hammer was set up in the yards, and as the business grew yet another steam hammer was added, and the name of the firm was changed to that of the Nova Scotia Forge Company. Eleven years after beginning his work in Nova Scotia the forge works were removed to the present town of Trenton, on the East River of Pictou, where new buildings were erected, commensurate with the large amount of business that had been developed during the eleven successful years since its inception.

The Nova Scotia Steel & Forge Company was floated as a corporation in 1882, and it is evidence of the skill and good reputation of Mr. Fraser among his fellow townsmen that the capital requisite for the Steel & Forge Co. was supplied entirely by them. The expansion of the steel business led to the investigation of opportunities for making

crude material, and subsequently, a company engaged in the smelting of iron ores, the mining of coal, and the building of their own railway. The works at Ferrona followed those at Trenton, and the works at Sydney have followed those at Ferrona. As president of the first company, and as vice-president and managing director of the Nova Scotia Steel & Coal Company, Mr. Fraser has been an unqualified success. His prudence, his judgment and his enterprise have helped forward and put upon a solid basis the steel business of the Dominion.

In his brother, Simon A. Fraser, now deceased, Mr. Graham Fraser had a cordial and intelligent supporter, and one whose intimate personal knowledge of the steel industry allowed Mr. Graham Fraser to devote his own attention to the commercial side. Mr. Fraser remained as the managing director of the Nova Scotia Steel & Coal Company until December, 1903, when he resigned to accept the position of Director of Works, with the Dominion Iron & Steel Company, on Jan. 1st, 1904. Under Mr. Fraser's direction the Dominion Iron & Steel Company have groped out of a position of great unsoundness to one of solidity and promised profits. He has had the pleasure of seeing the works of the Dominion Company put on a commercially paying basis. His resignation from the Dominion Iron & Steel Company, as he has personally told the REVIEW, comes from his desire to take a well-earned rest after nearly thirty years of continuous hard work in the steel business.

As a man, Mr. Fraser is well known to members of the Canadian Mining Institute. He is quite unassuming, always pleasant, and ever ready to render a service when called upon to do so. The story of his career during the last thirty years is largely the industrial history of New Glasgow, for not only is Mr. Fraser a steel man, but he has fulfilled his duties as a citizen in serving on the Town Council of New Glasgow, and is acting as chairman of various committees established by that town. The REVIEW sincerely hopes that he may live many years to witness the substantial national benefits he has given to the Dominion through his efforts in the steel industry.

### THE PROPOSED REVISION OF THE ONTARIO MINING LAWS.

To the Editor:—

Sir, The last three issues of the MINING REVIEW have contained both editorial comments and correspondence on the matter of legislation (both by statute and by Order in Council) as affecting titles and discoveries in the new Temiskaming Mining Division, in which are situated the unique deposits of argentiferous cobalt and nickel which have recently attracted so much public attention. Likewise, the press of Ontario, and particularly of Toronto, has contained wonderful emanations from the pens of some writers, not only as regards the production of this district, but also in respect to

suggested or intimated changes in the mining law of the province.

Many of the letters published in the REVIEW have contained excellent ideas in respect to suggested amendments to the mining law, and in an interview which I recently had the privilege of having with the Hon. Frank Cochrane, Minister of Mines, I learned that he is striving hard to get at facts, and also to get at the wishes of the *actual miners* in Ontario, in order to lay down a basis for a new, permanent and satisfactory mining law which shall not need continual amending by Orders-in-Council. Perhaps you will give me space in which to make one or two comments that have not yet appeared in your journal.

The chief ground of complaint, and also of discussion, which I have personally noticed in frequent visits to the Cobalt district this year, has been the impermanence, or lack of any fixity, of the mining law owing to the frequent use of Orders-in-Council, which have affected both the acquisition and the tenure of mining lands in the province. The refusal of the Government to accept the stipulations of the existing act, or, in other words, its refusal to accept the oath of the locator, *as an oath*, unless supported by subsequent inspection of an inspector, is another frequent, and perhaps just ground for complaint. An oath or affidavit in ordinary legal affairs is proof, and accepted as such by the Courts. Why it should not be accepted, in its application to the mining law of Ontario, has only been explained on the ground that prospectors did not recognize the sanctity of an oath, and that, in consequence, frequent attempts at blanketing of large areas of ground had been made. That some such attempts have been made is not denied.

In its avowed intention to discriminate between locations filed for silver and those filed for iron, copper, or other minerals, by reducing the size of the claim located for silver to one-half the size of a claim located for gold, the Government has introduced another subject for dissension, and for which there can be little or no valid reason. In older and more experienced mining countries, such as British Columbia in this Dominion, and the various states of the United States, a claim is of uniform size whether located for gold, silver, copper, lead or other mineral, and because, during the last year or two years, the extraordinary richness of the upper portions of the veins in Coleman Township have been so valuable is no better reason for reducing the size of such claims than was the extraordinary richness of some of the placer claims in the Klondike region excuse for varying their size from that stated in the regulations for mining lands in the Northwest Territory.

The proposed imposition of a royalty on silver is a point which has not, as yet, been particularly objected to; the royalty on the nickel and cobalt contained can hardly be insisted upon unless a royalty is also imposed upon the nickel and cobalt contained in the pyrrhotite ores of the Sudbury district. In a minor way, also, there has been more or less

fault found with the subservience of mines and mining to timber grants and lumbering interests. Your own experience in the Province of British Columbia has specially qualified you to expect and to comment upon this remarkable divergence of views as expressed in contributions to your own columns and in contributions to the daily press, and perhaps such experience will preclude, in your own mind, any hope of an amended law passing, which will be satisfactory to all parties.

In the various meetings of miners and those interested in mines, called by the Department of Mines for the latter part of last month, and to be supplemented and enlarged by a mass meeting of representatives to be held in the city of Toronto on or about the 11th of December, the Hon. the Minister of Mines is doing all that is possible for a man to do to give full expression to the divergent views of the men who are desirous of obtaining mines, or who have already obtained mines, in the Province of Ontario. The Hon. Minister has emphatically stated, that he, personally, and the Government through him as minister, desire the fullest expression of sensible views respecting proposed changes in the mining law of the province. Further than this no man can go, and if the December meeting fulfils the expectation of Mr. Cochrane he will be able to go to the next session of Parliament with a draft of a mining law which has already received the full acquiescence of men who are interested in the business of mining.

This letter is not written with the intention of espousing any particular line of argument, or any particular amendments to the existing law, but more with the hope of inducing every individual, either who is interested, or who hopes to be interested, in the mines of Ontario, to come forward and be heard at this mass meeting in Toronto, so that he may have every chance of getting others to agree with his views, also that he may be perfectly satisfied that he is not in the minority in respect to the changes which he desires to see made.

JOHN E. HARDMAN.

Montreal, P.Q.

Nov. 5th, 1905.

#### ONTARIO MINERS' MEETINGS.

During the past week or so meetings have been held in various sections of Ontario, in compliance with the suggestion of the Minister of Lands and Mines to discuss a proposed revision of the mining law of the province. Unfortunately, in several instances the real issues have not been touched upon and many irrelevant suggestions have been made. These meetings, however, are of course merely preliminary to the Convention that is to be held in Toronto later on, and doubtless then the subject will be approached from all sides, and thoroughly threshed out. At the meeting held at Sault Ste. Marie on October 24th, however, the defects of the present system as regards the inspection of claims, were pointed out, and a recommendation was made to the Government that the affidavit of the locator be accepted as sufficient evidence of discovery, but that it be required that an expenditure of \$100 be made on any claim so located within 90 days after the discovery thereof.

The following gentlemen were appointed delegates to the Toronto convention.—Messrs. W. H. Plummer, John

McKay, A. C. Boyce, M.P., U. McFadden, A. B. Wilmott, F. J. S. Martin, T. A. Hand, J. L. O'Flynn, James Stobie, C. Williams, J. W. Curran, T. Johnston.

At the Sudbury meeting some 100 persons were present, and the following resolution was passed:

"That all lands belonging to the Crown, whether valuable for pine or not, should at all times be open for exploration and sale, subject to regulations for protection of Crown property."

Mr. A. P. Turner, President of the Canadian Copper Co., advocated the appointment of a commission by the Government to investigate the mining industries of the province.

At the Belleville meeting, held on the 29th of October, the following resolutions were passed

"The title to minerals should be absolutely separate and free from any rights or claim of lumbermen.

"Tax titles should be valid from date of deed.

"The Government, at the beginning of the year, should give the clerk of each township a list of lands owned by them, and thereafter send to him the number and concession of each lot subsequently sold immediately after sale.

"Existing timber licenses to be investigated and their present position and effects ascertained.

"The Government should continue assistance given by former governments to make roads into mines, particularly in the locality of their own lands.

"Under all charters of mining companies there should be the right to the minority to appeal to the Government, or to the court, to compel the majority to work the property or have the property sold.

"The rights of employees should be extended on the same principle as under the Mechanics' Lien Acts, so that the company's interests in mines, buildings and machinery should be liable.

"There should be no royalty or mining tax, as this would at once put an end to mining in this country.

"The affidavit of the prospector alone should be sufficient, without the affidavit of two others as at present required.

"That the commission be requested to urge upon the Ontario Government to use its influence with the Dominion Government, so that all mining machinery (not made in Canada) should come in free of duty.

"That this section should be made a mining district.

"That the Hydro-Electric Commission should be requested when examining the water-powers in the County of Hastings to consider the importance cheap electric power would give our mining industry.

"That two mining experts should be appointed, to be known as inspectors of Government lands, one for the province east and the other for the province west of Port Arthur, who should inspect and report to the Government on all disputes touching mining claims.

"That the prospector should be protected as far as is consistent with the mining interests of the country.

"That the mill test of ores at the School of Mines at Kingston should be given at cost.

"That a bounty, or other assistance, should be given the arsenic industry.

"That corundum should be treated the same as other minerals, save that it should be required to be milled in the country.

"That the miner's bonus of 50 cents a ton now paid does not attain the desired end, and could well be withdrawn, but it is hoped that the commission will lay before the Dominion Government the advisability of imposing a duty on iron ore of 75 cents per ton for the protection of the iron industry in the county."

Delegates to the Toronto convention were appointed as under:—Messrs. W. A. Hungerford, A. W. Coc, D. G. Kerr, D. E. K. Stewart, Mr. Kirkegard, Mr. Cushman, Mr. Farnham, Mr. Geo. Weese, J. W. Pearce, M.P.P., and W. B. Northrup, M.P.

At Kenora, on the 31st October, the following resolutions were passed. "That this meeting recommend

that the Government vote an amount of money as an appropriation for the purpose of demonstrating the continuity of the veins in this district to a depth of 1,000 to 1,500 feet, and in the event of the work being done on an existing property the owners of such property to guarantee one-half the cost before the work is commenced."

"That this meeting recommend that in cases where lessees of mining properties have done development work and expended money in improvements thereon to an amount more than sufficient to cover the cost of acquiring title in fee simple to the properties in question, special consideration should be given, and unless in cases where evident abandonment has taken place a patent should be granted in respect of such properties."

A largely attended meeting was held in Madoc, on October 27. The following resolutions were passed:

"The title to minerals should be absolutely separate and free from any rights or claims of lumbermen."

"Tax titles should be valid from date of deed."

On November 2nd, an interesting meeting was held at Kingston, at which the following resolutions were carried:

"That this meeting approve the present form of application for mining lands and of affidavit of discovery—part 6 of Act—but not the affidavit in support of discovery—(mineral or bona fide indications of mine).

"That the clause requiring two witnesses to prove discovery, etc., be withdrawn to conform with B.C., etc., mining acts."

"That the Act should provide for inspection of discoveries, in certain cases to ascertain their bona fide, but an inspector shall not have the power to throw a claim open so long as the discoverer is carrying on development work as required by the Act."

"Locator of mineral claim shall have the right to all the minerals within his claim, excepting in those cases of iron, mica, and other minerals, which are located in claims larger than the ordinary mineral claims."

"That the clauses in regulations for mining divisions with reference to planting discovery posts, blazing and defining the location, etc., be made applicable to territory outside mining divisions (clauses 18 and 20, reg. for mining reg.)"

"That Sec. 28 of regulations for mining divisions be amended to allow applicant to obtain a record of his claim in 30 or 60 days, instead of 90."

"That leases should be made more simple, free from oppressive and onerous restrictions, and with provisions for facilitating assignment."

"That in the opinion of this meeting the bounties on pig iron made from foreign ores, should be abolished."

(This resolution is to be forwarded to the Federal Finance Minister.)

"That the present provisions for assays under Government supervision be supplemented by utilizing the equipment of the mining laboratory of the School of Mining for testing ton or carload lots of ores."

"That legislation be passed to further protect the miner in payment of his wages, and that he have first claim against the property of the operator of the company or companies in cases of insolvency."

The following delegates were elected to the Toronto convention:—Dr. Goodwin, Mr. T. R. Caldwell, Prof. Brock, R. E. Kent, Prof. S. Kirkpatrick, Mr. Clifford Smith, Brockville; Mr. E. L. Fraleck, Mr. H. Richardson, Mr. Boyd Caldwell and Mr. G. Y. Chown.

## THE MONTH IN BRITISH COLUMBIA.

(From Our Own Correspondent.)

Nelson, Nov. 1.—The month has been quiet in mining and there has been little extraordinary in the way of developments. One feature that at one time seemed as if it would give rise to some trouble was the suspension of shipments from the St. Eugene mine, in consequence of the fire at that property, which destroyed the hoist. It was declared that as the chief supply of ore for the lead

stacks at Neison and Trail came from that particular point the smelters would be obliged to close. However, the Highlander of Ainsworth Camp, is now in better condition for shipping and a good supply of ore is looked for from that direction, within a few weeks. Mr. Cronin states meanwhile that the St. Eugene will certainly be again producing by January 1, and in all probability some time ahead of that date, so that a shut down, even if it comes, will not be serious.

The Zinc Commission is still pursuing its labors and the opposition to it has died a natural death. It is considered, however, that the usefulness of that commission will be greatly enhanced if it is extended into next season. There has not been nearly enough time this year to examine anything like the whole of the zinc properties even within the Kootenay, without considering the number of meritorious properties at the Coast. The trouble with those would seem to be that their owners, following the bad example of many Kootenay men, have not nearly sufficiently developed their holdings, so that a purchaser is asked to take much on trust and pay a heavy price, often enough, for that trust. In connection with the Zinc Commission it may be stated that the zinc reduction works at Frank have made a trial run and succeeded in producing some zinc matte. The run, however, was purely experimental, being undertaken to satisfy some French capitalists of Lille, who are financing the undertaking for the founder, Mr. C. Fernau, to a large extent. Mr. Fernau, it is understood, is about to open up the Pilot Bay smelter for the purpose of the reduction of zinc, a position far better situated with regard to the zinc properties than Frank. The Monitor Ajax on Slovan Lake, has started work on its concentrator and in a short time some good results should be heard from it. Nothing has been heard lately of the fortunes of the magnetic separator at the Payne mine, the only statement recently made about that mine being that it was shipping a little ore, and that the Zinc Commission were not allowed to examine the property. The latter assertion is, however based solely on a none too reliable local paper, which has made a hot fight against the Zinc Commission, or rather against one of its members. The plant at Kaslo is also in abeyance, but it is stated that arrangements are being made whereby some ore, which is not chemically combined with iron, will be put through that plant, coming from the Lucky Jim. In fact, from one reason or another, the whole of the plants connected with the separation or reduction of zinc are more or less "hung up" at the present time.

On the other hand, the mill lately installed at the Reliance mine, near Nelson, working under the Hendryx process, is stated to be a success, Dr. Hendryx himself, making a statement to that effect before his departure east. However, no official statements have as yet been made as to results, runs or charges. The La Plata mine on Kootenay Lake, is now putting up a mill and its manager, Capt. Trethewey, declares that he is in a position to take out 20 tons of ore daily on a conservative estimate. The mines of the Lardeau, especially the Eva, are looking well, and much development work has been accomplished in different directions through the summer. At Poplar it is noted that the Great Northern mines are finding capital for the exploitation of their properties at depth. \$200,000 is to be raised, of which sum three directors are themselves advancing \$20,000 apiece. This, however, will lie over, probably until next summer.

There is much prospecting activity in the Crawford Bay district, but it is too early at present to look for any returns. At Marysville the new smelter management are still preserving their attitude of "It is no business of the public's."

In the Boundary the mines are looking and doing well, that is to say, among the principal shippers. Among the lesser fry there is some complaint about freight rates which is more or less justifiable. The Providence, of which great things have been expected, is seriously involved in litigation. An annual meeting has just been held and it is declared that machinery will be installed

and the property worked on a larger scale. This was also said in 1904, but the machinery did not materialize. It is claimed, however, that there was a profit made last year of some \$20,000, and a statement is published which purports to show this. This statement is about all that a mining report of receipts and expenditure should not be. The ore in sight is not mentioned. The amount of ore shipped is not recorded nor its average value. There is a statement of expenditures. The profit shown on the books is \$19,934.76, and it is arrived at by subtracting the liabilities from the assets, among which latter is placed \$44,814.27 for development work! Of this amount 25 per cent. is considerably allowed for depreciation.

Turning to Rossland Camp, it will be noted with pleasure that the camp is now picking up again. Shipments are regular and recent developments would show ore at depth on all the principal mines. The one drawback seems the concentration of the second class ores. A little of this is being done, but it is doubtful whether the profit made under the present processes employed is sufficiently large to permit the companies building larger plants. Yet there is no doubt that the future of the camp depends largely upon its concentration. The recent reduction in smelting rates has made available much ore which was formerly left unstopped and hence for some time it will be possible to extend the old stopes without opening up extensive and expensive developments. This has been the experience of the camp from the beginning. There are no regular walls to the veins and the ore shoots seem merely to get less and less in value on either side of a certain point. The wall is the limit of pay ore and the wall shifts with the lower smelter rate. But when concentration can reduce the ore at a cost of \$1 to \$1.50 per ton those walls will recede wonderfully and Rossland may then be the biggest low grade camp on the continent.

#### ONTARIO MINING INTELLIGENCE.

(From Our Own Correspondent.)

The Court of Appeal for Ontario has just given judgment in the case of McConnell v. Erdman. The plaintiff, a clergyman, brought action to recover commissions on sales of stock for and money lent to defendant, the superintendent of the International Gold & Copper Company, operating in the County of Frontenac. At the trial plaintiff recovered part of his claim, and on appeal the judgment has been confirmed, with a slight variation as to value of stock.

The Temiskaming & Northern Ontario Railway commissioners are considering the advisability of building a branch of the road from Cobalt to the district between Kerr and Giroux Lakes, about three miles, to provide transportation facilities to the mining camps. At present the ore from these mines at these lakes is conveyed to Cobalt by water, a small stream running into Cross Lake having been made navigable by a dam, but this involves a portage of about two hundred yards at the dam, besides a haul from the mines to the water. If the road is built the ore can be loaded at once on the cars.

Reports have appeared recently in many papers respecting an alleged find of diamonds in Northern Ontario, near Sault Ste. Marie. Diligent inquiry fails to discover anything to warrant the report. The Ontario Bureau of Mines knows nothing of such a discovery, and none of the leading jewellers of Toronto, to whom the stones would naturally be submitted for an expert opinion as to their value, have heard of it. Some geologists have stated that diamonds might be found north of Lake Superior or in the Rainy River country, the formation being such as to warrant the opinion, and a repetition of this view has probably given rise to the report. Masses of garnet have been found, but not of gem value.

The stamp mill of the Big Master Mine, near Kenora, in Lake of the Woods district, recently yielded 140 ounces of gold in a twenty-three days' run. This is considered a remarkably good showing.

The Ontario Bureau of Mines has had inquiries from abroad respecting some of our ores, which show that Canadian minerals are attracting more attention, probably the outcome of the Liege and other exhibitions. A firm in Rotterdam, Holland, inquires about supplies of iron, copper and nickel, and an Antwerp company asks for copper and silver-cobalt ores. P. B. MacNamara, commercial agent at Manchester, in a communication to the Department of Trade and Commerce, reports inquiries from some of the English chemical companies for cobalt ores for which there is likely to spring up a demand in Britain. So far, all the cobalt ores produced here have gone to the United States.

Mr. J. D. Hubbard, general manager of the Western Mines' Development Company, Chicago, and a pioneer in the gold fields of Nevada, which at one time attracted as much attention in the United States as the Cobalt field is now doing in Canada, recently paid a visit to Cobalt. He is much interested in the discoveries there and is making a close study of them.

The charter of The Hutton Mining Company, Limited, incorporated in Ontario, has been cancelled.

The following mining leases have been cancelled by order of the Ontario Minister of Lands and Mines, for non-payment of rent:—Lease dated 9th March, 1893, to Robert Forbes, George L. Chesebrough, and Harry G. Ingersoll, all of Dumuth, Minnesota, for the south half of lot 11, in the 5th concession township of Coffin, 146½ acres; lease dated 3rd April, 1900, to Nicholas Rowe, of the township of Waters, for the south forty acres of the north half of lot 5, in the 3rd concession, township of Waters, district of Algoma.

The Pittsburg Coal Company, which has the contract to supply the fuel for the Canadian Northern Railway, is completing the immense docks at Port Arthur as rapidly as possible, and it is expected the first cargoes will be unloaded within a few weeks. The company hoped to have 1,000,000 tons delivered this fall but this has been found impossible. The dock will have a frontage of 1,200 feet and will extend back 2,500 feet to the shore, and it will be solidly filled with sand. The Atekokan Iron Company is building a dock of 650 feet frontage, with the same depth, on the adjoining property, on which its furnace, coke ovens, etc., will be erected. One furnace will be ready next fall and work on a second may be commenced in the spring. The ovens will be connected by overhead bridges with the Pittsburg Company's coal dock to facilitate the delivery of fuel. The government breakwater will be extended in front of both these properties. The Canadian Northern tried the experiment of bringing coal all the way by water from the mines in Nova Scotia, in which Messrs. Mackenzie and Mann are interested, but without return cargoes of grain or ore this would not pay, and besides the coal was not found to be up to the mark for steaming, so the contract was awarded to the Pittsburg Coal Company.

Mr. Fox, of Fox & Ross, mining brokers, Toronto, has returned from a combined business and pleasure trip to the West. In conversation with your correspondent he expressed himself in optimistic terms as to the future of mining in Canada. He says there is a great deal of ignorance on the subject, largely due to the fact that the newspapers, unless paid so much per line, will not give information to the public. The brokers are deluged with inquiries, and any information they give is naturally supposed to be prejudiced in favor of properties in which they are interested. Speaking of British Columbia, Mr. Fox says the feeling is very hopeful. He considers the prospects for Rossland, notwithstanding past depression, the effect of which is still seen on the streets, as most promising, while the outlook in Boundary is also exceptionally good.

Mr. D. D. Mann, of Mackenzie & Mann, is developing two claims he has secured at Cross Lake in the Cobalt district, and has brought in some expert miners from British Columbia, where he has interests in silver mining, to work these claims.

A number of Canadian stockholders in the Homestake Extension Mine, near Deadwood, South Dakota, took advantage of a cheap rate arranged by Douglas, Lacey & Co., the promoters, for an October trip, to see the mine in which their money is invested. They appear to be pleased with the prospect. A drift of 1,200 feet has been run into the hill and the ore is being stoped. A stamp mill and reduction plant is about to be installed. The mine is said to be on the same ledge as the old Homestake.

**NOVA SCOTIA MINE INTELLIGENCE.**

(From Our Own Correspondent.)

**Coal and Iron.**—The Londonderry Iron and Mining Company, have lately been enlarging the works and increasing the output. The Company has now over 200 men engaged about the works and at present are putting out over 100 tons of pig per day. The pipe foundry is in full blast and a general flourishing condition prevails.

At Torbrook contracts have been let for the sinking of two 300 feet shafts, the work having been undertaken by Mr. Patterson, the contractor of the Allan shafts, (which incidentally, it may be remarked, are the deepest shafts in the province).

At North Sydney the Nova Scotia Steel & Coal Co. have developed No. 3 mine so that it has outstripped the famous Princess pit in the matter of production.

At Lourdes the Allan shaft has at last intersected the well known Ford seam.

**Gold.**—Mr. Rickard's report is expected to be ready for distribution about Christmas and is anxiously awaited by persons interested in gold mining matters. Speculation is rife as to his opinion on the point, i.e., the analogy to the structure of the Bendigo formation, and the prospect for deep mining on a similar scale in this province.

The following is a summary of the areas in the different districts, taken under Prospecting Licenses during the month of October:

District	78 areas
Quoddy	20
Miller's Lake	105
Stormont	6
Broad River	9
Leipsigate	26
Cow's Bay	48
Mill Village	12
Ragged Falls	27
Gold River	20
Brookfield	6
Montague	3
Harrigan Cove	6
Malaga Barrens	12
Vogler's Cove	49
15-Mile Stream	10
Jeddoric	18
Meagher's Grant	4
Oldham	65
East Chezzecook	8
Wine Harbor	32
Somerset	51
Salmon River	40
Lower South	6
Lochaber	22
Whiteburn	

The latest mill returns give crushings as follows.—

- Sept.—Crease Mill at Mount Uniacke—  
20 tons yielded 60 oz. 15 dwt. 0 grs.
- Aug.—Anderson Mill at Lake Catcha—  
21-2 tons yielded 13 oz. 14 dwt. 0 grs.
- July, Aug., Sept.—McCawley Mill at Stormont—  
396 tons yielded 280 oz. 0 dwt. 11 grs.
- July, Aug., Sept.—Philadelphia Mill at Brookfield—  
701 tons yielded 378 oz. 16 dwt. 0 grs.
- July, Aug., Sept.—Libbey Mill at Brookfield—  
2,985 tons yielded 1,159 oz. 15 dwt. 0 grs.

**BOOK NOTICES.**

**Geology of Western Ore Deposits.**—The Kendrick Book and Stationery Company of Denver, have just printed a second issue of Prof. Lakes' Handbook of Colorado ore deposits in particular and other Western States in general. During the ten years which have elapsed since the first edition was printed there have been so many developments in the older mining camps and discoveries of new regions that a revision and enlargement of the original work became a necessity. In this second edition Prof. Lakes has endeavored to present the fresh examples of principles which additional experience furnished. The principles of general geology, in their application to mining geology, take up the first seven chapters (118 pp.), and these are followed by a chapter on the principal ores of the useful metals, and one on the theory of ore deposits, which later, we regret to say, will not clarify the atmosphere for a majority of Prof. Lakes' readers. Twenty pages of condensed heterogeneous abstracts of different individual theories is apt to leave the untrained reader more befogged than he was before perusal. The chapter on gold placers 1-2, epitomises much useful information, and the rest of the book is taken up with brief accounts of the most important mining districts of Colorado and the Great West. The book is desirable for reference, giving (usually) brief summaries of the most producing districts which will be found valuable to the student. It is, however, rather a reference book for beginners than one for experienced men.

**Pyrite Smelting.**—In this compact, well printed volume of 310 pp., Mr. T. A. Rickard (Engineering and Mining Journal, New York), has collected and compiled the various discussions which appeared in the columns of the Engineering and Mining Journal from October, 1903, to February, 1905, on the topic of the direct smelting of sulphide ores, more commonly known as "pyrite" or "pyritic" smelting.

As is usual with Mr. Rickard's books, he has introduced the various contributors and summarized the gist of their conclusions in a chapter wherein his remarkable gift of language and freedom of expression are well shown. The fathers and chiefs of pyrite smelting, Messrs. Austin, Lang, Hixon and Carpenter, and some twenty or thirty other metallurgists, contribute to make the volume the latest and most authoritative expression of opinion on this branch of modern metallurgy.

**Technical Methods of Ore Analysis.**—It might seem, with works like Van Furman's already well established, that another treatise or handbook on technical methods of analysis would find small room for usefulness. That such is not the case is abundantly established by the record which Mr. A. H. Low's book, (John Wiley & Sons), has already made. Beginning his commercial career as an analyst, in Leadville, in 1877, Mr. Low has had, for more than a quarter of a century, uninterrupted success in dealing with the many and varied problems which constantly come before the analyst in such a metallurgical centre as Denver has been during the last thirty years. There is, probably, no other chemist in the United States whose experience and professional necessities have so well qualified him to write on technical analysis.

The arrangement of chapters in the book is well conceived, and the short chapter on apparatus makes one wish it were three times as long.

The author's own methods for the determination of copper by sodic thiosulphate, of lead by potassium permanganate, of alkalies, and of zinc are included, of course, but the author is most modest in his presentation of the claims of his new methods.

For the metallurgical chemist we know of no one volume for his library that can compare with this of Mr. Low's, both for usefulness and for the unravelling of knotty problems. We can cordially commend this book to our readers.

## MINING MEN AND AFFAIRS.

Mr. J. Obalski, who was one of the commissioners in charge of the Canadian exhibit at Liege, has returned to Quebec.

Mr. J. A. Clark, a mining engineer of Minneapolis, recently examined the Page-Holmes properties at Contact Bay, Ont.

Mr. H. W. Vance has been appointed superintendent of the mines at Windy Arm, Yukon, controlled by Mr. J. H. Conrad.

Mr. Armand Muscovice, who has been in Chibogamoo, as chemist and assayer for the Chibogamoo Mining Company, has returned to Montreal.

Mr. J. Graham, who formerly acted as assistant to Prof. Meyers, of Oxford University, recently joined the staff of McGill, as demonstrator in mineralogy.

In consequence of the retirement of Prof. Marshall, Prof. M. B. Carmichael and Mr. Manley Baker are now lecturing in physics at the Kingston School of Mines.

Mr. Felix Levick, of Leadville, Col., inspected during October the Tiger-Poorman group of claims, in the Fort Steele district of East Kootenay, on behalf of a Colorado syndicate.

Mr. D. W. McVicar, superintendent of the Last Chance Mine, near Phoenix, B.C., last month had the misfortune to fall down the shaft at the property, breaking his right leg and two ribs.

It is reported that operations are to be resumed at the Miocene Company's property, Harper's Camp, Cariboo, B.C., under the direction of Mr. R. H. Campbell, who is about to return to the district.

Messrs. Jas. McEvoy and O. L. Spencer, jr., of the staff of the Crow's Nest Pass Coal Company, have been engaged in examining the coal fields of the Similkameen and Nicola districts, British Columbia.

Mr. Springwiler, of Buffalo, and Mr. Von Sich, of Toledo, Ohio, who are already largely interested in Canadian mining undertakings, have been visiting properties near Rat Portage with a view to investment there.

Mr. Oliver Wethered, Chairman of the London and British Columbia Gold Fields, has been spending some weeks in British Columbia inspecting the company's mines and other properties in which he has interest.

Some of the directors of the Crow's Nest Pass Coal Company, including Mr. Robert Jeffrey, Col. H. M. Pellatt and Messrs. C. E. Dalton, and T. Walmsley, during October paid a visit to the company's properties in East Kootenay.

Mr. W. H. Paul, a zinc specialist, of Denver, Colorado, has been visiting properties in the vicinity of Vancouver, alleged to contain zinc ores. It is said, however, that Mr. Paul has been disappointed with the results of his examination up to the present time.

Dr. A. E. Barlow and Mr. Jos. Keele, of the Geological Survey of Canada, were sent early in October on special duty to report on the zinc resources of British Columbia, doubtless to facilitate the work of the zinc commission now investigating in this field.

Mr. A. N. Mouat has been appointed General Manager of the Breckenridge-Lund Coal Co., Ltd., of Lundbreck, Alberta. The Company's coal lands are situated on the main line of the Crow's Nest Pass Railway, where a large plant has been installed and production is about to commence.

Messrs. J. G. Dixon (of Sheffield), and J. A. Peacock, (of Montreal), have been touring the mining districts of British Columbia. Mr. Dixon is very much pleased at what he has seen in the Similkameen and Coast districts, and will report accordingly to the British interests with which he is associated.

Dr. Robert Bell, Acting Director of the Geological Survey of Canada, has, during the past two months, been touring the districts of the Yukon and British Columbia,

and has accorded to the Western press numerous interviews relative to the work of the Survey and his work in connection therewith.

Mr. James Ross, President of the Dominion Coal Company, has returned to Canada after an absence of two months spent in Europe, where he visited many of the important British and Continental collieries. Mr. Ross states that the showing of the Company this year will be an exceptionally good one.

Mr. Alex. Hamfield, manager of the Thibert Creek Mining Company, has returned from Cassiar, B.C., and reports a satisfactory season's work, in spite of a shortage of water, due to an exceptionally dry season. Two other companies are installing a plant in this district, in readiness for next season's operating.

Mr. D. W. Moore, ore buyer for the Trail smelter, who has recently spent some time in the East visiting the Cobalt and other mining camps, left for British Columbia on Nov. 7th. It is satisfactory to learn that Mr. Moore has entirely recovered from a severe attack of blood-poisoning, and is now enjoying exceptionally good health.

At the session of the Tariff Commission in Victoria, Mr. C. H. Lugin, a barrister of that city, urged that the bounty on pig iron be extended on the grounds that this would result in the establishment of blast furnaces on Vancouver Island to utilize the local occurrences of magnetite which otherwise would be shipped to furnaces in Washington.

Mr. Angus A. Ferguson, who for the past nine months has been in the service of the Dominion Coal Company, has been appointed manager of the Cape Breton Coal, Iron & Railway Company's mine at Broughton. Upon leaving the Dominion No. 2, Mr. Ferguson was presented with a testimonial and address by the officials connected with this property.

The London Rialto remarks that Mr. A. J. McMillan is making a subtle bid for the sympathy of Le Roi shareholders by stating that if returned to power he is prepared to recommend the payment of a dividend for the year ending June 30th last. It looks as if there might be a very pretty contest, and meanwhile McMillan is increasing his holding in the company.

It has been largely due to the successful efforts of Mr. Mackenzie King, Deputy Minister of Labor, that the long-drawn out strike of the coal miners at the Nanaimo collieries, Vancouver Island, B.C., has at length been brought to a conclusion. This fact is recognized by the Western Fuel Company, whose manager, Mr. T. R. Stockett, has written an appreciative letter to Sir Wm. Mulock, in which he states that but for Mr. King's services there can be no doubt that the strike would have been continued for some considerable time longer.

Dr. Bonsall Porter, Professor of Mining Engineering at McGill University, who was a guest of the British Association during the recent summer meeting of that distinguished body in South Africa, returned to Montreal by the S. S. Virginian on Nov. 6th. Dr. Porter delivered a lecture, in response to a special invitation, on "The bearing of engineering upon mining, with special reference to mining education," at the time of the Association's visit to Kimberley, and since, the University of Good Hope has conferred on him the degree of Doctor of Science.

At the annual meeting of the Dominion Iron and Steel Company, the announcement of the retirement of Mr. Frederick Nichols, who for the past three years, has acted as Vice-President of the Company, was announced, his successor being the Hon. Senator L. J. Forget. Mr. Nicholls, who has devoted much time and attention to the affairs of the company without any remuneration, was tendered a hearty vote of thanks by the shareholders and was presented with a piece of plate by the directors. Mr. Graham Fraser has also retired as Director of Works.

In consequence of the retirement of Mr. Graham Fraser, Mr. F. P. Jones has been appointed general manager of the Dominion Iron & Steel Company. Mr. Jones

was appointed sales agent to the company in 1901, previous to which time he had been in the employ of the Nova Scotia Steel Company, first as Western sales agent, and subsequently as general sales agent. He is a man of wide experience, and his intimate knowledge of the iron and steel industry, and particularly of the Canadian and American markets, will stand the Company in good stead at this time.

Mr. W. Fleet Robertson, Provincial Mineralogist of British Columbia, returned during the month from visiting the Bulkley Valley in Northern British Columbia, where he has spent the summer months. In speaking of the mineral possibilities of the region, Mr. Robertson stated that there are undoubtedly some promising indications of ore, but in his opinion it is premature to form any conclusive judgment with regard to the extent of these deposits as the majority are locations of but a season or so standing. In the Telkwa, there are promising coal deposits, the beds being of very considerable thickness.

Mr. F. T. Hamshaw, a large operator in the Atlin district, states that the output of the district for the season is, at a reliable estimate, in the neighborhood of \$100,000 greater than that of last year. This increase is due in part to the extent of drift mining during the winter, for the past summer has been an exceptionally dry one. Mr. Hamshaw expressed the opinion that there would be shortly a consolidation of interests on McKee Creek by the two companies operating in that vicinity. These companies have proved the value of their ground to a distance of over three and a half miles, and propose to instal steam shovels and other additional plant.

Mr. R. B. Lamb has been appointed general manager and superintendent of the Daly Reduction Co., operating the Nickel Plate Mine at Hedley, B.C. Mr. Lamb is an Australian mining engineer, of considerable experience and standing. At a recent meeting of the shareholders of this company the following officers were elected: — President and treasurer, Mr. J. C. Lalor; vice-president, Mr. Marcus Daly; secretary, Mr. C. A. Crawford; assistant secretary, Mr. A. J. Campbell; the directors being as follows: Messrs. Marcus Daly and J. C. Lawlor, of New York; C. A. Crawford, of Anaconda, Mont.; J. G. Morony, Grand Falls, Mont., and A. J. Campbell, of Butte, Mont.

The British Columbia Department of Mines is taking steps towards securing much valuable information in regard to new mineral country, which is likely in the near future to receive considerable prominence. Thus the provincial mineralogist, Mr. W. F. Robertson, after spending the summer in the Bulkley Valley in Omineca, has now proceeded to Windy Arm, part of which territory, where recently rich quartz discoveries have been made, lies within the Province of British Columbia. Mr. Robertson, by the way, has received a handsome gold medal from the American Institute of Mining Engineers, in acknowledgment of his good offices in connection with the visit of the Institute to British Columbia in July last.

The 44th annual session of the Nova Scotia Institute of Science opened at Halifax on October 19th. The retiring president, Dr. Poole, delivered an interesting address, which was listened to with much attention. The following officers were elected for the ensuing year: President, Mr. F. W. W. Doane, C.E.; 1st Vice-President, Prof. E. MacKay, Ph.D.; 2nd Vice-President, Prof. J. F. Woodman, D.Sc.; Treasurer, Mr. W. McKerron; Cor. Secretary, Mr. A. H. MacKay, LL.D., F.R.S.C.; Rec. Secretary, Mr. Harry Piers; Librarian, Mr. H. Piers; other members of Council: Messrs. M. Bowman, B.A.; W. L. Bishop; E. Gilpin, jr., LL.D., F.R.S.C., I.S.O.; Alex. McKay, J. B. McCarthy, M.A., B.Sc.; Prof. T. H. Sexton, B.Sc.; Henry S. Poole, D.Sc., F.R.S.C.; Auditors, Messrs. D. A. Murray, Ph.D.; R. McColl, C.E.

In publishing last month a lengthy extract from a letter addressed by Mr. J. L. Retallack to Mr. Philip Argall, affording much interesting information on the subject of

the occurrence of zinc in British Columbia, we omitted to state that this letter was written in reply to a request made by Mr. Argall, and that it enclosed as authority a mass of correspondence from provincial government officials and others, and that on account of Mr. Retallack having decided not to accept the appointment on the Board, offered to him, the information was incomplete, but was published in order that those who had supplied him with the information in question might not consider him to have been neglectful of their interests.

A dispatch from Rossland states that Mr. J. M. Astley has retired from the management of the Le Roi mine; Mr. Astley had been in charge of operations at this mine since September, 1904.

### DOMINION GOVERNMENT BOUNTIES.

The official reports of bounties paid by the Dominion Government for the encouragement of the respective industries, for the year ending June 30th, have been published, the details of which are as follows:—

Pig iron .....	\$624,666 98	
Puddled bars .....	7,894 83	
Steel ingots .....	614,433 16	
Manufactures of steel .....	293,208 51	
		\$1,540,203 48
Lead .....	233,844 53	
Lead exported for treatment ...	96,800 59	
		330,645 12
Binder twine .....		13,789 27
Crude petroleum ....		350,047 17
		<hr/>
Total .....		\$2,234,685 04

This statement shows that \$250,000 more was paid during the period referred to than the year previous. This is shown in detail in the following comparative statement:

	1904-1905.	1905-1906.
	Per ton.	Per ton.
Pig iron made from Canadian ore .....	\$2 25	\$1 65
Pig iron made from foreign ore .....	1 50	1 10
Puddled bars .....	2 25	1 65
Steel ingots .....	2 25	1 65
Manufactures of steel:		
Wire rods .....	6 00	6 00
Rolled angles, tees, channels, beams, joists, girders, or bridge building or structural rolled sections, etc. ....	3 00	3 00
Rolled plates .....	3 00	3 00

The other rates of bounty granted by the Government are as follows:

	Per ton.
Lead smelted in Canada .....	\$15 00
Lead exported to Europe for treatment .....	10 00
Crude petroleum produced from Canadian wells, 1 1-2c per gallon.	
Binder twine equal to export duty on Manila fiber, 75c per 100 kilos.	

### MINING STATISTICS.

The Government has received royalty on over seven million dollars' worth of gold produced in the Yukon this year.

The Klondyke's gold production to October 19 was \$7,086,000. The per capita output of the camp for the ten months of 1905 is about \$1,500.

Gold productions from the Yukon for the year is estimated at, approximately, six million dollars. Shipments until September 1st aggregated \$4,838,000.00, while, since then, the value of the gold send-out has been nearly a million dollars.

Coal shipments from Nova Scotia during the month of September were as follows:

Dominion Coal Co., Ltd.—	
Output.....	322,288 tons.
Shipments...	299,403 tons.
Total shipments for 9 months ... ..	2,123,170 tons
Cumberland Railway Co.—	
Shipments for September.. ..	32,934 tons
Shipments for 9 months .. ..	294,725 "
Acadia Coal Company—	
Shipments for September.. ..	26,514 tons
Shipments for 9 months .. ..	189,085 "
Nova Scotia Steel & Coal Co.—	
Shipments for September.. ..	58,818 tons
Shipments for 9 months .. ..	398,095 "
Inverness Ry. & Coal Co.—	
Shipments for September.. ..	14,745 tons
Shipments for 9 months .. ..	94,702 "
Intercolonial Railway Co.—	
Shipments for September.. ..	19,755 tons
Shipments for 9 months .. ..	139,429 "
Total for 9 months, 1905.. .. .	3,239,206 tons

### COMPANY MEETINGS.

Dominion Iron & Steel Company.—The annual meeting of this company was held in Montreal on October 18th, the following statement being presented for the year ending May 31st:—

#### BALANCE SHEET—December 31st, 1904.

##### ASSETS.

Property and Construction ....	\$34,322,361.58
Cash, Accounts receivable, etc ..	498,647.71
Raw Materials .....	602,187.85
Manufactured Products .....	210,568.04
Warehouse Materials .....	296,362.97
Materials in Process, etc.....	156,119.59
Insurance, etc., paid in advance.	10,388.60
	<u>\$1,774,274.76</u>
Special Deposits at Montreal ..	300,000.00
	2,074,274.76
Profit and Loss Account, Debit Balance .....	1,093,240.82
	<u>\$37,490,077.16</u>

##### LIABILITIES.

First Mortgage Bonds .....	\$7,876,000.00
Second Mortgage Bonds .....	712,500.00
C. B. Real Estate Bonds .....	70,000.12
	<u>\$8,658,500.12</u>
Interest on First Mortgage Bonds due 2nd Jan'y, 1905	196,900.00
Interest Accrued on Second Mortgage Bonds .....	10,079.34
	206,979.34
Bills Payable .....	2,899,320.62
Loans secured by subscriptions for 2nd Mortgage Bonds...	300,000.00
Accounts Payable .....	265,982.24
	3,465,302.86
Sinking Fund First Mortgage Bonds .....	84,300.00
Relining and Replacement Funds .. .. .	65,578.85
Suspense Account .....	9,415.99
	<u>159,294.84</u>
	<u>\$12,490,077.16</u>
Capital Account:	
Common Stock .....	\$20,000,000.00
Preferred Stock .....	5,000,000.00
	<u>25,000,000.00</u>
	<u>\$37,490,077.16</u>

#### PROFIT AND LOSS ACCOUNT—December 31st, 1904.

##### Dr.

Balance brought forward, December 31st, 1903 .....		\$584,237.11
Interest on First Mortgage Bonds .....	\$393,800.00	
Interest on Second Mortgage Bonds .....	10,079.34	
Interest on Current Loans ....	183,087.28	
	<u>586,966.72</u>	
Sinking Fund First Mortgage Bonds .....		56,200.00
		<u>\$1,227,403.73</u>
Cr.		
Profit on Sales .....	\$124,755.36	
Rents, etc. ....	9,407.55	
	<u>134,162.91</u>	
Balance carried forward, December 31st, 1904. ....		1,093,240.82
		<u>\$1,227,403.73</u>

#### BALANCE SHEET—May 31st, 1905.

##### ASSETS.

Property and Construction ....		\$34,703,463.02
Cash, Accounts Receivable, etc.	\$587,525.82	
Raw Materials .....	371,206.20	
Manufactured Product .....	330,232.33	
Warehouse Materials .....	251,276.79	
Materials in Process, etc. ....	212,821.80	
Taxes, Insurance, etc., paid in advance .....	27,471.77	
	<u>1,780,534.71</u>	
Special Deposits at Montreal...	528,118.49	2,309,353.20
Profit and Loss Account, Debit Balance .....		1,021,708.75
		<u>\$38,036,524.97</u>

##### LIABILITIES.

First Mortgage Bonds .....	\$7,876,000.00
Second Mortgage Bonds .....	1,631,500.00
C. B. Real Estate Bonds .....	65,833.47
	<u>\$ 9,573,333.47</u>
Interest Accrued on First Mortgage Bonds .....	164,083.34
Interest Accrued on Second Mortgage Bonds .....	16,607.60
	180,690.94
Bills Payable .....	2,873,222.01
Accounts Payable .....	215,491.49
	3,088,713.50
Sinking Fund .....	107,716.66
Relining and Replacement Funds .....	86,070.40
	<u>193,787.06</u>
	<u>\$13,036,524.97</u>
Capital Account — Common	
Stock .....	20,000,000.00
Preferred Stock .....	5,000,000.00
	<u>25,000,000.00</u>
	<u>\$38,036,524.97</u>

PROFIT AND LOSS ACCOUNT—May 31st, 1905.

Dr.	
Balance brought forward, Dec. 31st, 1904 .....	\$ 1,093,240.82
Interest on First Mortgage Bonds. ....	\$ 164,083.34
Interest on Second Mortgage Bonds. ....	30,779.09
Interest on Current Loans ....	81,048.16
	275,910.59
Sinking Fund, First Mortgage Bonds .....	23,416.66
	\$1,392,568.07
Cr.	
Profit on Sales, January 1st to May 31st 1905. ....	\$366,062.90
Rents, etc. ....	4,796.42
	370,859.32
Balance carried forward .....	1,021,708.75
	\$ 1,392,568.07

Since the last annual meeting arrangements have been made to dispose of the remainder of the second mortgage bonds authorized by the shareholders. The total issue is \$2,500,000, of which \$2,000,000 have now been sold. \$100,000 of the bonds which would fall due on 1st of October, 1905, were cancelled without being issued, and \$150,000 of those already issued, maturing on the same date, will be duly met. The price realized for the whole amount averaged 90 5-8 and accrued interest.

The entire proceeds will be devoted to the improvement and completion of the plant. The chief matters in this connection now under progress are the coke ovens mentioned by the director of works in his report last year; the enlargement of the electric power plant, to provide for the additional burden put upon it by the rail mill and additional coke ovens; the improvement of the open hearth plant; and the installation at Wabana of the machinery requisite for underground mining.

The directors have pleasure in reporting that the rail mill was completed and started up on June 14. It has proved satisfactory in every respect, and although, as might be expected, some delays were experienced in getting it into full operation, these have been largely overcome. The capacity of the mill is fully up to the estimate of 500 tons in each shift, and the expectations as to the high quality of the rails to be produced have been entirely fulfilled.

The directors are glad to be able to submit a statement showing that in the first five months of 1905, the earnings of the company fully provided for the fixed charges and sinking fund. Apart from interest on the floating debt, the annual charges to be borne are as follows:—

Interest and sinking fund, first mortgage bonds.	\$450,000
Interest on second mortgage bonds, after 1st October, 1905, (lessening annually).....	135,000
Redemption of second mortgage bonds, 10 per cent. annually. ....	250,000
	\$835,000

The company's output will be considerably increased at an early date by a third blast furnace being brought into operation, and the tonnage of steel will, it is hoped, be enlarged by the improvements in the open hearth department. With this increased production, with the full and profitable outlet which the rail mill and rod mill afford for the whole output of steel, and with the existing promising outlook for business your directors are very hopeful that the company's affairs will now show continued and satisfactory improvements.

The directors regret to announce that in accordance with the understanding on which he accepted the office of director of works, Mr. Graham Fraser desires to be relieved from further service at an early date. They feel that the improved prospects of the plant are largely due to his sound practical management, and they especially wish to record their appreciation of the excellent work he has done in two important undertakings entered on under his supervision, namely, the erection of the coal washing plant and of the rail mill.

**Lake Superior Corporation.**—As already reported in the Mining Review, this company held its annual meeting on Oct. 4th, at Jersey City, N.J. The directors reported as follows:—

To properly appreciate the situation and the results, it is necessary to recall that your properties were received in June, 1904, after a long period of idleness with its attendant demoralizing and accumulating disadvantages. They were also hampered by litigation and complications resulting from the most unfortunate condition of the old company. This was so serious, that had it not been for the persistent and heroic efforts of a few men, many of the creditors, and the stockholders of the Consolidated Lake Superior Company would have suffered almost a total loss of their claims and investments.

After a reorganization was made possible, much time was consumed in extricating the properties by the legal procedure necessary to complete the transfer of title, and to give unrestricted possession.

The last Canadian property to remain in the receiver's hands, The Lake Superior Power, has been released by the discharge of the receiver, and has passed into the full control of the corporation within the past few days.

The inevitable costs and legal fees, etc., in connection with all these matters were very large, but you will be pleased to know that these expenses were special and will not be again incurred.

The allotment of the stock and bonds of the corporation to underwriters and to participating stockholders in exchange for assessment certificates, was quite a complicated matter, and fractional shares and bonds were found to be due almost every individual. The scrip to represent these fractions was undesirable for the investor. A plan for the equitable conversion of the fractional shares and bonds was devised which rendered the issue of scrip unnecessary. This was a relief to the shareholders and a saving of expense.

The distribution of the new securities to underwriters has been completed; and only a small percentage of the securities due to shareholders remains to be issued.

The expenditure was heavy both in time and money in putting such an extensive plant in full operation after a long period of inactivity, with scarcely more than one plant (The Grand Wood Pulp Mill) in condition for operation.

Under these conditions, profitable operations could not be established before the closing half of the year, and thus profits were depleted by expense absolutely necessary to restore working conditions.

The difficulties of the situation were increased late in October, 1904, by the sudden death of the first general manager, Mr. Cornelius Shields.

This serious emergency was soon happily relieved by the engagement of Mr. Willard N. Sawyer, the present general manager, a gentleman of large experience, whose ability and qualifications have met the expectation of your Board.

It is matter for congratulation that following a combination of such conditions and circumstances, the aggregate net income of the plants operated, is in excess of the fixed charges of the corporation.

The old indebtedness has been practically all settled, with the exception of a few disputed claims, and a number of small accounts. When these are all settled, the balance of the treasury bonds for the uses of the corporation will probably be a little over one million dollars.

Under the wise provision of the plan of reorganization, your corporation received one million dollars in cash as working capital, which was in addition to the material and supplies held by the subsidiary companies.

This sum, large in itself, was soon found to be inadequate for the requirements of the business, and it has been necessary to have recourse to loans in order to provide for the advantageous purchase and accumulation of stock and materials required by the subsidiary companies for continuous operation.

Plans have been considered for extensions and additions to the plant, which will materially increase the earning capacity, but lack of ready moneys for this purpose has prevented action being taken beyond a very limited extent, and on lines of extreme urgency. It is expected that this hindrance will be removed during the current fiscal year by the disposition of treasury bonds, and by the sale of nickel matte and ore on hand, and from the increasing net earnings of the current year.

The maximum monthly output of the rail mill was 12,138 tons. Under the efficient direction of the management the product of the mill is of a very high grade, fully meeting the extreme requirements of the Canadian Railways.

The rail mill, in point of appliances for economical handling of material is most efficiently equipped.

The two blast furnaces produced 11,997 tons of pig iron during the month of August, 1905.

Negotiations are pending with experienced parties with a view to deriving a satisfactory revenue from the nickel properties.

Over 200,000 tons of ore were taken out at the Helen Mine, and this, together with the stock on hand, and the output to the close of the shipping season this year, has been sold.

The woods operations for the year have not resulted satisfactorily owing to the large dues payable to the Government, and to other matters incident to this work.

A new arrangement has recently been consummated with the Government, which will make more profitable operations possible, and it is believed that the woods department will hereafter show fair earnings.

The saw mill has been kept running profitably with our own logs and custom work.

The pulp mill produced 27,817 tons of ground wood pulp during the year, which is the largest output in its history.

Building paper and tar paper are also being made in increasing quantity, and will augment the income of this department.

The Algoma Central & Hudson Bay Railway, and the Manitoulin & North Shore Railway, and the fleet of steamers have been operated profitably, mostly in carrying company's freight.

The two traction companies at the Canadian and Michigan "Soos" show a loss for the year. The traffic is increasing, however, and it is expected will show better results the coming year.

The Tagona Water & Light Company with a business of comparatively small volume is one of the best properties, in proportion to the investment.

It has been a matter of serious concern that the great power house of the Michigan Lake Superior Power Company, 1,368 feet long, is unable to bear safely the strain of the full head of water required to develop the maximum horse power; and the works necessary to make its security beyond question, upon the estimates of experienced engineers, will cost an amount beyond the present resources of your corporation.

An agreement, however, has been reached between the bondholders' committee representing the owners of the first mortgaged bonds of the Michigan Lake Superior Power Company, and the officers of your corporation, by which it will be possible to secure the amount required for the construction of the necessary work to place the power house in a satisfactory condition.

This work will require several months and can be undertaken as soon as weather conditions permit next spring.

In the meantime power will continue to be furnished up to the limits of safety, under the contract with the Union Carbide Company, and for other purposes, and your corporation expects to be in a position to entertain applications for the sale of power early in 1907.

In concluding this review, it is proper to state that the manufactured goods on hand, June 30, 1905, such as ore, rails, etc., while sold and under contract at profitable figures, were inventoried at cost, the benefit from which will be realized in the current year's earnings.

The outlook for the current year, viewed conservatively, is most encouraging. Barring unforeseen accidents, the output of rails with the present equipment should be 150,000 tons, 50 per cent. increase upon the production of last year, and at reduced cost, because of some new appliances now being installed.

The two furnaces should produce this year nearly the amount of iron required for the present capacity of the rail plant, whereas last year it was necessary to purchase 50,000 tons of pig iron.

The Directors feel that the shareholders of the Consolidated Lake Superior Company are under obligations to the Province of Ontario for the very substantial assistance which that Government gave to the re-organization in the form of a guarantee upon a loan to the amount of two million dollars, and to some of the bankers holding the loan against the Consolidated Lake Superior Company, who also assisted in redeeming the property from its debts by offering financial assistance to the Underwriting Company.

The disposition of the Canadian Government and people to foster and protect home industries, particularly those which are developing the mineral resources of the Dominion, has been generously manifested towards this enterprise. This friendly spirit and assistance are appreciated and give courage and confidence to extend and enlarge the subsidiary companies' operations.

Cordial and hearty thanks are extended on your behalf to a great body of faithful employees, for most loyal and efficient service, and to those who have ably supervised and directed the work of the year.

Finally, the present and prospective favorable conditions of all markets are too well known to need comment, and with the plants now in operation, running a full year, you may have confidence that the results to be shown at the close of the current fiscal year will be fairly commensurate with the normal operations and healthy growth of a great and developing business.

Providence Mining Company (B. C.) — The third annual meeting of this company was held at Greenwood on October 24th. The superintendent, Mr. P. J. Dermody, reported that when he took over the management of the mine on the 30th of September last he found the property to be in a very poor condition. All the available ore was on the 300 foot level, and was 43 feet long, 12 feet high and 6 inches in thickness. This was stoped out and shipped. A considerable amount of development work has since been done and the mine at present is in a much improved state, while a new boiler and air compressor plant has been installed. Mr. Dermody recommends the installation of a complete electric plant, including shaft house, drying room and office building, at an estimated cost of \$30,000. Owing to the disagreement between the directors of the company, the mine was only running seven months of the eleven months covered by the report. The balance sheet shows an excess of assets over liabilities of \$42,296.24, the net gain for the year ending September 30th, 1905, being \$19,934.76. During the past year the mine shipped 657 tons of ore, which yielded \$61,919.54. The cost of mining was \$19.83 per ton, and the cost of hauling, assaying, freight and treatment, \$10.71 per ton.

**Granby Consolidated Mining, Smelting & Power Co., Ltd.**—The Directors report as follows: Although a large tonnage of ore was treated, the production of copper bullion during the year shows a slight falling off, due entirely to the fact that no outside mattes were purchased for treatment. Nevertheless, the profit—\$712,649.26—is considerably larger than last year, owing partly to great economies introduced during the year and partly to better average prices for metals. It is especially interesting to note that by far the larger proportion of the profits was earned during the last few months of the fiscal year.

In March last, the new line of the Great Northern Railroad Company, connecting the smelter at Grand Forks with the mines at Phoenix, was completed, and since that time ore shipments have been received by both the Great Northern and Canadian Pacific Railroad companies.

In the Phoenix Camp, the company has, during the year, materially increased its holdings by acquiring there, by purchase, the Monarch Group, the Marshall Group, and the Missing Link; and after the first of July, the Gold Drop claims, all adjoining the mining properties of the company in the Phoenix Camp. These acquisitions will facilitate the working of the mines owned by the company in the past, and, with the ore reserves on hand, will satisfy the largely increased demand of the smelter for raw material for a long time to come.

It was decided last winter to add two blast furnaces to the six then in existence, thus increasing the smelting plant at Grand Forks to eight blast furnaces, and it was hoped that they would be in commission by mid-summer of the current year. A number of unforeseen contingencies, however, caused considerable delay, with the result that the seventh furnace was not blown in until October 3rd and the eighth is expected to be in commission by the 16th inst. Consequently, no benefit was derived during the last fiscal year from the operation of the two additional furnaces.

These extensions and improvements necessitated a large outlay of money. It was found necessary to widen the tunnels, equip them with the same electric locomotive haulage system and provide new 10-ton steel ore cars. Besides, a new crushing plant had to be erected and new ore bins installed in order to facilitate the shipment of ore over the Great Northern. At the smelter, in addition to the new furnaces, a new blowing engine and accessory machinery, as well as new ore bins had to be erected. The method of handling the slag from the blast furnaces was changed, as also the method of charging the furnaces into a new and better system, both of which are now in operation and have materially lessened costs. These improvements entailed an outlay of about \$350,000 in the past year, and additional sums will be required during the current fiscal year.

The mines, at which development work is constantly pushed, look well; the quantity of ore blocked out is largely in excess of that in sight last year. The smelting works, thanks to the improvements recently introduced, are in a high state of efficiency. The company is entirely free from debt, and in addition to a large cash balance on hand, has further available assets in the shape of blister copper in transit from the smelter to the refining works.

**Treasurer's Report.**

Following is a summary of the years' business:

**Produced.**

14,237,622 lbs. copper fine, sold at an average price of .....\$0.1436  
 212,180 ozs. silver fine, sold at an average price of ..... 0.5830  
 42,884 ozs. gold fine, sold at an average price of ..... 20.00

These prices are net after all expenses have been deducted.

The total amount realized equals ... ..\$2,749,145.02

**Costs.**

Working expenses at mines and smelter, freight, refining, selling, and general expenses....	\$1,797,964.35	
Foreign ores purchased ... ..	238,531.41	
		\$2,036,495.76
Net profit for the year ending June 30, 1905 .....	712,649.26	
Surplus from previous year (corrected) .....	842,226.01	
		\$1,554,875.27
Net surplus June 30, 1905 .. .		\$1,554,875.27
There has been expended in new construction, equipment at the mines, smelter and converter plants, etc. ....	\$ 343,974.28	
For additional mining properties as above enumerated .....	142,603.53	
		\$486,577.81

All development work, renewals and repairs have been charged to working expenses.

Mine Development .....	5,200 lineal feet
Diamond Drill Development .....	3,148 lineal feet
Granby Ore Smelted .....	550,738 dry tons
Foreign Ore Smelted .....	99,382 dry tons

**Assets and Liabilities.**

June 30, 1905.

**Assets.**

Cost of land, real estate, machinery, buildings, dwellings and equipment .....	\$14,451,563.39
Stocks, bonds and bills receivable .. . . . .	45,545.17
Cash, copper in transit and on hand, less advances, ... ..	584,113.35
Fuel and store supplies .....	158,345.83
	\$15,239,570.74

**Liabilities.**

Capital stock .....	\$15,000,000.00
In the treasury .....	1,500,000.00
Issued stock .....	\$13,500,000.00
Accounts payable (current for month) .. . . . .	184,490.27
Dividends collected on liquidator shares .....	205.20
Surplus .....	1,554,875.27
	\$15,239,570.74

**Shakespeare Gold Mining Company (Ontario).**—A meeting of the shareholders of the Shakespeare Gold Mining Company was held during October, when the following directors were elected: Mr. C. L. Twohy, president, Duluth, Minn.; Messrs. Andrew Gowan, Duluth, Minn.; A. I. Hoffman, Brainerd, Minn.; J. C. Foley, Sault, Ont.; J. B. Miller, Sault, Ont.; J. W. Trotter, Sault, Ont.; F. R. Price, Soo, Mich.

**COAL NOTES.**

**NOVA SCOTIA.**

The Dominion Coal Company, which have been making a number of improvements during the past summer, have decided to substitute electricity in place of steam in the respective collieries.

The Nova Scotia Collieries Co., composed of English capitalists who have acquired extensive coal areas at St. Rose, N.S., (the old Chimney Corner location) has had engineers in the field for the past month making a preliminary survey for a line of railroad from its holdings to Port Malcolm, on Caribou Cove. The proposed line will probably connect with the I.C. Ry. at Orangedale.

The work of excavating for the new foundry to be erected at Glace Bay by the Dominion Coal Company has been commenced. The building will be ninety by one hundred feet long, about twice the size of the present foundry. It will be of brick and steel, and will cost over \$25,000. It is expected that the building will be completed inside of three months. The capacity will be ten tons per day. The output at the big colliery, Dominion No. 2, will this month be the largest in its history. Some days the output has run up to 3,900 tons per day on single shifts.

The coming winter promises to be the brightest ever experienced in the coal trade in Nova Scotia. Commencing this month, the quantity of coal supplied to the Dominion Steel Co. has increased from 40,000 to 60,000 tons per month. The contract with the Maine Central Railway calls for 75,000 tons for winter shipment. Louisburg, the winter port of shipment of the Dominion Coal Co., will have the busiest season in its history. The Dominion Coal Co. have erected immense coal pockets at St. John and at Halifax, which are now nearly completed. Thus increased steamship traffic will be readily supplied, as well as the local trade of the provincial towns and cities. The time is not far distant when Nova Scotia will utilize two million tons of coal per year. The coal pocket structure at St. John measures 200 feet long, 36 feet wide, and 56 feet high from the wharf line. The pocket will have a capacity of 5,000 tons, and by the utilization of up-to-date machinery the average vessel will be emptied in ten hours, at a cost of three-quarters of a cent per ton. Eight hundred thousand tons of coal will be required of the Dominion Coal Co. between January 1 and April 1. This means steady work throughout the winter.

#### BRITISH COLUMBIA.

The output from the Comox collieries is being steadily increased, and it is expected that the monthly production will aggregate 40,000 tons.

Development operations have commenced on the recently discovered coal deposits near Enderby, in which it is said Sir Arthur Stepney, who is a large proprietor in other British Columbia properties, has secured a considerable interest.

After a period of idleness of nearly five months the Nanaimo collieries were re-opened during October. The mines were found to contain a considerable quantity of water, but were free from gas, and by the beginning of November were working at full capacity.

The Vermilion Forks Mining Company is operating a steam drill on one of the company's properties on the Tulameen, and a seam of good coal, four feet in thickness, has been reached. Arrangements are to be made for the commencement of active mining operations, and a shipment of coal to the Daly Reduction Company, at Hedley, is shortly to be made.

#### MINING NOTES.

##### NOVA SCOTIA.

A promising new discovery of gold quartz is reported to have been made near Cross Roads, Country Harbour. The property is now being developed.

The Dominion Iron & Steel Company's new rail mill is in steady operation, and last month completed the Grand Trunk Railway Company's order for 25,000 tons. The capacity of the mill is 1,000 tons a day, though the daily production is about 600 tons.

We are informed that the Dominion Antimony Co., owning extensive deposits of antimony ore at West Gore, N.S., have contracted with a representative of the McArthur-Forrest Company, for the erection of a plant for the extraction of the gold which is associated with antimony at the mine. This report states that the plant is to cost \$75,000.

A large addition is being made to the coal-washing equipment of the Dominion Iron and Steel Company in the form of a trestle, pockets and conveyors for taking care of the storage of fifteen thousand tons of coal. The work is being done, by a Pittsburg firm. The rest of the washing plant has been definitely taken over by the Steel Company, and it is expected that the first section of the new work will be finished by Christmas.

The Dominion Iron & Steel Company are contemplating an enlargement of the plant, but are at present undecided whether to build more open-hearth furnaces or install a Bessemerizing plant for de-siliconizing the pig. The company is arranging with the Nova Scotia Steel Co. for the exploration of the submarine areas at Wabana. The Nova Scotia Co. owns areas lying outside those of the Dominion Company, and a slope will be driven down through their present workings, which, it is hoped, will prove the existence of large and valuable ore bodies in the area of both companies.

#### QUEBEC.

The Trans-Canada Railway Company have already completed their survey of 30 miles along the proposed route of the extension of this line from Roberval into the Chibogamoo country, and it is expected that construction will be commenced at an early date.

#### ONTARIO.

The Ogden Oil Company is sinking a new well on the Dick farm, lot 14, 9th concession, at Leamington.

The B. A. Pyrite mine at Queensboro is now making steady shipments of ore. The new testing mill is now completed and the machinery installed.

Another important strike of oil is reported to have been made in Essex, at a well being sunk by a Marmora company, which holds a large tract of land near Leamington.

Arrangements, it is hoped, will be made to continue milling operations at the Camp Bay mill during the winter. A clean-up at this property was recently made, with satisfactory results.

The Manitou Mining Company, a new organization, proposes to commence development operations on the H. P. 413, H. W. 36 and H. W. 37 properties, situated near the Big Master mine in the Manitou district, early next spring.

The Lake Superior Corporation has resumed operations on the Josephine iron mine, under the direction of the Company's metallurgist, Mr. A. B. Willmott. The re-opening of this company was announced some time ago by the directors.

Another gusher is reported to have been struck, at a depth of 1,080 feet, in the Leamington oil fields. This is the fourth large gusher that has been tapped in the last two weeks. The well is located on the east half of lot 10, in the 7th concession of Mersea.

The development of the Garden Plough mine is proceeding satisfactorily, and the mill test, recently conducted by Mr. C. Brent at the Eldorado mill, proved very satisfactory. Operations have meanwhile been resumed at the Eldorado mine, which is now being unwatered. A stamp mill is also being installed at the Grace.

The mill at the Big Master mine is now steadily crushing ore, and as a result, of 23 days' operations, bullion was produced said to be valued at \$3,000, from a crushing of 450 tons. At the mine the shaft has been sunk to a depth of some 300 feet, and a cross cut is being run to the main vein. It is reported that the company contemplate the installation of a cyanide plant.

The clean-up at the mill of the Anthony Reef mine at Sturgeon Lake, resulted in the production of a gold brick valued at \$8,000. Milling operations have been discontinued for the present, to enable certain repairs to be made to the mill foundations. Arrangements are being made with a view to the resumption of operations of the Grace Gold Mine, Michipicoten. This property was previously on a profit-earning footing. It is also expected that the Mariposa property in the same locality will be re-opened in the near future.

The Leamington Oil & Gas Company has declared another dividend of 6 per cent. The Leamington News states that the production of the Leamington Oil Co. from three wells on the Grant farm for September was 1,066 barrels. On the Rymal farm the production for the month was 622 barrels. Five wells on the Foster farm yielded for the same company 693 barrels, and those on the Gowman farm produced 714 barrels. Their total production for the month of wells as reported above was 3,095 barrels. This, of course, does not include the company's output on leases north.

During the past summer a considerable amount of development work has been carried on at the Hermina mine, in the Algoma district, under the superintendence of Capt. William Daniells, who assumed charge of the property in May last. At the No. 1. 2-compartment shaft sinking has been continued to a depth of rather more than 300 feet, and drifts extended from the 2nd and 3rd levels. This work has resulted in opening up a considerable quantity of ore. At the No. 3 shaft, on the No. 3 vein, a hoisting engine, capable of operating to a depth of 2,000 feet, an 8 drill compressor and other plant, has been installed. This shaft is a 3-compartment, and sinking was commenced towards the close of September.

The Iron Age, in a recent issue, published an account of the record of No. 1 blast furnace of the Algoma Steel Company in the production of charcoal pig iron at Sault Ste. Marie. On July 8, 1905, the output was 173 gross tons, and the average for four days ending July 9 was 163 tons. Charcoal consumption was 1,471 pounds per ton of pig iron; the pressure of the blast was 9 1-4 pounds; and the volume of air 10,172 cubic feet per minute. The furnace was built to use charcoal as fuel but since the middle of July it has been running on coke. No change whatever was made in the construction or connections of the furnace in going from charcoal to coke, except the necessary increase in the amount of blast blown. For one week the experiment of part coke and part charcoal was tried with good results. The product was only a little higher than on all charcoal, 175 tons being the best day's output. The best week's product on all coke was 1,372 tons, or a daily average of 196 tons. This is at the rate of 224 tons per week per 1,000 cubic feet capacity. The furnace is only 70 feet by 13 feet six inches bosh diameter by eight feet six inches hearth. The best day's product was 216 tons,

#### ALBERTA.

A dispatch received at the local offices of the Western Oil & Coal Co., Ltd., from its works in the Alberta oil fields, states that the boring machine is now down almost 1,200 feet and that gas is issuing from the bore in sufficient quantity to give a flame six feet high when a light is applied. In the last 100 feet a softer formation has been entered and the oil has been seeping into the bore freely. The officers of the company express pleasure at the news of the softer formation as oil is never struck in the harder rocks.

#### BRITISH COLUMBIA.

Atlin.—Operations on McKee Creek have been suspended for the season. One of the principal companies operating on this creek is the McKee Creek Mining Company, which, during the summer, cleaned 5,700 square yards of bed rock covering gold to the value of \$34,000.00, at a profit of \$12,000.00, notwithstanding the scarcity of

water during the summer months. The company proposes installing electric shovels for handling the dirt more expeditiously next season.

The season in Atlin has practically closed, although some of the large undertakings are still working. The season is said to have been an exceptionally successful one, and good reports have been received of dredging operations. There is some talk of a likelihood of an amalgamation of interests on McKee Creek, by the two companies operating there. The British American Dredging Company meanwhile are said to be arranging for the purchase of another large dredge from the manufacturers in San Francisco, while dredging operations are said to have yielded good returns. A large steam shovel plant is also, it is expected, to be installed next season, to handle 350 yards of material daily. During the year important developments are said to have taken place on Ruby Creek, which, it is believed, will prove a very rich area.

Coast.—The Western Iron Co. has been floated with a capital of half a million dollars, to construct a large blast furnace at or near Seattle for the handling of iron ore, presumably from the mines recently purchased by the company organized by Messrs. Moore and Pigott on Quatsino Sound.

The Victoria Colonist reports that a million dollars has been guaranteed to provide for the erection of a blast furnace of 300 tons capacity on Puget Sound, to utilize the Vancouver Island iron ores.

Shipments of ore have commenced from the Copper Queen mine, on Texada Island, to the Crofton smelter, while pumping machinery has been installed at the Cornell, where the workings are being unwatered.

The reports from the Mount Sicker district indicate that mining in that section is at present extremely active, largely as the result of the arrangements to re-open the Crofton Smelter, the installation of new machinery and the erection of a briquetting plant. A force of men are also at work overhauling the smelter plant and rearranging the tracks. Ore is already being roasted in the yards.

Cariboo District.—A company known as the Beaver Valley Oil Company has been incorporated with a capital of \$100,000, to prospect for oil in the Beaver Valley, Horse Fly district.

Mr. Frank Hibel kindly sends us the following notes:

The Lightning Creek Gold Gravels and Drainage Company has successfully concluded its drilling operations for this season.

"Since the location of the ancient channel has been positively ascertained, its depth, width and direction have since been more extensively explored and determined by three additional drill holes, No. 8 drill hole proved the same depth to bed rock as No. 5, where such prodigious values were recovered and equally as rich.

"A new flume treble the size of the former is about to be completed, which will carry sufficient water to develop 75 horse power.

"A new shaft house is in course of construction and as soon as it is completed the sinking of a three compartment shaft about 75 feet from the point where the old channel was discovered, will be commenced.

"Supt. Sam. Keast, who so successfully conducted operations during the past summer, will in the near future make a business trip to Vancouver and Victoria to select the necessary machinery, such as steam hoist, dynamo, pumps, turbine water wheels, and other requisite supplies to the end of prosecuting a vigorous system of development of this promising proposition. Much credit is due to Mr. Keast's untiring efforts and ability in what has been accomplished since the beginning of operation last spring.

"In all, the company has an exceedingly bright future, its location at Wing Dam on the Cariboo Road has every appearance of a busy camp."

Mr. R. T. Ward proposes installing a dredging plant on his property at Harper's Camp, and has worked a No. 3 Keystone drill in order to first test the ground.

Arrangements for the sale of the Consolidated Cariboo Hydraulic Mining Company's property, it is unofficially announced, to Messrs. Guggenheim and others, have been completed, following the lines mentioned in the Mining Review last spring.

**Lardeau.**—Last month's clean-up from the Oyster-Cryerion gave a net result of \$6,000.

At the Silver Dollar mine, at Camborne, machinery for a more extensive working of the property has been installed.

The Lardeau Mining Review speaks very hopefully of this summer's development operations at the Silver Cup mine, good ore having been encountered at a depth of 700 feet on the property.

The Great Northern Mines, Limited, at a general meeting of the company, has decided to raise \$10,000 by mortgage to liquidate an immediate indebtedness, and, in addition, issue debentures to the value of \$200,000, of which \$60,000 has already been subscribed, to provide for the purchase of mining machinery and mine development.

Last month's clean-up at the Eva mill resulted in the production of a gold brick valued at \$5,000 besides which there are concentrates of an approximate value of \$1,000, making the gross output for the month's work, \$6,000, says the Camborne Miner. After paying all expenses of operating a good margin will be left on the right side of the ledger, which is a creditable performance for a ten stamp mill.

**Slocan.**—A despatch from Nelson dated Nov. 6th states: A dividend of \$25,000, equal to 5 per cent. on the capitalization of the company, has been declared by the Slocan Star Mining and Milling Company, operating the Slocan Star mine at Sandon.

A decision has been reached to continue development work at the La France mine during the winter.

Mr. S. S. Fowler has obtained from the London B. C. Gold Fields a renewal of his lease on the White Water mines on favorable terms.

The owners of the Lucky Jim divided profits amounting to \$24,000 in October. The mine has been in operation for rather over a year, and during that period has paid \$80,000. The ore carries values chiefly in zinc, which has been shipped to Colorado smelters.

**Nelson.**—It is stated that a new and comprehensive plan for the development of the Ymir mine, is now under consideration.

**Rossland.**—The Department of Trade and Commerce has been notified that the lead refinery, operated in connection with the smelting works at Trail, has been enlarged to enable a product of 50 tons per diem.

A 400 h.p. electric motor has been shipped from Montreal to the White Bear Mining Company.

The Rossland output to the end of October is 275,663 tons, of which the Le Roi contributed rather over 100,000 tons, the Centre Star 83,000 tons, and the War Eagle 56,500 tons.

On September 27th the Le Roi No. 2 Company declared an interim dividend of one shilling per share. This Company has, it is reported, obtained the consent of the Le Roi Company to run a drift from the 1,550 ft. level into the Josie ground, in order to admit of prospecting work at that depth. The Rossland Miner remarks that by this means a large saving will be effected. Should the ore shoots be found, as it is expected they will be, on the 1550 foot level in the Le Roi Two, either the main shaft can be extended down to them or the ore can be extracted and taken out through the Le Roi workings. It is certainly the cheapest method of getting at the ore in the Josie, and whether the ore is found or not the expenses of running a crosscut and drifts for the purpose of ascertaining the fact will not be very great.

**Boundary.**—At the British Copper Company's Mother Lode mine preparations are in progress for sinking the main working shaft to the 500 foot level, exploration by diamond drilling having justified the expenditure in this district.

Shipments from the Boundary Creek district, British Columbia, for the year to the end of October, are given as 731,277 tons, of which over 500,000 tons have been produced by the Granby mines and 160,000 by the B. C. Copper Co.

The Dominion Copper Company has contracted with the Cascade Power Company for 100 h.p., for the purpose of operating the company's plant at Phoenix. The Dominion Copper Company meanwhile proposes to install a larger and more complete compressor plant at the Brooklyn mine.

The Granby Company is now employing between 900 and 1,000 men at the mine and smelter. The new furnace, recently blown in, is said meanwhile to be giving excellent results, the daily treatment of ore being 450 tons. The smelter is in consequence treating in excess of 2,000 tons of ore in 24 hours.

A deputation of smelter employees recently waited upon Mr. Hodges, the company's general manager, and urged that their hours be reduced to 8 hour shifts instead of as at present 12 hours. The request will be laid before the directors, but it is understood that Mr. Hodges is not unfavorably disposed in the matter.

**Similkameen.**—Mr. M. K. Rogers, manager of the Nickel Plate mine, states that it is the intention to increase the capacity of the Nickel Plate mill from 40 to 120 stamps directly the railway, now under construction, shall have reached Hedley.

**East Kootenay.**—The St. Eugene Mining Company paid a dividend on the 4th of October, of 2 per cent., for the quarter ending June 30th.

On October 6th the shaft house and machinery at the St. Eugene mine was totally destroyed by fire, the damage being estimated at \$25,000, the insurance being only \$8,000. The origin of the fire is believed to have been due to the work of incendiaries. No time, however, has been lost in repairing the damage, and new machinery was immediately ordered. It became necessary, however, to close down the mill temporarily, but development at the mine has been continued. Some considerable inconvenience, however, will be occasioned by the suspension of shipments to the smelters, but a recent despatch states that production will be resumed by the first of December, which is earlier than was anticipated.

#### YUKON.

An order-in-council has been passed applying the regulation governing placer mining in the Yukon Territory to the district of Mackenzie.

Last month the construction of the Bonanza Basin Gold Co.'s dredge was completed, and operations commenced on the Klondike. Some of the plants are meanwhile being equipped with special appliances for thawing the gravel during the winter season, in order that operations may be continued during cold weather.

Preparations are being made to commence development operations on the Silver King property in the new Windy Arm district, while it is reported that the Dale properties have been bonded for the sum of \$100,000.00. The recent heavy rains in the Yukon during September will, it is said, result in an increase of output of nearly a million dollars over what was expected, though the production of the Territory will, nevertheless, be not very much more than two-thirds that of last year, owing to the exceptionally dry weather during July, and in addition to this a number of changes have recently been made.

Dredging operations were commenced on the 8th of October at the Bonanza Basin Gold Dredging Company's property, at the mouth of the Klondike River. The Yukon World states that the new dredge is dissimilar in many respects from those now working in the Yukon, the difference being that the buckets dump the debris in a bin, from which it is washed into a grizzly, and is perforated with holes four inches in diameter. The gravel then drops into a basin from which it is washed into a sluice box leading into a well, whence the finer gravel is

picked up by a 12 inch centrifugal pump, and finally carried over Hungarian riffles.

The output of gold in the Yukon was this year smaller than that of last year, the falling off being due to a lack of water. But it is also worthy of notice that the best grounds on the available creeks are getting worked out. In a recent interview in Winnipeg, Mr. E. C. Senkler, gold commissioner for the Yukon, expressed the opinion that as time goes on the miners will have to resort to large methods of working low-pay gravel. New methods have already been used with some success. This summer a company brought in one of the largest dredges ever used in mining, and in the seven weeks before the close of the season took from the ground about \$100,000. This success will have the effect of making modern machinery more common in the Klondike. The great need of the country is for the Government to bring in, by means of ditches and flumes, a large supply of water for mining purposes. Although the expense of this would be enormous, it is thought to be justified by the promise of great results. The future of the Klondike lies in its vast expanses of low pay gravel. It may be safely predicted that there will be remunerative placer mining in the country for very many years to come.

### THE ZINC COMMISSION.

At a public meeting of mine owners and others, held at New Denver on October 11th, at which were present representatives of the Comstock, Bosun, Hartney group, the Standard, Red Fox, Monitor, Wakefield, and Mercury mines, the following resolutions were passed:—

1. Whereas, articles have appeared in local newspapers purporting that general dissatisfaction exists with the operation of the zinc commission, and

Whereas, it is believed that such feeling is not prevalent and that opposition, confined to a few, is largely actuated by personal or selfish motives, and

Whereas, the zinc commission is investigating Slocan Lake district,

Therefore, be it resolved, that no dissatisfaction exists with such investigation as conducted in Slocan Lake district and that condemnation or criticism before publication of the report is ridiculous and unwarranted.

2. That the results to be obtained by establishing a free assay office would not further the object of the commission and would result in waste of public money.

### NOVA SCOTIA COAL AND THE ONTARIO MARKET.

A correspondent writes to the Montreal Daily Gazette as follows:—"The Dominion Coal Company is recognized as one of the largest as well as most progressive coal companies in America. Under the management of James Ross it has gained greatly in public confidence. Recognizing the necessity of a large market, Mr. Ross has boldly invaded Ontario, hitherto held exclusively by American mines, and filled a large contract as far west as Deseronto. In accomplishing that feat on a commercial basis, Mr. Ross has conferred a great benefit to the trade. To Deseronto, the American freight rate is probably seventy-five cents less per ton than to Montreal, the Sydney freight rate is probably seventy-five cents more than to Montreal, total, \$1.50, or, to be within the mark, say, one dollar discrimination against Dominion coal in Deseronto, in comparison with it in Montreal in competition with American coal. It has now become manifest that if Sydney coal can compete (as Mr. Ross has demonstrated), with American coal in Deseronto with the duty on, it can compete with it in Montreal with the duty off, and have fifty cents or more to spare. An ounce of practice is worth a pound of theory, and with Mr. Ross's practical demonstration in view, it cannot now be alleged that American coal can compete with the Nova Scotia article in the Montreal market, duty or no duty.

Mr. Ross has proved that the duty has no protective value in Montreal. The increasing population in the mining districts in Nova Scotia, as well as the continuous development of that province, demand imperatively an enlarged market to prevent a certain glut in coal production, and a shrinkage in employment and wages. Mr. Ross is far-sighted enough to know this, and to be reaching out for new markets."

### COMPANY NOTES.

The Durham Natural Gas and Oil Company, Ltd., of Durham, Ontario, has assigned to T. A. Harris.

St. Eugene, (B.C.)—The secretary of this company issued last month a circular to shareholders announcing the payment of a dividend at the rate of 2 per cent. for the quarter ended June 30th, 1905, this being the sixth dividend paid by the Company.

The Ymir.—The following cablegram has been received from the mine manager at the London office of the Ymir Gold Mines, Ltd.:

"Crosscut to the hanging wall level No. 7, fine body of ore; the average width is ten feet; average assay of ore is \$9." (Office note—This important ore body has been struck 230 feet east from the shaft, 200 feet below the discovery (5 feet wide, \$20), in level No. 5, which is 240 feet west from the shaft. Operating costs amount to about \$5 per ton on the present output, exclusive of development but this figure can be appreciably reduced on a larger output.)

Le Roi No. 2.—The mine manager cables for September: "Shipped 1,087 tons. The net receipts are \$19,412, being payment for 1,026 tons shipped and \$1,963 being payment for 68 tons of concentrates shipped; in all \$21,375, inclusive of \$2,818 for 250 tons from the dump."—August receipts, \$8,787.—

Tyee Copper (B.C.)—During September the smelter ran 11 days and treated 1,019 tons of Tyee ore, giving a return, after deduction of freight and refining charges of \$35,019.24.

Le Roi.—The September returns from this mine are as follows: 8,150 tons to the Northport smelter; 6,955 tons to Trail Smelting works; 1,185 tons, containing 3,079 ounces of gold, 3,050 ounces of silver and 172,850 pounds of copper; estimated profit on this ore after deducting cost of mining, smelting, realization and depreciation, \$17,000; expenditure on development during the month, \$10,000.

The Payne Company (B.C.)—A special meeting of the directors of the Payne Company was held in Montreal towards the end of October, when a decision was reached to lease the workings to Mr. Walker Smith for a term of three years. A report, giving the position of affairs, will shortly be sent to the shareholders.

New Fairview Corporation, Limited.—The secretary has issued a circular showing that the company's liabilities have again been reduced during the past year by the substantial sum of \$23,928.17.

The appearance of the ore-body under the fault, previously reported, was most promising when work was discontinued; and, if adequate funds to properly open this up in depth (which is an absolute necessity for future success) are forthcoming, the outlook is distinctly favorable.

The company's buildings, machinery, plant, and stores are all in good condition, and ready for the active resumption of operations at any time.

### MINING INCORPORATIONS.

#### ONTARIO.

The Canadian Hart Corundum Wheel Co., Ltd. Capital, \$75,000, in shares of \$100 each. Head office, Hamilton. Provisional directors. Geo. Frederick Webb, Seward Wilcox, Harley Ethelbert Sherk and Chas. Douglas Warren.

The Canadian Oil Refining Company, Ltd. Capital, \$100,000, in shares of \$100 each. Head office, Toronto. Provisional directors. John Frederick Hollis, Thos. Herbert Wilson, Thos. Henry Hamilton, William Perkins Bull and Annie Marie O'Brien.

The Standard Silver & Cobalt Mining Co., Ltd. Capital, \$40,000, in shares of \$1.00 each. Head office, New Liskeard. Provisional directors: Jno. Armstrong, Geo. Warrell, Jno. Sharpe, Elijah Field Stephenson and Wm. McNab Cameron.

The Brakehurst Oil Co., Ltd. Capital, \$100,000, in shares of \$50 each. Head office, Sarnia. Provisional directors. Geo. Montgomery Trefts, Josephine Winfield Brake and John Hingston Cooper.

The Rothschild Cobalt Co., Ltd. Capital, \$500,000, in shares of \$1.00 each. Head office, Haileybury. Provisional directors. Maniel Rothschild, Herman Joseph, Max Rothschild and John McKay.

The Northern Exploration Company, Ltd. Capital, \$100,000. Head office, Haileybury. Provisional directors: Frank Mortimer Perry, Stair Dick Lauder and Arthur Cyril Boyce.

Coleman Cobalt Mining Co., Ltd. Capital \$250,000, in shares of \$1.00 each. Head office, Toronto. Provisional directors. Albert Robert Moore, Hamilton Bender Wills and John Jennings.

#### BRITISH COLUMBIA.

The Northern & B. C. Sampling and Milling Co., Ltd. Capital, \$20,000, in shares of \$1.00 each.

The San Juan Mining & Mfg. Co., Ltd. Capital, \$1,000,000, in shares of \$1.00 each.

Green City Gold Mining, Smelting & Development Co., Ltd. Capital, \$1,500,000, in shares of \$1.00 each.

Spitzee Mining Co., Ltd. Capital \$350,000, in shares of \$5.00 each.

Alaska Pumice Stone, Hydraulic, Cement & Trading Co., Ltd. Capital, \$50,000, in shares of \$1.00 each.

#### INDUSTRIAL AND MACHINERY NOTES.

The Canadian Northern Coal & Ore Dock Company, Port Arthur, Ont., recently purchased from Robb Engineering Co., Ltd., Amherst, N.S., one 300 h.p. Robb-Armstrong tandem engine.

The Montreal Copper Co. recently made a shipment of 100,000 pounds of refined ingot copper to China to be used by the Government of that country for coinage purposes. The company was founded a little over a year ago. It is now proposed to install a larger plant for the refining of copper at these works.

The Canadian factory at Montreal of the Syracuse Smelting Works have recently made some large shipments of their products to Europe, and also to China and Japan. They inform us that their babbitt metal business is expanding wonderfully. Messrs. L. and H. Sapery, the proprietors, are Canadians, and deserve much credit in establishing branch works in New York from which to supply their American trade.

An increasing demand for the gas engine is noticeable, due no doubt to greater appreciation of the excellent operating economy of this class of prime mover. The Westinghouse Machine Company, of East Pittsburg, Pa., the first manufacturers of large gas engines in America, have received within the last few weeks many orders for gas engines, ranging from 10 B.H.P. to 1,000 B.H.P. No less than thirty-six gas engines are covered by these orders, aggregating 6,647 B.H.P.

The Pennsylvania Railroad Company has very recently placed an order with The Westinghouse Machine Company for six 132 in. x 26 grate and four 100 in. x 20 grate Roney mechanical stokers to extend their already large

equipment at Altoona. Two new boiler plants were erected at Altoona only a few years ago, for supplying steam power at the Altoona shops. These plants were both equipped throughout with Roney mechanical stokers, and are thoroughly representative of the highest development of modern boiler plant construction.

The confidence of Cobalt miners in the future of that district is shown by the scale on which they are investing in mining machinery. M. J. O'Brien & Co., whose mine is on the edge of Cobalt Lake, recently bought from Allis-Chalmers-Bullock, Limited, a complete power house equipment, including boilers, hoisting engines, 7-drill compressor plant, boiler feed pump, large general supply pump, high speed engine and generator for electric lighting. The compressor is of the Ingersoll-Sergeant self-contained type and the whole machine is mounted on a continuous box girder frame, specially designed for heavy mining work.

Three orders of large size have recently been received by the Westinghouse Machine Company of East Pittsburg, Pa., for their Roney mechanical stoker. One order from the Jones & Laughlin Steel Company of Pittsburg, Pa., calls for sixteen 114 in. x 24 grate stokers, one from the Lehigh Valley Traction Company of Philadelphia, Pa., calls for eight 130 in. x 20 grate stokers, and another from the Pressed Steel Car Company of Pittsburg, Pa., covers six 100 in. x 20 grate mechanical stokers. These stokers are of the inclined rocking grate type with removable fuel plates, and are provided with the necessary actuating mechanism for automatically controlling the motion of the grate-bars and the supply of fuel. They will be capable of burning low grade bituminous coal efficiently and without smoke.

Steam shovels are the latest addition to the already numerous products of the Allis-Chalmers Co., Milwaukee, represented in Canada by Allis-Chalmers-Bullock, Limited, Montreal. They are especially designed to meet all requirements of up-to-date contractors. One of the many good features claimed for the Allis-Chalmers steam shovel, is the method of operating dipper with drum of different diameters on the boom. The rope from hoisting engine drum passes around the large diameter of the boom-drum and is permanently fastened to it. Two ropes lead to the dipper from smaller diameters of the boom-drum, one on each side of the large diameter, which increases the pull on the hoisting rope without multiplying gears, and materially quickens the operation of shovel without carrying an immense weight on the boom. These and other features are admirably illustrated in Bulletin No. 1402.

Messrs. the John McDougall Caledonian Iron Works Co., Ltd., have been appointed sole manufacturers in Canada of the Blaisdell Cyanide Excavating Machinery, under the various patents owned and controlled by the Blaisdell Co., of Los Angeles, Cal. This machinery was invented by Mr. H. W. Blaisdell, who has had an active experience in mining and milling gold ores extending over twenty-five years. After a series of experiments, this machinery, consisting of excavators, distributors, tailings stackers, aerators and mixers, was produced, and thus abolishing unskilled labor from cyanide plants and providing the final link for a complete mechanical method of handling ore between the mine and the dump was successful. These plants have already been installed in various parts of the United States and have met with great success during the last few years.

## MAJOR DAVID BEAMES,

Late I.S.C., and of Berkhamstead, England.

If the above will communicate with C. J. Walker's Advertising Agency, 24 Coleman Street, London, England, he may hear of something to his advantage.

# PROVINCE OF QUEBEC

The attention of Miners and Capitalists in the United States  
and in Europe is invited to the

## GREAT MINERAL TERRITORY

Open for investment in the Province of Quebec.

**Gold, Silver, Copper, Iron, Asbestos, Mica, Plumbago, Phosphate,  
Chromic Iron, Galena, Etc.**

**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.**

Mining concessions are divided into three classes:—

1. In unsurveyed territory (a) the first class contains 400 acres, (b) the second, 200 acres, and (c) the third, 100 acres.

2. In surveyed townships the three classes respectively comprise one, two and four lots.

All lands supposed to contain mines or ores belonging to the Crown may be acquired from the Commissioner of Colonization and Mines (a) as a mining concession by purchase, or (b) be occupied and worked under a mining license.

No sale of mining concessions containing more than 400 acres in superficies can be made by the Commissioner to the same person. The Governor-in-Council may, however, grant a larger extent of territory up to 1,000 acres under special circumstances.

The rates charged and to be paid in full at the time of the purchase are \$5 and \$10 per acre for mining lands containing the superior metals\*; the first named price being for lands situated more than 12 miles and the last named for lands situated less than 12 miles from the railway.

If containing the inferior metal, \$2 and \$4 according to distance from railway.

Unless stipulated to the contrary in the letters patent in concessions for the mining of superior metals, the purchaser has the right to mine for all metals found therein; in concessions for the mining of the inferior metals, those only may be mined for.

\* The superior metals include the ores of gold, silver, lead, copper, nickel, graphite, asbestos, mica, and phosphate of lime. The words inferior metals include all other minerals, and ores.

Mining lands are sold on the express condition that the purchaser shall commence bona fide to mine within two years from the date of purchase, and shall not spend less than \$500 if mining for the superior metals; and not less than \$200 if for inferior metals. In default, cancellation of sale of mining lands.

(b) Licenses may be obtained from the Commissioner on the following terms:—Application for an exploration and prospecting license, if the mine is on private land, \$2 for every 100 acres or fraction of 100; if the mine is on Crown lands (1) in surveyed territory, \$5 for every 100 acres, and (2) in unsurveyed territory, \$5 for each square mile, the license to be valid for three months and renewable. The holder of such license may afterwards purchase the mine, paying the prices mentioned.

Licenses for mining are of two kinds: Private lands licenses where the mining rights belong to the Crown, and public lands licenses. These licenses are granted on payment of a fee of \$5 and an annual rental of \$1 per acre. Each license is granted for 200 acres or less, but not for more; is valid for one year, and is renewable on the same terms as those on which it was originally granted. The Governor-in-Council may at any time require the payment of the royalty in lieu of fees for a mining license and the annual rental—such royalties, unless otherwise determined by letters patent or other title from the Crown, being fixed at a rate not to exceed three per cent. of the value at the mine of the mineral extracted after deducting the cost of mining it.

The fullest information will be cheerfully given on application to

**THE MINISTER OF LANDS, MINES AND FISHERIES,**

**PARLIAMENT BUILDINGS, QUEBEC.**

# Ontario's

## Mining

### Lands..

**T**HE 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; zincblende, 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.



## PROVINCE OF NOVA SCOTIA.

Leases for Mines of Gold, Silver, Coal, Iron, Copper, Lead, Tin

— AND —

## PRECIOUS STONES.

TITLES GIVEN DIRECT FROM THE CROWN, ROYALTIES AND RENTALS MODERATE.

### GOLD AND SILVER.

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

Licenses are issued to owners of quartz crushing mills,

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

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

### MINES OTHER THAN GOLD AND SILVER.

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

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

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

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

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

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

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

THE HON. W. T. PIPES,

Commissioner Public Works and Mines,

HALIFAX, NOVA SCOTIA.



# DOMINION OF CANADA

## SYNOPSIS OF REGULATIONS

### For disposal of Minerals on Dominion Lands in Manitoba, the North-West Territories and the Yukon Territory.

#### 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 ten cents per ton of 2,000 pounds shall be collected on the gross output.

#### QUARTZ.

Persons of eighteen years and over and joint stock companies holding free miner's certificates may obtain entry for a mining location.

A free miner's certificate is granted for one or more years, not exceeding five, 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 x 1,500 feet by marking out the same with two legal posts, bearing location notices, one at each end on the line of the lode or vein.

The claim shall be recorded within 15 days if located within ten miles of a mining recorder's office, one additional day allowed for every additional ten miles or fraction. 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 \$1.00 an acre.

Permission may be granted by the Minister of the Interior to locate claims containing iron and mica, also copper, in the Yukon Territory of an area not extending 160 acres.

The patent for a mining location shall provide for the payment of a Royalty of 2½ per cent. of the sales of the products of the location.

#### PLACER MINING.

Manitoba and the N. W. T., excepting the Yukon Territory.—Placer mining claims generally are 100 feet square; entry fee \$5, renewable yearly. On the North Saskatchewan River claims are either bar or bench, the former being 100 feet long and extending between high and low water mark. The latter includes bar diggings, but extends back to the base of the hill or bank, but not exceeding 1,000 feet. Where steam power is used, claims 200 feet wide may be obtained.

Dredging in the rivers of Manitoba and the N. W. T., excepting the Yukon Territory.—A free miner may obtain only two leases of five miles each for a term of twenty years, renewable in the discretion of the Minister of the Interior.

The lessee's right is confined to the submerged bed or bars of the river below low water mark, and subject to the rights of all persons who have, or who may receive entries for bar diggings or bench claims, except on the Saskatchewan River, where the lessee may dredge to high water mark on each alternate leasehold.

The lessee shall have a dredge in operation within one season from the date of the lease for each five miles, but where a person or company has obtained more than one lease one dredge for each fifteen miles or fraction is sufficient. Rental, \$10 per annum for each mile of river leased. Royalty at the rate of two and a half per cent. collected on the output after it exceeds \$10,000.

#### DREDGING IN THE YUKON TERRITORY.

Six leases of five miles each may be granted to a free miner for a term of twenty years, also renewable.

The lessee's right is confined to the submerged bed or bars in the river below low water mark, that boundary to be fixed by its position on the 1st day of August in the year of the date of the lease.

The lessee shall have one dredge in operation within two years from the date of the lease, and one dredge for each five miles within six years from such date. Rental, \$100 per mile for first year and \$10 per mile for each subsequent year. Royalty, same as placer mining.

#### PLACER MINING IN THE YUKON TERRITORY.

Creek, gulch, river and hill claims shall not exceed 250 feet in length, measured on the base line or general direction of the creek or gulch, the width being from 1,000 to 2,000 feet. All other placer claims shall be 250 feet square.

Claims are marked by two legal posts, one at each end, bearing notices. Entry must be made within ten days, if the claim is within ten miles of mining recorder's office. One extra day allowed for each additional ten miles or fraction.

The person or company staking a claim must hold a free miner's certificate.

The discoverer of a new mine is entitled to a claim of 1,000 feet in length, and if the party consists of two, 1,500 feet altogether, on the output of which no royalty shall be charged, the rest of the party ordinary claims only.

Entry fee, \$10. Royalty at the rate of two and one-half per cent. on the value of the gold shipped from the Yukon Territory to be paid to the Comptroller.

No free miner shall receive a grant of more than one mining claim on each separate river, creek or gulch, but the same miner may hold any number of claims by purchase, and free miners may work their claims in partnership by filing notice and paying fee of \$2. A claim may be abandoned, and another obtained on the same creek, gulch or river, by giving notice and paying a fee.

Work must be done on a claim each year to the value of at least \$200.

A certificate that work has been done must be obtained each year; if not, the claim shall be deemed to be abandoned, and open to occupation and entry by a free miner.

The boundaries of a claim may be defined absolutely by having a survey made and publishing notices in the Yukon Official Gazette.

#### PETROLEUM.

All unappropriated Dominion Lands in Manitoba, the North-West Territories and within the Yukon Territory are open to prospecting for petroleum, and the Minister may reserve for an individual or company having machinery on the land to be prospected, an area of 640 acres. Should the prospector discover oil in paying quantities, and satisfactorily establish such discovery, an area not exceeding 640 acres, including the oil well and such other land as may be determined, will be sold to the discoverer at the rate of \$1.00 an acre subject to royalty at such rate as may be specified by order-in-council.

Department of the Interior.

Ottawa, February, 1904.

**W. W. CORY,**  
Deputy of the Minister of the Interior.

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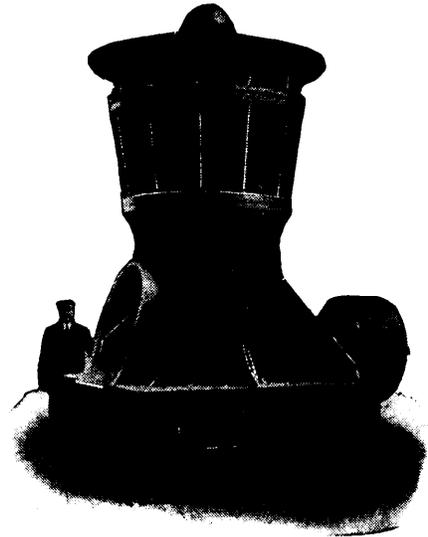
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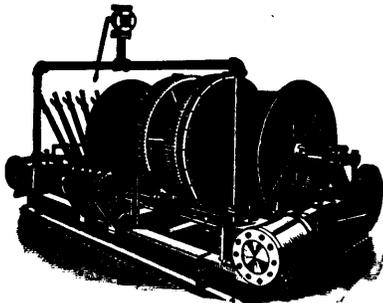


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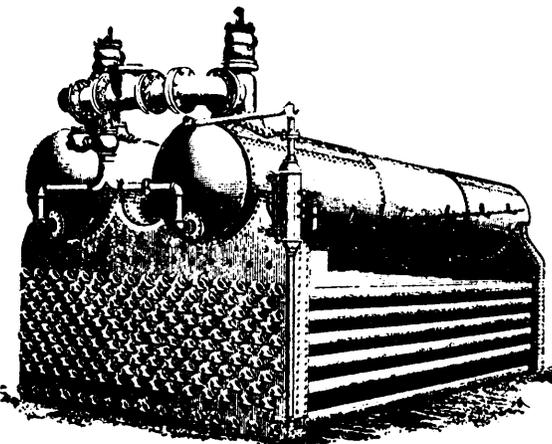
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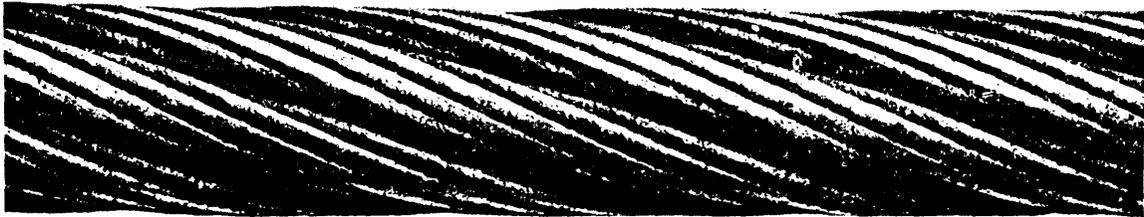


Illustration of Winding Rope, 240 fms. long x 3½ circ., Galvanized Special Improved Patent Steel. Compound Make, supplied to Kinneil Collieries, Bo'ness, Scot., which gave a record life of 6 years and 2 months. Showing condition when taken off.

TELEGRAMS—"Ropery Rutherglen." A B C, A I and Lieber's Codes used.

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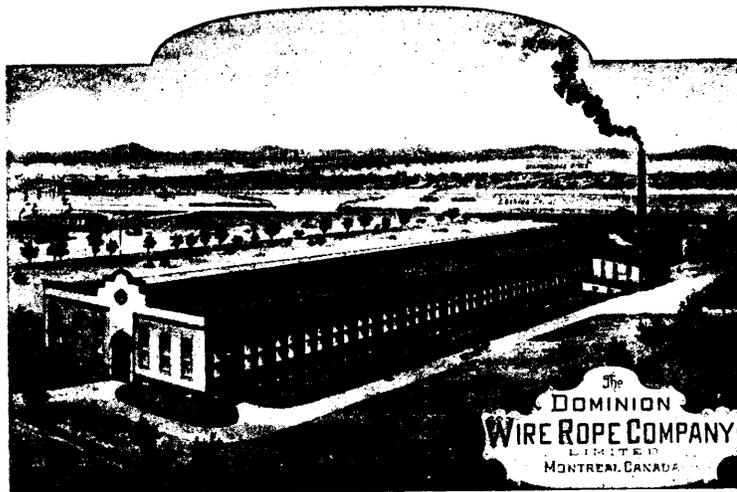
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