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TWENTY-FIRST YEAR OF PUBLICATION

CANADIAN MINING REVIEW

Established 1882

Vol. XXII--No. VIII.

OTTAWA, AUGUST 31st, 1903.

Vol. XXII--No. VIII.

 <p>AIR COMPRESSORS GAS</p>	<p>THE CANADIAN RAND DRILL CO SHERBROOKE, QUE. BRANCH OFFICES IN MONTREAL, QUE. TORONTO, ONT. HALIFAX, N.S. ROSSLAND, B.C. RAT PORTAGE, ONT. GREENWOOD, VANCOUVER, B.C.</p>	 <p>ROCK DRILLS</p>
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SPECIALLY BUILT TO MEET THE VARIOUS REQUIREMENTS
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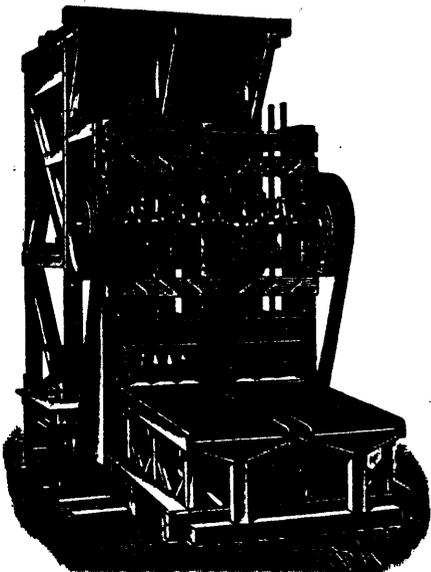
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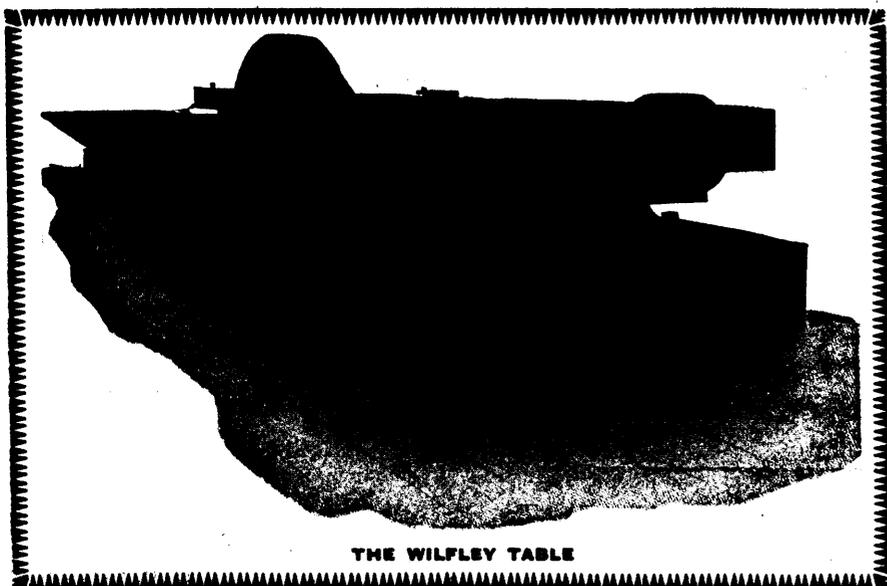
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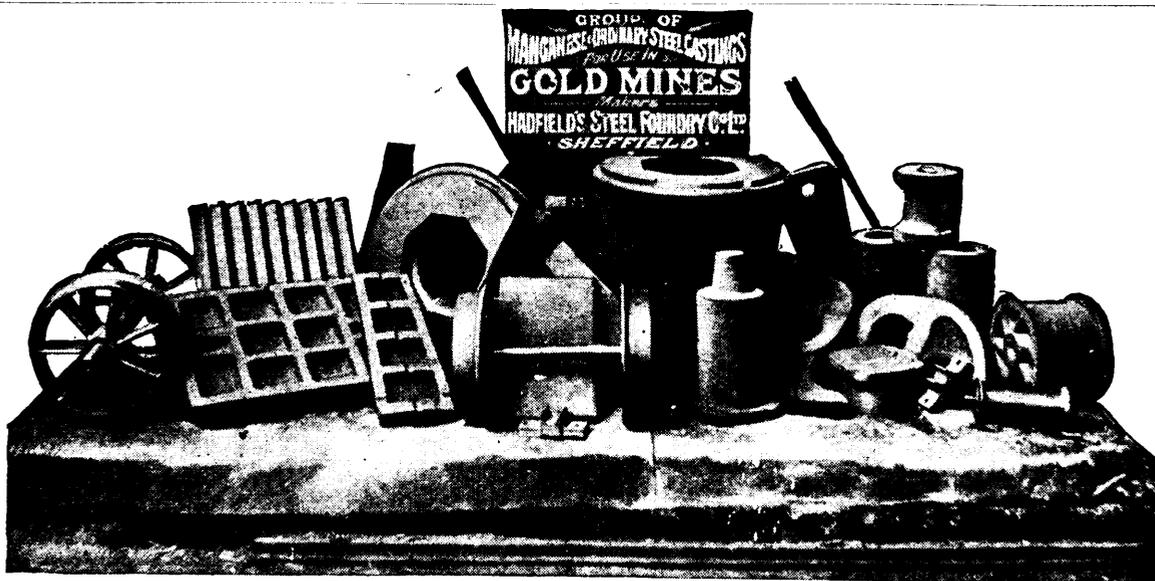
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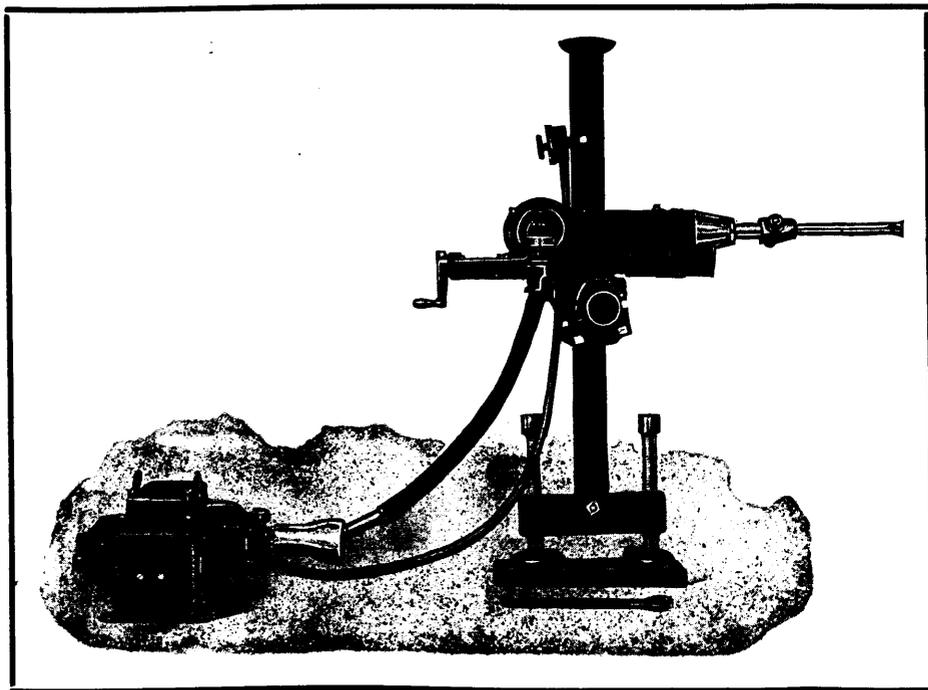


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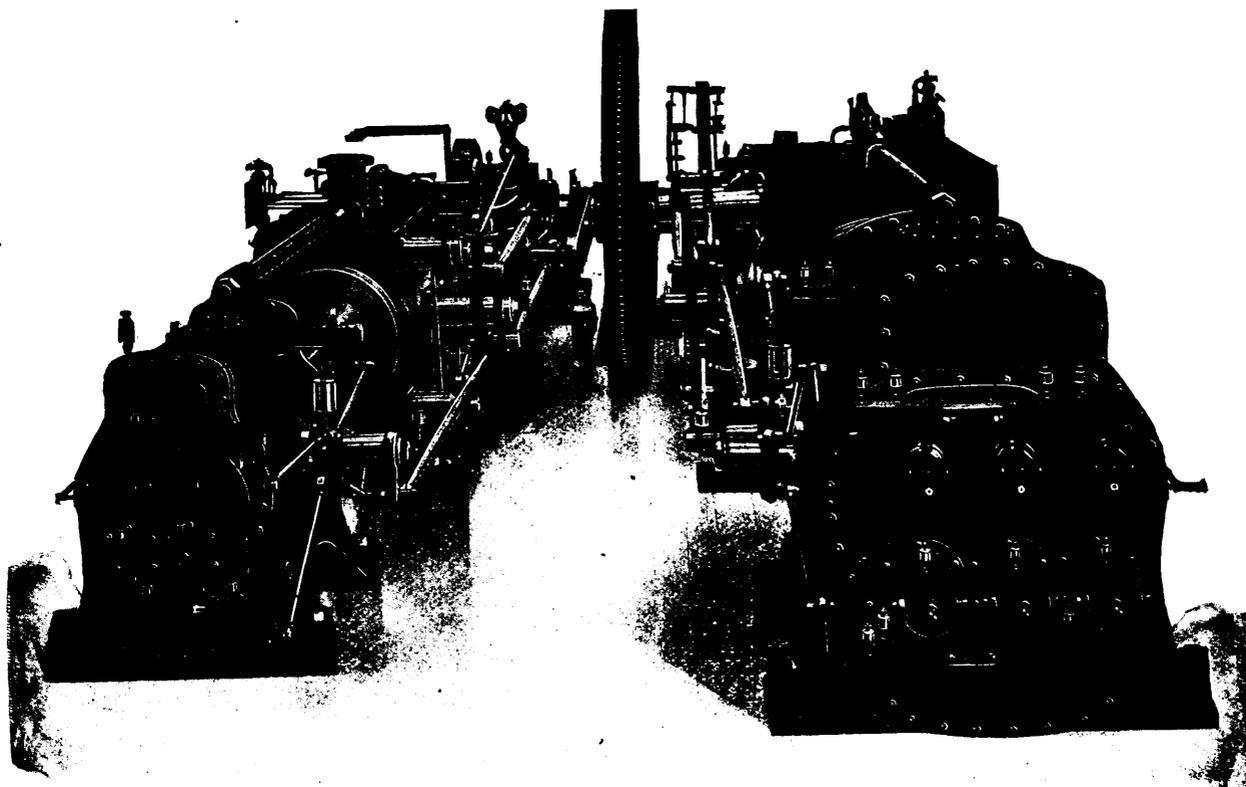
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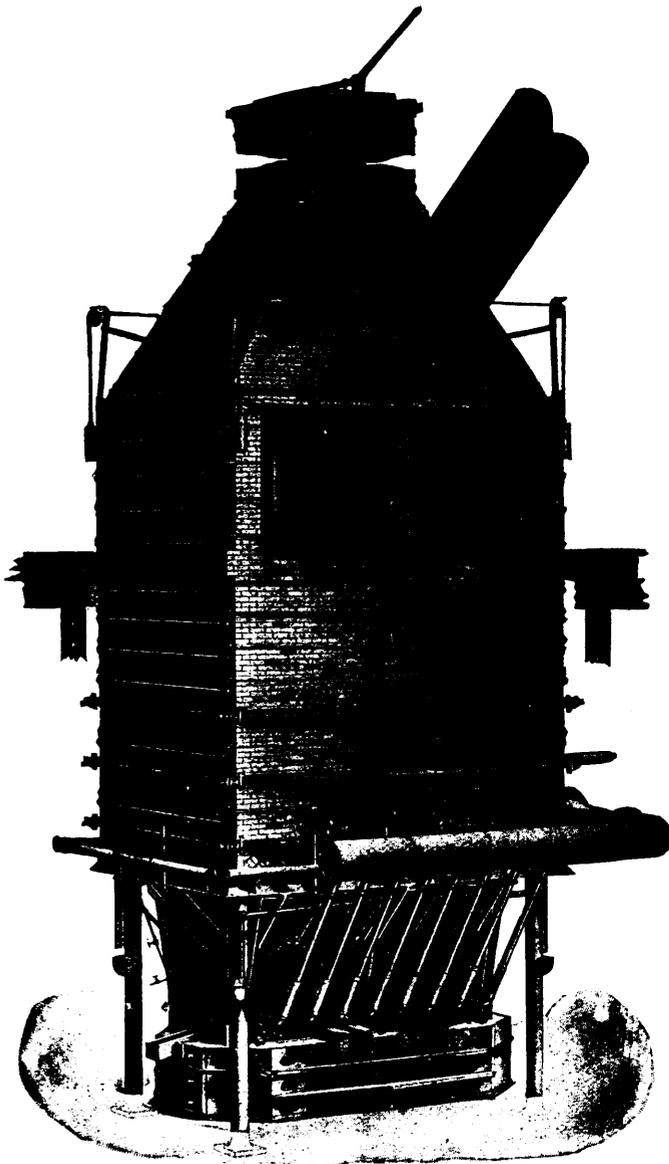
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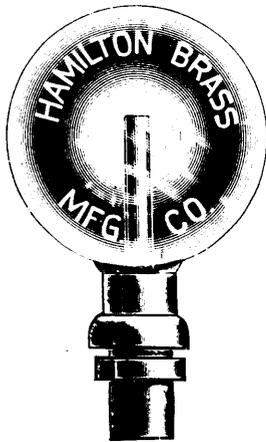
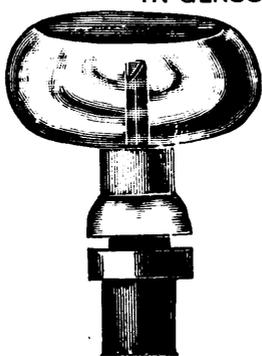
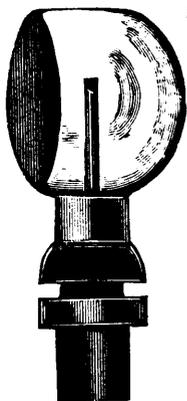
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On a PATENT PNEUMATIC and SELF-ACTING PRINCIPLE,
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The Lubricators being carefully fitted by enlarging the oil hole to fit the plug part of stopper, or otherwise by reducing the plugs to fit existing oil holes, the needle must be perfectly round, smooth and clean, so as to work freely in the tube, the flattened end reaching about half-way up the inside of Lubricator, while the other end rests on the shaft or axle, will produce the following results, viz. :—

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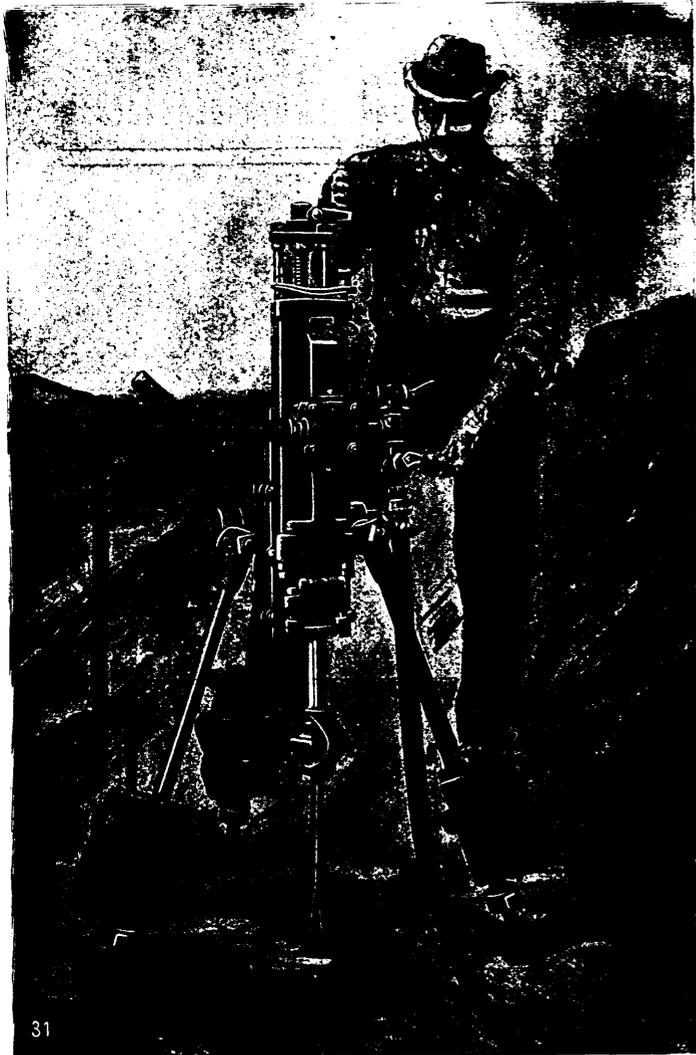
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Unexcelled for work and owing to construction the economy in repairs will save first cost

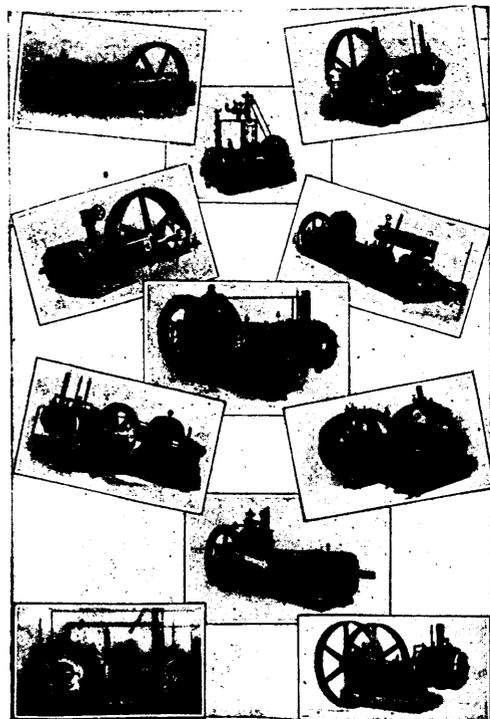
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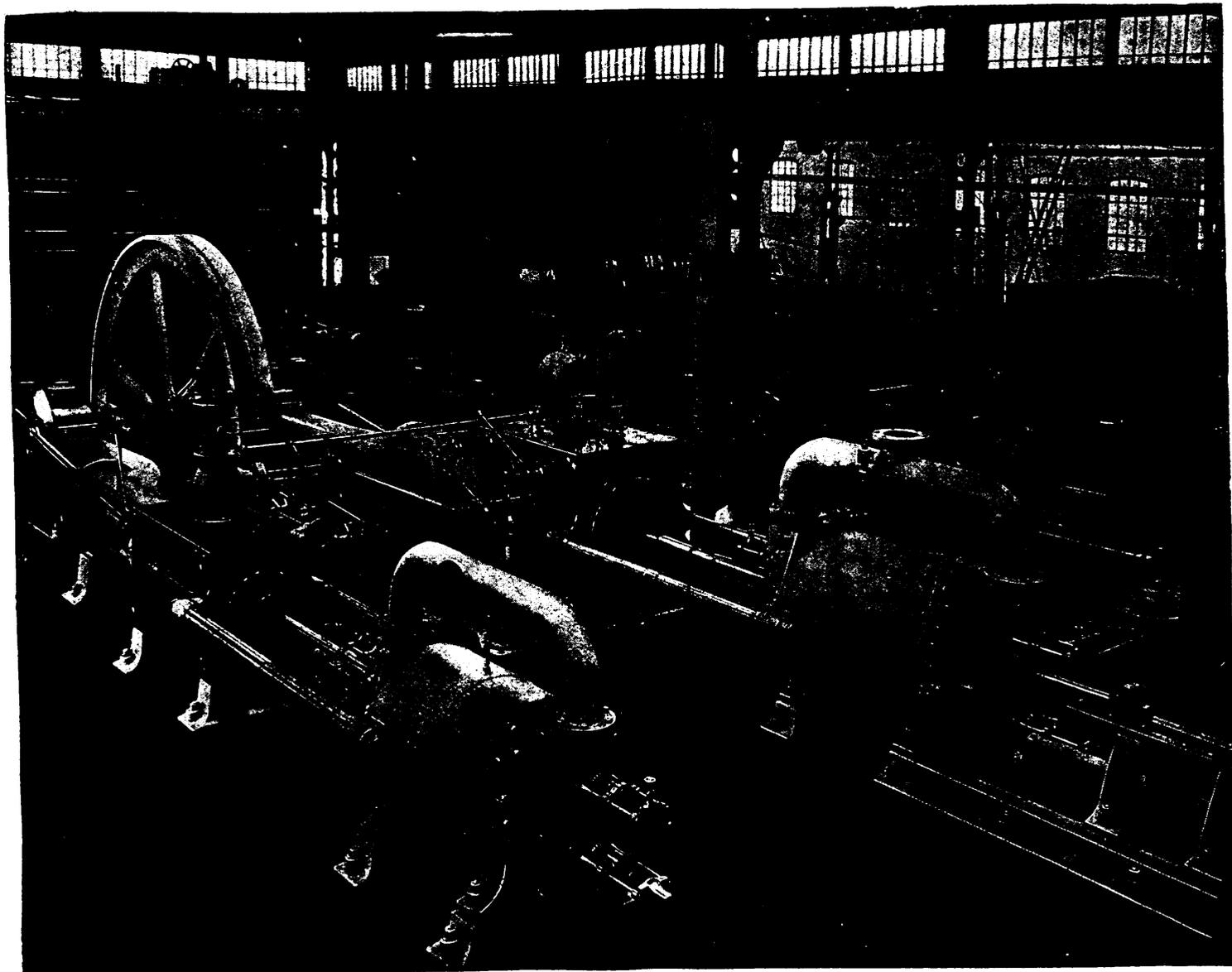
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AIR COMPRESSORS

AGGREGATE POWER AT WORK, ABOUT 550 IN NUMBER, EXCEEDS 250,000 H. P.



WALKER BROTHERS HAVE RE-MODELLED OVER 100 AIR COMPRESSORS
ORIGINALLY CONSTRUCTED BY OTHER MAKERS.

RIO TINTO COMPANY

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For the construction of the Tunnel, Six Air-Compressing Engines were erected. The largest Two Pairs of Compound Engines, were supplied by us. Messrs. S. PEARSON & SON, the Contractors for the construction of the Tunnel, have kindly written to us, as below, with reference to the quality and working of our Machinery :-

S. PEARSON & SON, CONTRACTORS.

Messrs. WALKER BROTHERS, PAGEFIELD IRONWORKS, WIGAN.

DEAR SIRs,—We are pleased to confirm what we told you verbally the other day, viz: that we consider the Air Cylinders and Valves of your Compressors to be the best for such work as we have been carrying out on the above Contract.

One of your Engines ran for almost a year without stopping, and it gives us great pleasure to thus testify to the good qualities of the plant which we purchased from you.

We are, Dear Sirs, Yours faithfully. (Signed) pro S. PEARSON & SON, E. W. Motz.

BLACKWALL TUNNEL WORKS, EAST GREENWICH, S.E.

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REPAIR SHOP, MACHINE SHOP, SHIP YARDS
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They remove solid cores through rock.

They furnish the cheapest-known method of prospecting.

The capacity of our Drills is from 350 feet to 6000 feet.

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Unexcelled Fuel for Steamships and Locomotives, Manufactories, Rolling Mills, Forges, Glass Works, Brick and Lime Burning, Coke, Gas Works, and for the Manufacture of Steel, Iron, Etc.

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Pit Rails, Tee Rails, Edge Rails, Fish Plates, Bevelled Steel Screen Bars, Forged Steel Stamper Shoes and Dies, Blued Machinery Steel $\frac{3}{8}$ to $\frac{1}{4}$ " Diameter, Steel Tub Axles Cut to Length, Crow Bar Steel, Wedge Steel, Hammer Steel, Pick Steel, Draw Bar Steel, Forging of all kinds, Bright Compressed Shafting $\frac{5}{8}$ to 5" true to $\frac{1}{1000}$ part of One Inch.

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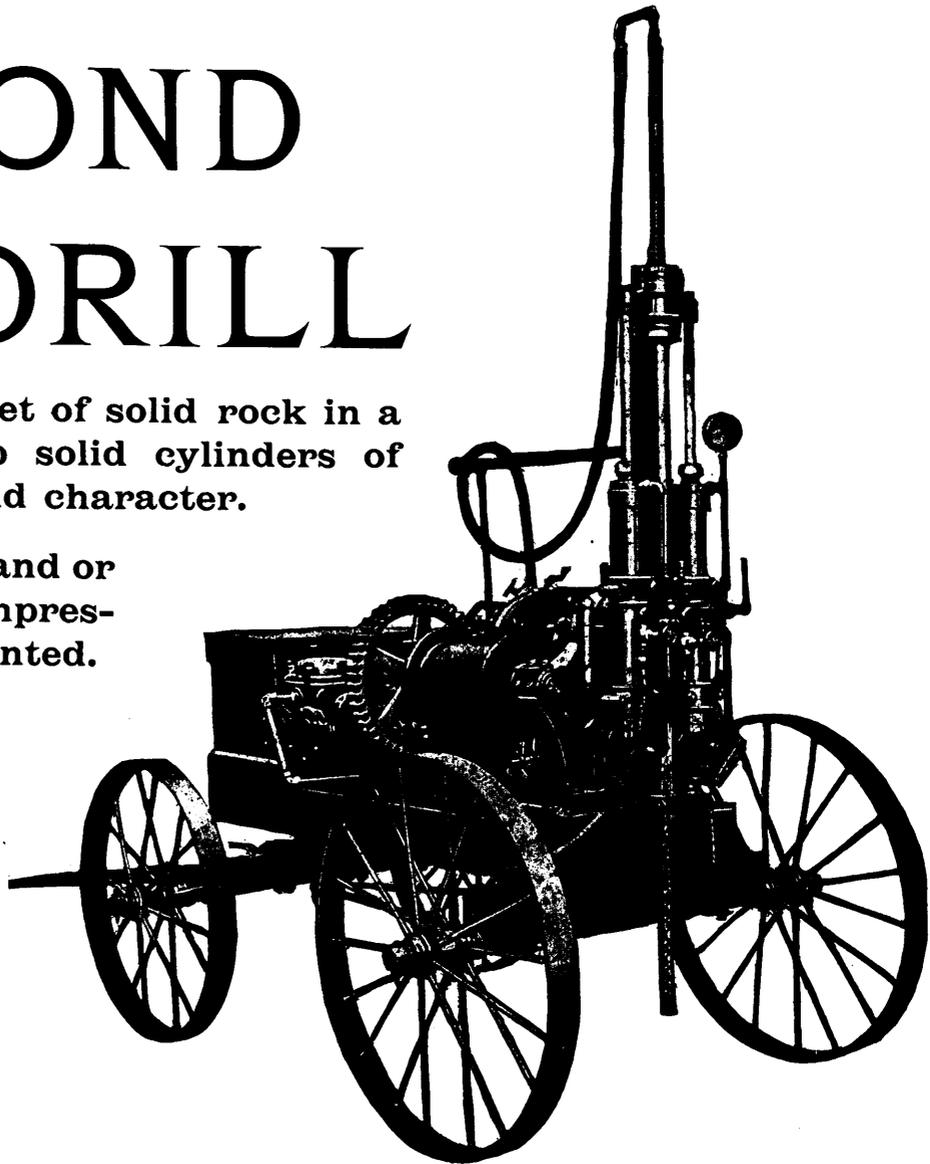
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It can cut through 2,500 feet of solid rock in a vertical line. It brings up solid cylinders of rock, showing formation and character.

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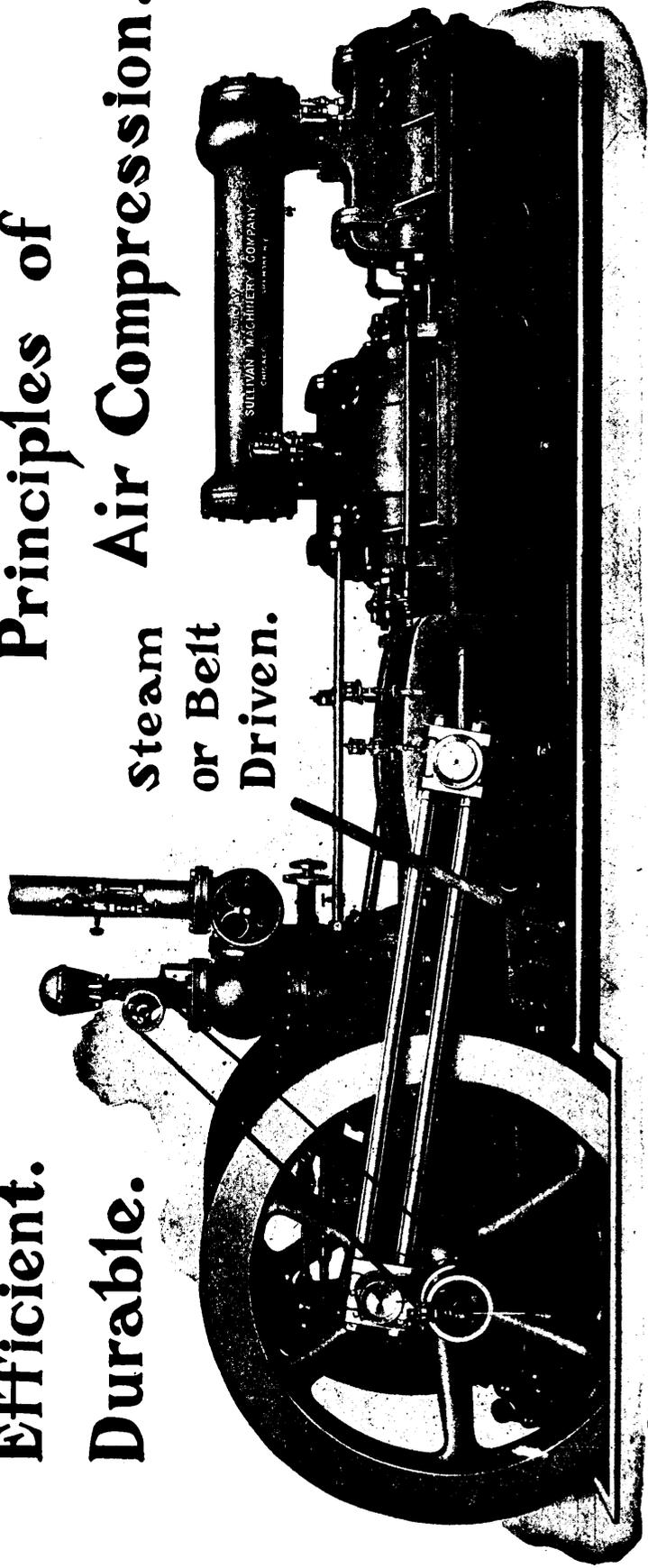
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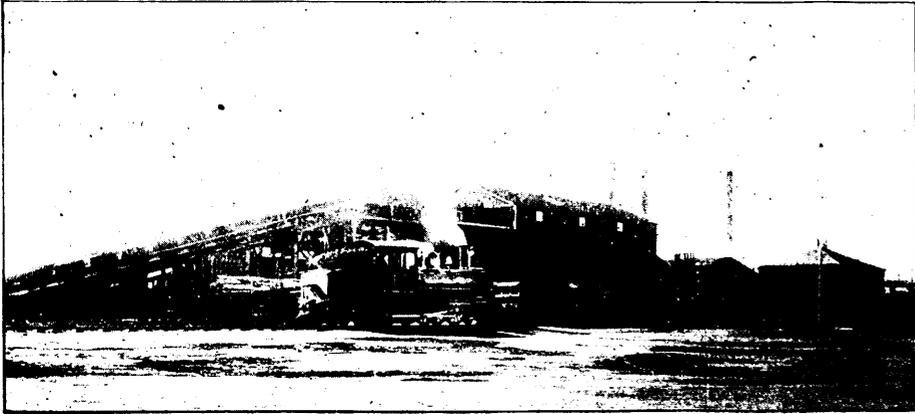


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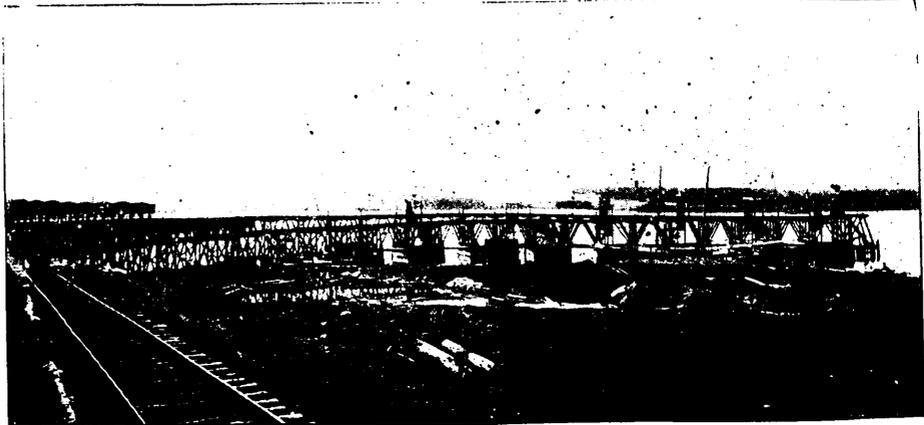
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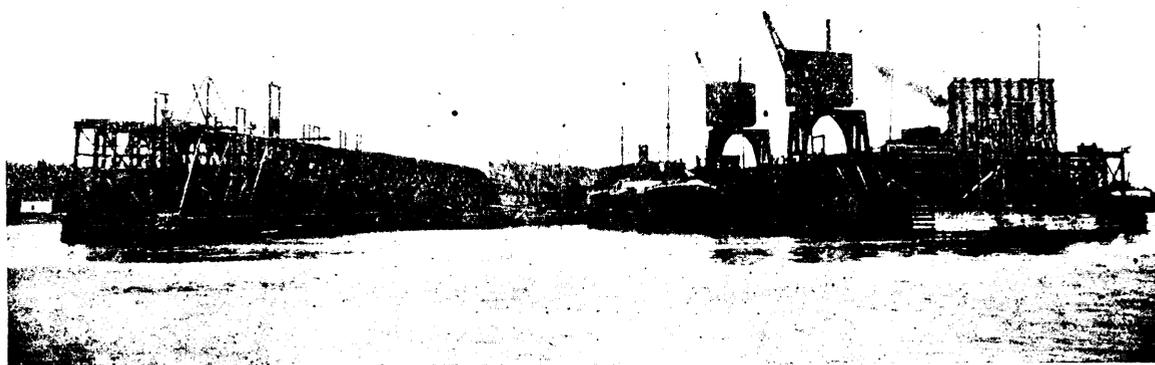
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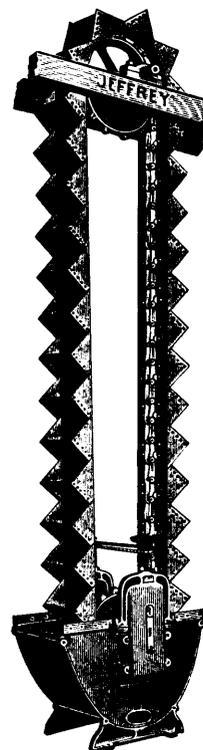
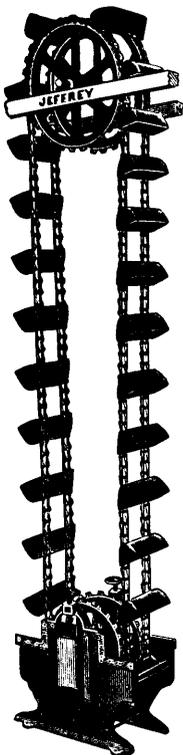
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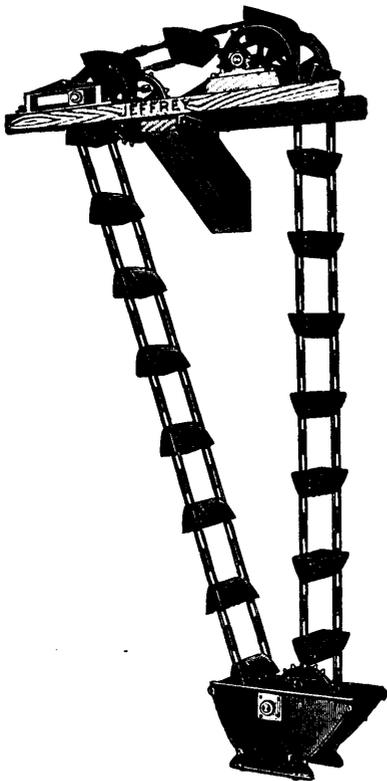
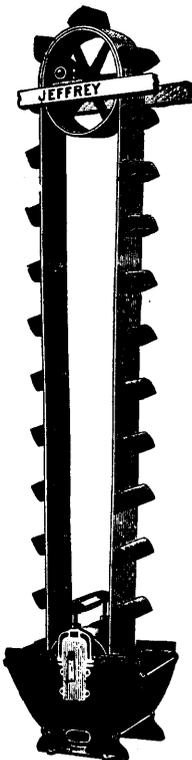
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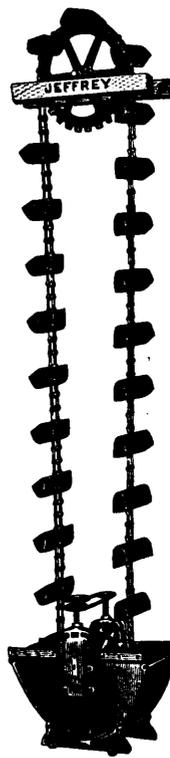
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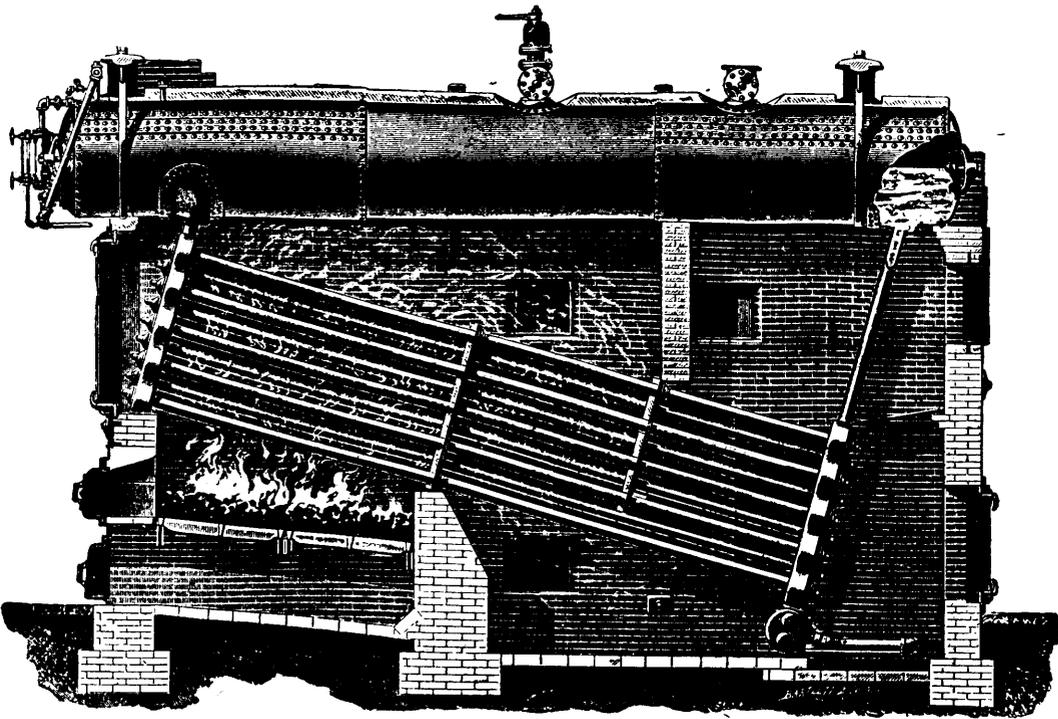


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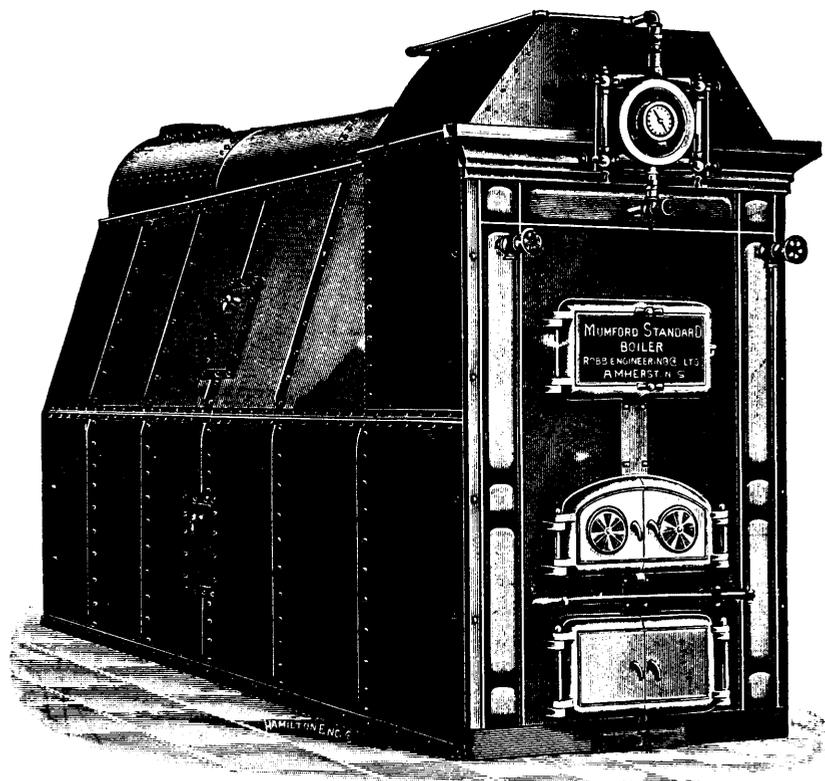
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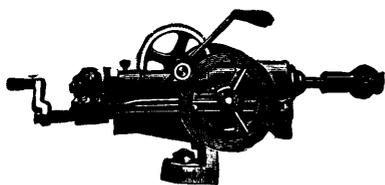
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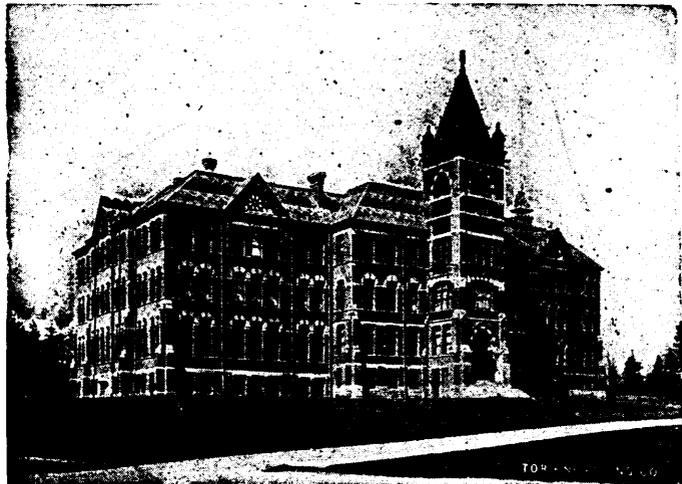
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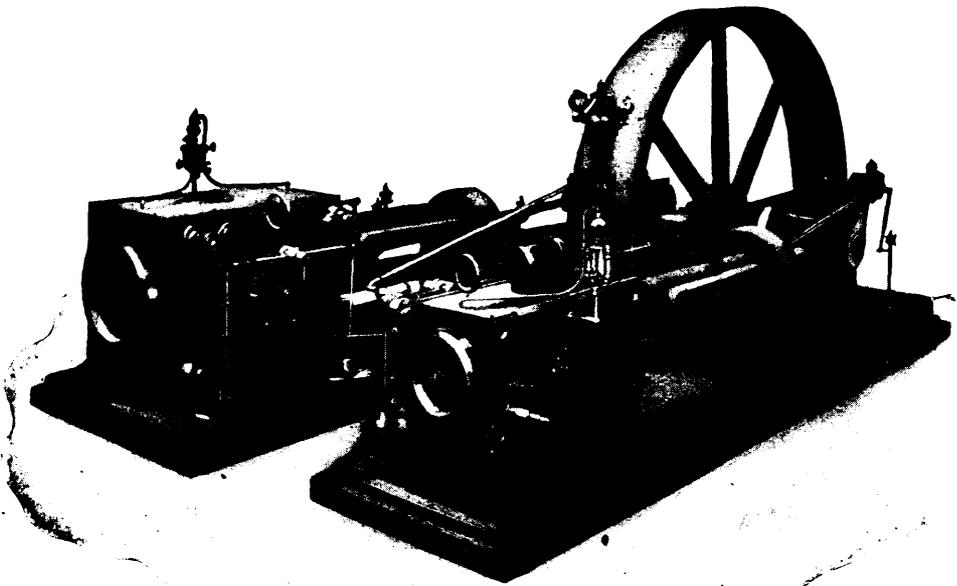
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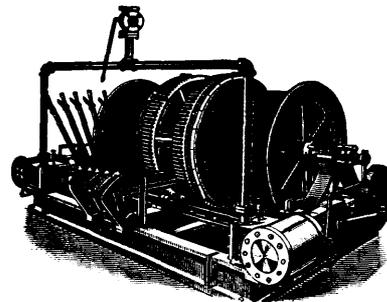
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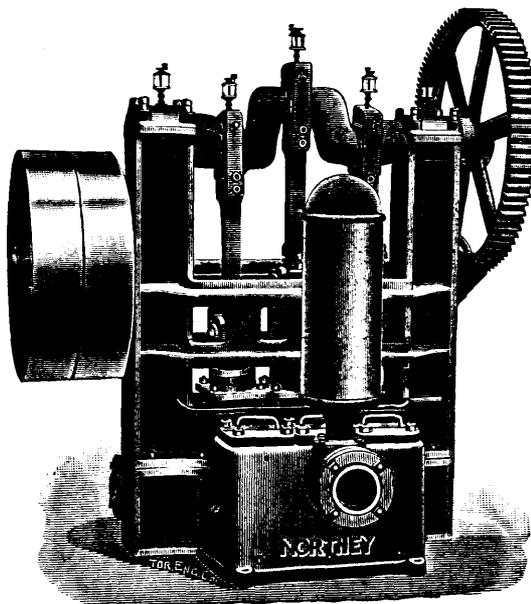
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VOL. XXII., No. 8

AUGUST, 1903.

VOL. XXII., No. 8

## Iron Ore and the Tariff.

The position of iron ore in relation to the tariff arrangements between Canada and the United States is very unsatisfactory, and bears heavily against the development of our iron mines. American ore is admitted into this country free of duty, while a tax of forty cents per ton meets Canadian or other foreign iron ores going into the United States. Hitherto a large part of the ore smelted at Canadian blast furnaces has been imported from the other side. It is easy to see why this should be the case. The immense deposits on the Vermilion, Mesabi and other ranges south of Lake Superior are easily worked, of superior quality, conveniently situated for transportation purposes, and the methods of mining and conveying them to the furnaces are organized and systematized to the last degree. Against the competition of Lake Superior ores, which can be delivered say at Ontario lake ports almost as cheaply as at Cleveland or Buffalo, it is difficult for the iron mines of eastern or western Ontario to make headway, since the demand in this country is necessarily limited as yet and insufficient to sustain even one large mine turning out ore upon a scale equal to that common in Minnesota or Michigan. The expenditure for railways, docks, ore pockets, etc., to say nothing of the cost of opening up the ore body itself, is enormous in the case of a great iron mine, and with the home market open to American ore, and that of the United States closed or open only on paying a fine of forty cents per ton, the owners of Canadian mines justly complain of the unfair and discriminatory conditions against which they have to contend. It is possible, as is proven by the exports of ore from the Helen mine, to send iron ore from Ontario to the States, but the profits must be small, since the price realized must be less than that current for American ore by nearly the full amount of the duty.

Again, in eastern Ontario the iron mines, which are comparatively small, are handicapped by freight rates to lake ports and smelters, and find themselves unable to supply furnaces with ore at prices equal to those for which Lake Superior ores can be laid down.

The remedy is reciprocity of tariffs with our southern neighbors. Either there should be free entry for Canadian ores into the United States, or a duty should be imposed on American ore equal at least to that paid by ore from this country imported into the States. The former would probably be preferable. While not tending to increase the price of ore to the smelters, it would allow of mines being worked whose present distance from a furnace renders their operation unprofitable, but which could market their output across the border. There is little doubt that if the ores of eastern Ontario were open to be pur-

chased freely by Pennsylvania furnace-owners, there would be a recrudescence of iron mining in that part of Canada, where it has once more gone to sleep. Free ore would preserve to Canadian furnaces their present breadth of choice, and leave them perfectly free to bring in whatever classes of ore they require for mixtures or for their special products, while free ore could not possibly injure the American mine-owner or bring down the price of ore in the United States market.

But if reciprocal freedom is not to be had, common fairness demands a duty on foreign ore coming into Canada. It is surely unjust to Canadian mines that their product should be fined on seeking a purchaser in the United States while American mines compete with them at home without let or hindrance. Again, an industry which receives such substantial assistance from the government by way both of bounties and protective duties as does the iron smelting industry could not reasonably complain if the owners of iron mines were to ask for the removal of what is undeniably an injustice, and to demand that some degree of recognition be accorded their product.

The bounty on iron ore mined and smelted in Ontario, paid by the government of that Province, is based on the pig iron product of the ore, and is limited to \$25,000 per annum. Hence, the sum payable per ton of ore is variable, being for each of the last two years about 25 cents per ton. This is the only share the producer of iron ore has in the whole scheme of government encouragement, Provincial and Dominion, and it has not proven sufficient to counteract the effect of free entry of American ore. As a matter of fact, the ore bounty goes mainly to the furnace companies, who oblige the mine-owner to assign his claim thereto before buying his ore.

It is not conceivable that a small duty on iron ore would increase the price of pig iron, the cost of which is regulated by the expense of laying down the imported article. But undoubtedly the better arrangement would be to procure free entry for Canadian iron ore into the United States market. Whether the High Joint Commission when it meets again—if it ever does meet again—will agree upon this, time only will tell. If it do not, the only thing open for Canadian mine-owners will be to agitate for a duty upon iron ore from the States, equivalent to that now levied on Canadian ore going into that country.

Mr. F. H. Clergue has recently been in London, England, in connection with the floating of bonds for the projected railway from Scotia Jct., to Sudbury, Ont., to be constructed by the Canada Central Ry. It is understood that although he proposes devoting the whole of his time to the interests of the new company, he will continue to act as a director of the Consolidated Lake Superior Company.

### Malay Tin and Ontario Nickel.

Although free trade is the traditional policy of British governments, a contrary course can be promptly taken if self-interest demands it. A signal proof of this has recently been given in an out-of-the-way corner of the world, where, though the country is not strictly speaking, British territory, the administration is in British hands.

The Malay States, or Straits Settlements, is now the principal source of the world's supply of tin, furnishing some 45,000 tons out of the 75,000 tons annually used. The remainder comes chiefly from the Dutch East Indies, Bolivia, Australia and Cornwall. Tin in the Malay peninsula is found mainly in alluvial deposits; it is worked chiefly by Chinese miners, being recovered by methods similar to those used for placer gold, and the local government derives a very considerable revenue from an export duty levied on the metal. The ore is dressed and smelted at Singapore, and is exported in this condition, some 70 per cent. of the output going to the United States.

An American syndicate has been formed, backed by some of the strongest financiers in the United States, to buy the tin ore of Malaya, ship it to New York, and there treat and smelt it for the home market. The tin mines at Harney Peak and elsewhere in the United States having proven abject failures, the syndicate's policy, following the usual American practice, would be after establishing a tin smelting industry, to agitate for a protective duty which while admitting tin ore free would be sufficient to keep out the product of tin smelters elsewhere. The consequence would be that the Singapore smelters would lose their American trade, and would have to go out of business. This would leave the American syndicate in full possession of the field in Malaya, where they would be the only purchasers, able to fix the price to suit themselves. The miners would suffer, the Straits Settlements would cease to be the great distributing centre for the tin trade of the world, and the government whose export duty is arranged on a sliding scale, according to the price of tin, would lose heavily in revenue.

Under these circumstances the government of the Federated Malay States has imposed an export duty on tin ore of \$30 per pikul (133 lbs.) in addition to the tax already in force. This regulation came into effect 1st June last, and the result is expected to be to preserve the tin dressing industry to the Settlement, and to protect the tin miners and the government from the disasters to which an American monopoly in tin smelting would expose them. Whatever the event may prove to be, the incident is significant of the new spirit abroad in British finance, for the home government and especially the Colonial Secretary, Mr. Chamberlain, in whom the management of the Crown colonies is vested, must be regarded as responsible for the action which has been taken.

A parallel suggests itself between the tin of the Malay States and the nickel of Ontario. The latter Province produces nearly as great a proportion of the annual output of nickel as the former of tin. The known sources of supply of nickel are even fewer than of tin. Neither metal is produced in the United States, and that country is the principal market for Ontario nickel as well as for Malay tin. In the case of nickel, however, the refining process is already established in the United States, which admits nickel ore and nickel matte free of duty, but imposes a tariff charge of six cents per pound on refined nickel.

The apprehensions of the Malayan authorities as to the probable course of events are doubtless well-founded, and there are those who would apply the principles of their legislation to Ontario nickel, and who declare that the metal should be allowed to leave the country in the refined state only. Power to impose an export duty of ten cents per pound on nickel contained in ore and matte has been placed by

the Dominion Parliament in the hands of the government of Canada, and the Legislature of Ontario has enacted laws looking to the same goal, namely, the refining of nickel in Canada. Up to the present time these powers have in both cases remained unused, and there is no sign of their being brought into play. Indeed, the effect of employing them is open to doubt. New Caledonia can supply nickel ore, and probably would do so were Ontario matte prevented entering the States, unless the French authorities should take a leaf out of Chamberlain's book, and impose a duty on outgoing ore in the hope of establishing a smelting and refining business in the colony, where, however, there is little free labor to operate it or to receive the benefit.

As it is, it is very questionable whether anything is to be gained by a restrictive nickel policy. The Sudbury mines are the backbone of Ontario's mining industry, the ore is now roasted, smelted, and re-smelted to a rich matte, and the only part of the refining process performed abroad is the final act of separating the nickel and the copper from the impurities in the matte—a step not involving much labor or expenditure of money. It may be at once admitted that the duty on refined nickel going into the United States is invidious to a degree, seeing there is no native nickel to protect, and the aim can only be to secure the business of refining for that country. At the same time, if retaliation would lead to a closing of the nickel mines of Sudbury, the luxury of cutting off one's nose to spite one's face might be purchased too dearly.

### Radium.

The properties of the newly discovered substance, radium, do not seem as yet to be thoroughly understood, and a good deal of nonsense has been talked and written about it. It has been stated that its characteristics are such as to render a re-writing of chemistry textbooks necessary by doing away with the list of "elements" to which we have been accustomed, and reducing everything in the final analysis to one common form of matter. But without resorting to exaggeration, radium is sufficiently extraordinary, largely, it appears, because the properties which it possesses in common with certain other substances, only in much greater degree, are capable of being utilized with little waste, whereas in most of the common methods of producing energy, the waste far exceeds the useful effect. For instance, in the burning of coal to convert water into steam for the production of power, the unavoidable loss from radiation, friction, etc., is very great. All known illuminants, even the incandescent gas-light, transform only a comparatively small proportion of the energy they consume into the desired form, the greater part being wasted as heat. On the other hand, as we are assured by a competent scientist, "a small fraction of an ounce of radium properly employed, would probably provide a good light sufficient for several rooms, which, at any rate during the present century, would never need removal." This surprising effect is produced by the intervention of certain phosphorescent substances which are very efficient media for converting the energy of radium into visible light.

The secret of the tremendous energy of radium is the stream of minute particles with which it is constantly bombarding everything within reach, a grain of it being capable of belching forth these projectiles at a rate calculated to be between ten and a hundred million per second, and of keeping up this discharge for many centuries. If a means could be found of concentrating this output of energy, that is of increasing the rate at which the emanations are given off so as to get the results in weeks or months which are now spread over hundreds of years, the feats that could be wrought by radium would surpass those accomplished by Aladdin's lamp. Potentially,



MR. B. T. A. BELL,

Editor of THE CANADIAN MINING REVIEW, who is now *en route* for Dawson as Commissioner to enquire into the Treadgold Concessions.

the energy stored up in one gram of radium is sufficient to raise 500 tons a mile high, consequently an ounce would suffice to drive a 50-horse power motor car round the world at the rate of 30 miles an hour.

No such things, however, are likely to happen, for there seems to be no possible way of controlling the store of energy in radium or to liberate it at a desired rate. Another difficulty in the way of realizing dreams of this kind is the very small quantity of radium which appears to exist. Not only are the substances from which it can be obtained few in number, but from its very nature, the quantity is diminishing all the time through the atoms which it is throwing off, hence what is now left is probably only the remnant that has survived this process of disintegration, which has been going on through ages of geological time.

There are other allied elements, such as uranium and thorium, which partake of the nature of radium but which give off their energy at a greatly slower rate. Consequently, they are much more plentiful, and some of them now play a highly useful part in providing the world with incandescent light. The principal source of radium at present is pitchblende, which probably does not contain more than one ten-thousandth per cent. of the substance.

An impure variety of pitchblende, called caracite, it may be remarked, has been reported from Lake Superior.

#### Imports of Mining Machinery.

The imports of free and dutiable mining and smelting machinery for the first six months of the present year compared with 1902, are as follows:—

| MONTHS         | 1903      |          |          | 1902    |          |         |
|----------------|-----------|----------|----------|---------|----------|---------|
|                | Free      | Dutiable | Total    | Free    | Dutiable | Total   |
| January .....  | \$ 77,298 | \$ 7,676 | \$84,974 | 77,284  | 2,549    | 95,533  |
| February ..... | 30,106    | 1,587    | 31,693   | 25,123  | 2,380    | 45,503  |
| March .....    | 83,535    | 11,534   | 95,069   | 55,255  | 2,629    | 57,884  |
| April .....    | 104,967   | 4,638    | 109,605  | 11,227  | 5,087    | 66,314  |
| May .....      | 155,493   | 1,469    | 156,962  | 90,820  | 4,782    | 95,602  |
| June .....     | 155,387   | 6,707    | 162,094  | 77,270  | 5,293    | 82,563  |
| Total .....    | 606,786   | 33,611   | 640,397  | 420,679 | 22,720   | 443,399 |

The principal sources from which this machinery has been imported during 1903 were:—

| MONTHS         | UNITED STATES |          | GREAT BRITAIN |          | Other Countries | TOTAL    |
|----------------|---------------|----------|---------------|----------|-----------------|----------|
|                | Free          | Dutiable | Free          | Dutiable |                 |          |
| January .....  | \$75,235      | \$ 7,676 | \$ 47         | —        | \$1,646         | \$84,974 |
| February ..... | 29,467        | 1,587    | 639           | —        | Nil             | 31,693   |
| March .....    | 82,680        | 11,534   | 158           | —        | 697             | 95,069   |
| April .....    | 104,902       | 4,638    | 65            | —        | Nil             | 109,605  |
| May .....      | 155,127       | 1,263    | 366           | 206      | "               | 156,962  |
| June .....     | 152,517       | 6,579    | 2,034         | 128      | \$36            | 161,094  |
| Total .....    | 599,928       | 33,277   | 3,679         | 334      | 3,179           | 640,397  |

#### Imports of Wire Rope.

The following table shows the imports of wire rope and cables for the six months ending June 30th, 1903:—

| Month                              | From Great Britain |          | From U. S. |          | Total     |           |
|------------------------------------|--------------------|----------|------------|----------|-----------|-----------|
|                                    | Pounds             | Value    | Pounds     | Value    | Pounds    | Value     |
| January .....                      | 115,646            | \$ 3,363 | 16,909     | \$ 2,210 | 132,555   | \$ 10,573 |
| February .....                     | 152,813            | 9,504    | 30,172     | 2,683    | 182,985   | 12,187    |
| March .....                        | 151,408            | 9,038    | 46,602     | 2,607    | 198,010   | 11,645    |
| April .....                        | 148,276            | 8,663    | 20,199     | 2,640    | 168,475   | 11,303    |
| May .....                          | 132,564            | 9,174    | 50,994     | 5,395    | 192,558   | 14,569    |
| June .....                         | 320,882            | 20,047   | 49,312     | 4,028    | 370,194   | 24,075    |
| Imports from other countries ..... | 1,021,589          | 64,789   | 223,188    | 19,563   | 1,244,777 | 84,352    |
| Total .....                        |                    |          |            |          | 40,272    | 2,589     |
| Total .....                        |                    |          |            |          | 1,285,049 | 86,941    |

#### Consolidated Lake Superior.

As we go to press the affairs of this Company are not in a very enviable position. Strong efforts are being made by President Shields to get the \$12,500,000 bond issue subscribed, but the success of this appeal is at present extremely doubtful although news comes from Philadelphia that a portion of this amount, viz., \$2,500,000, has already been pledged. The hope is expressed by the management that the present holders of the stock, both common and preferred, will come forward and take a considerable portion of the new bond issue, and it is more than hinted that unless this is done it will be impossible to preserve the valuable assets of the Company to its shareholders, as once in the hands of a receiver and forced liquidation ensues it is likely to result in the entire sacrifice of the original investment.

The stock at present outstanding amounts to \$102,000,000, divided into \$74,000,000 common and \$28,000,000 preferred, and although both issues were made at considerably under par, it is none the less a fact that at one time they represented on the various exchanges a total market value of \$50,260,000. The highest price quoted for the common stock was reached in March, 1900, during which sales were made at 38½. The preferred stock reached its maximum in 1902, as in April of that year it sold as high as 80¼. On the 30th of last month the quotation on the Montreal Stock Exchange had fallen to the nominal figures of one per cent. on the common and five per cent. for the preferred, or a shrinkage in market value amounting to \$48,860,000, or roughly speaking, of 95 per cent. The magnitude of the difference between the par value of the combined issues of common and preferred stock and the nominal value of the same on the date mentioned will be more readily perceived by glancing at the following figures:—

|                                        |               |
|----------------------------------------|---------------|
| Par value of common stock .....        | \$74,000,000  |
| " " preferred " .....                  | 28,000,000    |
| Total par value .....                  | \$102,000,000 |
| Market value (nominal) July 30th ..... | 2,100,000     |
| Depreciation .....                     | \$99,900,000  |

In view of this enormous shrinkage it would seem an extremely difficult matter to induce the unfortunate shareholders to put up the extra millions required to finance the Company through its troubles, the more so as their present holdings would not be considered safe collateral for even the smallest kind of a loan. The outcome of the efforts now being made to keep the Company on a moving basis, will be awaited with interest as the extremely valuable properties, concessions and franchises now under its control are of too substantial a character to remain long undeveloped, without to a considerable degree impeding the progress of that part of our country.

### The Hooley Scandal.

"For ways that are dark, and tricks that are vain  
"The nimble Hoo Lee is peculiar.

The following extract from the editorial columns of the London, Eng., *Critic*, one of the leading mining weeklies of the world and a paper which has been most persistent in exposing mining and other financial swindles, will be of interest as shewing the opinion of two members of the English judiciary, as to the methods adopted by that prince of promoters, Ernest Terah Hooley:—

If a poor man sets at naught the Bankruptcy laws, and defrauds his creditors, he is generally prosecuted; if he commits perjury, he stands a strong chance of being prosecuted; and if he be found to have been engaged in fraudulent bill transactions he is certain to be prosecuted. But Ernest Terah Hooley, the magnificent bankrupt of Papworth Hall, Huntingdon, and the Albemarle Hotel, Piccadilly, W., has been doing all these things openly for a considerable time, with an immunity from embarrassment by the Criminal authorities which has been remarkable. The company-mongering which he has engineered with his swindling associates, at the Walsingham House and Albemarle Hotel, since his bankruptcy, and the large profits which he has made thereby, and which, by the thin pretence of acting as his wife's manager, he has prevented from going to the relief of his creditors, have been notorious. His frauds in other directions, and his lying on his periodical appearances in Court as a witness, have been equally notorious. I have dealt with his bankruptcy scandal so often that I need not go into that matter at length again here and now; but I desire to draw particular attention to his appearance as a witness in one case, and his figuring in another as a party to a bill transaction which occupied the Courts this week, and which called forth strong denunciations from the presiding judges.

In the first case a Mr. Moore sought, under an agreement, to recover from Mr. and Mrs. Hooley £25, which he had paid in calls on 2,000 shares of the Nerchinsk Gold Mining Company (formerly Hooley's Siberian Gold-fields ramp), and to be indemnified against all further calls on the shares. The action came before Mr. Justice Buckley, and, after hearing the plaintiff and Hooley in the witness-box, his lordship briefly gave judgment as follows:—

The witness last in the box (E. T. Hooley) told me three things in three successive breaths. He said: "I did not know that the plaintiff had not had the Holland and Cremetti shares," "I knew he had not had the 4,000 shares, because he had not paid the guinea," and "I do not know whether he had the shares or not." I do not believe a word of his evidence, and I give judgment for the plaintiff for £25, and indemnity in respect of calls, and on the shares and the costs of the action.

No comments of mine could add to the force of these judicial remarks on Hooley.

The extremely remarkable bill transaction case was heard the following day, before Mr. Justice Darling. The action was brought by Hooley's notorious associate, Mr. James Arnold Bradshaw, stockbroker, Liverpool, (see *CRITIC BLACK BOOK*, pp. 141-142), against J. C. Kelly, of Sapphire Corundum fame, to recover a sum of money on a bill of exchange. The following abbreviated report from the "Star" gives the chief points in the case, and his lordship's scathing criticism of Hooley and Bradshaw, and their transactions:—

The plaintiff alleged that he had had to pay the bill, which was discounted by the Bank of Ireland, and he sued Mr. Kelly, the acceptor.

Mr. Hooley's name was mentioned as being at the bottom of the transaction, which occurred through the sale of some Corundum shares, and plaintiff, in cross-examination, said he used to go to the Albemarle Hotel,

where Mr. Hooley had a suite of rooms, in order to do business with him. Witness knew that at that time Mr. Hooley was a bankrupt.

His lordship: And yet he lived at the hotel. (Laughter.)

His lordship: What was the matter with the Corundum Mine?

Witness: I do not know. I think there is plenty of corundum in it, but still I think the thing was a swindle.

Continuing, witness said he found in the end that it was arranged to turn the affair into a company, in which hundreds of thousands of pounds were to be the capital. Hooley wanted 3,000 shares, and then a question of a £1,000 bill cropped up as an assistance in the matter.

Witness accepted the bill, and then transferred the 3,000 shares to Mrs. Hooley. Asked as to why he did that, witness said he presumed Mr. Hooley always acted as Mrs. Hooley's agent.

Witness was aware that the defendant refused to pay the bill in question, because he said that Hooley had committed fraud in the matter, inasmuch as the person to whom the shares were sold was not a man of substance.

His lordship asked whether the fact that Mr. Hooley was a bankrupt was the reason why his wife selected him as her agent.

Witness replied that he thought so. (Laughter.)

In answer to his lordship the plaintiff said he saw Mr. Hooley only last week in London. Mr. Hooley knew full well that the present action was being brought, and, in fact, had been subpoenaed as a witness.

Mr. Justice Darling said he was satisfied that Mr. Bradshaw was almost living with Hooley at the Albemarle Hotel. Hooley being an uncertificated bankrupt, it was quite natural that he should live at such a place. (Laughter.)

Moreover, said his lordship, he was perfectly satisfied that Mr. Bradshaw was drawn into the frauds which Mr. Hooley was carrying on. The whole making of the bill was a fraud, and the money was only paid through the process of the law. Every step taken and every document in the case was a fraud. From the inception of these matters to the present time there had been nothing but fraud.

It was astonishing that in the middle of London, the largest city in the world, a man like Hooley could, as an uncertificated bankrupt, carry on business in the way he did.

People were prosecuted for thimble-rigging, which was a comparatively innocent game, and it was astonishing to find that persons like Hooley were allowed to play with thousands, nay, millions of pounds, in the way they did.

In concluding his judgment, which he gave for the defendant with costs, his lordship said he sincerely hoped that the exposure of to-day would put an end to these transactions.

## EN PASSANT.

The new trans-continental railway should open up much fresh ground for prospectors. In northern Quebec and Ontario, as well as in the western territories and the mountain ranges of British Columbia, are thousands of square miles of virgin territory. Little is known of the possibilities of these regions, but in many places the outcropping rocks are favorable for the occurrence of minerals. It will be surprising if experience with the C.P.R. be not repeated, the building of which both brought to light and made accessible mineral deposits which are now daily adding thousands of dollars to the available wealth of the country.

It is to be hoped that the announcement stating it to be the intention of the English authorities to prosecute Mr. Ernest Terah Hooley for his share in the Sapphire Corundum swindle is well-founded. This is one of the transactions which have helped to make British capitalists look askance at Canadian mining projects. An almost wholly undeveloped corundum property in Ontario, without mill or machinery, was actually capitalized for a million pounds, most of which was coralled by the promoters and sold to the moneyed simpletons among whom Mr. Hooley chiefly operated. It is for disposing of these worthless shares and for false representations in connection therewith that Mr. Hooley is in danger of punishment. Sapphire Corundum would not be wholly without merit if it brought the meteoric career of this preposterous individual to a close.

If there was one manufacturing industry in Great Britain which was deemed hard struck by the McKinley high protective tariff, adopted by the United States in 1891, it was the tin-plate industry. Previous to that time the chief market for Welsh tin-plates was in the States, but since then the purchases have fallen lower and lower until they are now of comparatively small dimensions. The home manufacturers supply the demand. Nevertheless, the tin-plate manufacture

of Wales is to-day turning out a greater output than ever before. In 1891 the total export of tin, ternes and black plates from Swansea was 233,020 tons. In 1901 it amounted to 239,489 tons, and last year to 271,332 tons. When the American demand ceased, the Welsh manufacturers bestirred themselves, and found new markets. To Russia alone they sent in 1902 \$2,500,000 worth of plates. This they were enabled to do partly because ship-owners, sure of profitable return cargoes of wheat or petroleum, could afford to take outward shipments at low rates of freight.

It is no wonder that the free trade system, which makes such ready readjustments possible, has many staunch defenders in the old land, who fear that in following Mr. Chamberlain's lead for protection and Imperial preference there is danger of dropping the substance in grasping after the shadow.

It is hard for some people to reconcile themselves to the fact that there is no coal in Ontario—at any rate in older Ontario. With a fine contempt for the theories of the geologists some of the citizens of Wallaceburg, a town near Sarnia, have subscribed a couple thousands of dollars to bore for coal in the vicinity of that place. There is coal in the state of Michigan a few miles away, and it is argued that as there is not much difference between the levels on the respective sides of the line, there ought to be coal in Ontario also. The government diamond drill has been at work for some time, the provincial treasury bearing one-third the cost, but the results so far have not proven the geologists in the wrong. If experience the world over counts for anything, coal is not to be found below the carboniferous series of rocks, and unless the whole tribe of geologists from Logan to Coleman have been mistaken, formations of south-western Ontario are below the coal measures. It would seem therefore that the Wallaceburg people are boring in the wrong place.

Indications in the silver-lead districts of British Columbia lead to the belief that the bounty of 75 cents per 100 lbs. granted by the Dominion government on lead will bring about much activity in mining and smelting. At Trail, No. 2 lead stack is to be blown in which will smelt about 100 tons of lead ore daily. In the Slocan region the Last Chance mine is again to be a producer, the Ruth mill has been started, and the Ivanhoe has taken on an increased force of men. The Jackson, Bosun, Sunset, Wakefield and Antonie properties are to be put in commission, and the North Star will add to its output. The great St. Eugene mine at Moyie, it is likewise announced, will probably start operations again in a short time. Altogether, the bounty stimulant seems, for the time being at any rate, to be effective.

Fifty years ago aluminium was a rarity, worth as much as gold. Now, it is quoted at 35 cents per pound. Its oxide, alumina, is one of the most widely diffused and commonly occurring minerals, being a leading component in all clays and many varieties of rock. The principal source of the metal, however, is bauxite, a variety of clay rich in alumina found in some of the southern and south-western states. Aluminium is the lightest in weight of all the metals, and its likeness in appearance to silver is utilized with good effect in the manufacture of ornamental articles. Besides being light, aluminium possesses much strength, and in some of the armies of Europe cooking and camp utensils made of it have been introduced. Advantage has also been taken of its conductivity in conveying the electric current, and when copper rose in price two or three years ago, there were many who thought it likely that aluminium wire would come into general use for this purpose. Since copper has receded in value, however, it is less likely to be replaced by aluminium in the electric field. Corundum is

a much richer ore of aluminium than bauxite, but it is an exceedingly stable compound, and its decomposition and the consequent isolation of the metal has not so far been found practicable on a commercial scale. If a feasible method were found, Canada could supply the world with aluminium.

Through the courtesy of Mr. L. Vogelstein, New York representative of Messrs. Aron Hirsch & Sohn of Halberstadt, Germany, we are enabled to give the figures of the German consumption of foreign copper for the months, January-June 1903, compared with the same period of 1902-1901:—

|                       | 1903.        | 1902.        | 1901.        |
|-----------------------|--------------|--------------|--------------|
| Imports . . . . .     | 43,688 tons. | 41,524 tons. | 33,014 tons. |
| Exports . . . . .     | 5,380 "      | 4,486 "      | 4,693 "      |
| Consumption . . . . . | 38,308 "     | 37,038 "     | 28,321 "     |

In the death of Mr. Thomas Chalmers, which occurred in Chicago last month, one of the pioneers in the manufacture of engineering and mining machinery, has passed away. The late Mr. Chalmers who came to America from Scotland in 1845, was one of the founders of the well known firm of Fraser & Chalmers, since merged into and now a constituent part of the great Allis-Chalmers Company, one of the largest manufacturers of mining machinery in the world. He was connected with the building of the Windy City's first system of water-works, consisting of a single pump at the foot of the Chicago River, and also installed the first steam-heating apparatus in that city, namely, in the old Dearborn school. Another public work in which the deceased gentleman took a prominent part, was in the construction of the old Illinois and Michigan canal, during which period he was one of the engineers.

#### Wabana Ores of the Dominion Iron and Steel Co.

We take pleasure in giving publicity to the following extract from a letter from Mr. W. L. Grammer, manager of the Wabana iron mine of the Dominion Iron and Steel Co., which speaks for itself:—

"In the articles on the Dominion Iron and Steel Co., Limited, in your last two numbers of the CANADIAN MINING REVIEW, Bell Island ore from Wabana mine is mentioned as running 43 per cent. of metallic iron. This is an error; and may we kindly ask you in justice to our company to correct it in your next issue.

We send you the average analysis for the four seasons that the mine has been operated by the Dominion Iron & Steel Co. :—

|                         |                         |
|-------------------------|-------------------------|
| Season 1900—Iron, 52.88 | Season 1902—Iron, 49.23 |
| 1901— " 49.79           | 1903— " 50.67."         |

#### The Synclinal or "Inverted Saddle" Reefs of the Bendigo Goldfields.\*

Whilst much has been written in past years by geologists, scientists, mining engineers, etc., regarding the well-known and justly notorious anticlinal, or, as they are more commonly known, "saddle" reefs of Bendigo, comparatively little notice has been given to the synclinal or "inverted saddle" reefs and their relationship with each other.

In taking up the question of the synclinal folds, I recognize that it is a large undertaking to confine within the limits of a short paper, and at the same time convey a comprehensive idea of their characteristics, and the importance of their relationship with the anticlinal

\* By Wm. H. CUNDY, in Transactions Australian Institute of Mining Engineers.

folds, in the general question of practical mining. However, from a practical point of view I consider the question of great importance, and if an interest in it can be awakened, more particularly among practical men, the object of this paper will be achieved.

Before entering into the subject, I must briefly state some facts, and perhaps some theories, in respect to the deposition of the Lower Silurian rocks, and their subsequent buckling up, as now seen on the Bendigo gold fields. At the same time, I do not intend to go very closely into the geological aspect of the question, as I wish the paper to be considered as a practical one.

It is, I think, a generally accepted theory that the rocks of this field were originally laid down in water in horizontal layers, sub-

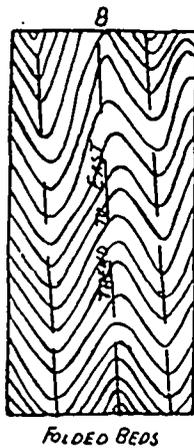
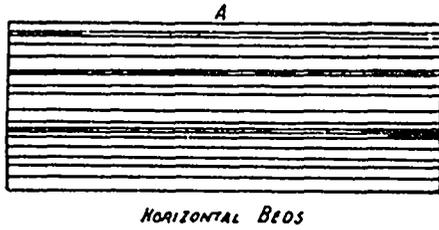


DIAGRAM NO. 1.

sequently being bent over, or roughly corrugated, probably by the granite upheaval. As an illustration I submit the following ideal diagram showing the layers or beds of rock as originally deposited, and the same rocks subsequently buckled up. (Diagram 1.)

From the present position of the rocks it is evident that the forces responsible for this buckling up exerted a very strong lateral pressure, and it is also evident that there was an endlong pressure as well, for looking at the stratification transversely it will be seen that the undulations ("dip") of the rocks are short in comparison with the longer and wave-like undulations ("pitch") when viewed longitudinally. (Diagram No. 2.)

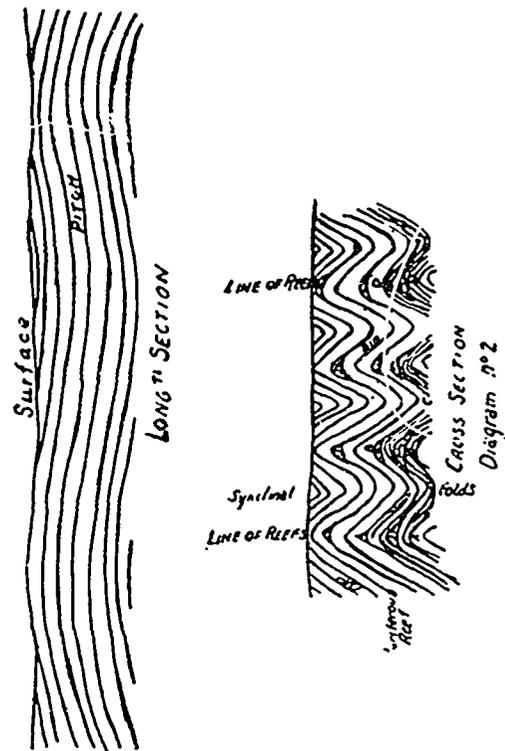
Whilst the process of bending over was in progress, it is natural to assume that the beds, or layers of beds, of rock would not be of uniform strength and thickness. Consequently, whilst the anticlinal arch and the synclinal trough were being formed the weaker ones would break. This would more particularly be the case near the surface, where the resistance would not be so great, and this fact (together with considerable faulting) may be laid down as one of the principal reasons why the reefs on the Bendigo field were not earlier recognised as anticlinal or more commonly known "saddle" reefs.

Local prejudice among mining men would not admit of the principle of the anticlinal formation until in recent years, but much more averse were the miners in regard to the synclinal fold formation. Even at the present time there are practical men of over thirty years'

experience on the field, who deny that any synclinal folds exist, simply because they have not seen them in their own mines, and are not sufficiently interested to notice them in others. I am glad to say, however, that in the last few years the practical men are evincing a greater desire to become more acquainted with the geological side of the question and applying it to practical mining. This is as it should be, for it stands to reason that without some knowledge of the deposition of the rocks and reefs, the work of laying out systematic mining operations must be attended with a large element of chance.

The result of the geological survey of the Bendigo gold fields, upon which I was engaged some years ago, under the direction of Mr. E. J. Dunn, F.G.S., disclosed the fact that transversely in a distance of 2½ miles there are 15 anticlinal folds along which the saddle reefs are formed, with 12 corresponding synclinal folds between them. The survey comprised an area of 20 square miles, in an oblong strip 2½ miles wide by eight miles long. The above number of anticlinal and synclinal folds were found within this limit, but it is well known that many others exist both to the east and west of the area surveyed. And further it must be noted that though the reefs were traced for a distance of eight miles, they continue for miles north and south of that limit. When it is considered that the bulk of the mining operations has been chiefly conducted on only three lines of reefs, the wonderful magnitude of this field is apparent, also the immense area yet to be exploited.

The anticlinal and synclinal folds have a general strike of N. 20°

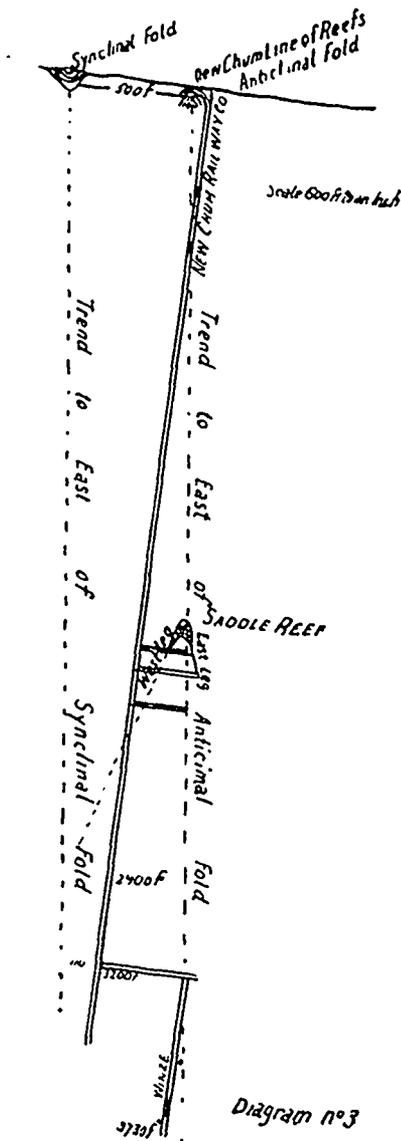


W., but they do not at all times run parallel to each other—in places they nearly converge and again widen out. The distances between the anticlinal folds vary from 400 feet to as much as 1600 feet, and the synclinal folds are not always midway between them. For instance, there is a distance of 660 feet between the Garden Gully and Paddy's Gully lines of reefs, with the synclinal fold only 130 feet west of the Paddy's Gully reef. (Diagram No. 5.)

The fact must be admitted that where the synclinal reefs have been found they are invariably smaller in comparison with the anticlinal reefs, but it must also be noted that very few have been found, and only in a few instances worked to any extent. This smallness may be accounted for as follows:—

When the bending over of the rock is considered the action would be that the anticlinal folds would leave larger openings or cavities (subsequently filled with quartz), and the tendency would be that any accumulated quartz in the synclinal fold would be smaller, as the rock beds or layers would form so many troughs, one inside the other, the pressure always being downward towards the axes, with an action that would prevent large cavities being formed. There is one at least notable instance where the synclinal reef is a large one, situated 410 feet west of the New Chum line of reef, immediately north of Mr. Lansell's Fortuna battery. This was a well known land mark in the early days, standing some 300 feet above the surface in the form of a pyramid.

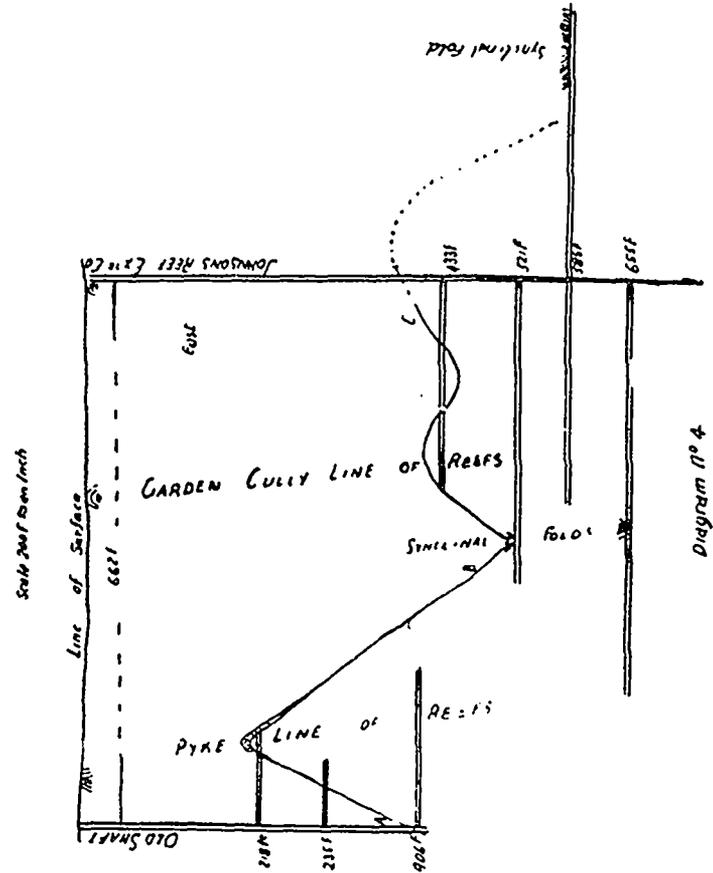
Though the synclinal folds cannot in all cases be fixed accurately on surface, owing to the rocks not being sufficiently exposed, they have been actually found on surface, and at a depth in mines on the following



lines of reefs, viz:—between the Carshalton and Napoleon lines of anticlinal reefs, between New Chum and Nell Gwynne lines, between Deborah and Garden Gully lines, Garden Gully and Paddy's Gully lines, and Paddy's Gully and Derby lines. So far as I know, the greatest amount of work done on a synclinal reef was that on the line between the Garden Gully and Paddy's Gully reefs from Lansell's "Sandhurst" shaft, and also from the east shaft of the Kock's Pioneer Co. This reef was more than payable, and it seems almost unaccountable that more work was not done to further exploit the channel of ground north and south of this locality. Another instance where the synclinal reef was worked is at the Johnson's Reef Extended Co.; here

it was followed for about 200 feet in length, but was hardly of a payable character.

The general local impression is that the inverted saddle reefs are not auriferous, or at least payably so, and that they are small comparatively; but I think this condemnation too sweeping, for it must be remembered that very few have been seen, and very little work done on those that have been found. It may be said also that the synclinal folds have been seen in many places without carrying quartz, and I



agree that it is so; but, on the other hand, we also have numerous instances on the field where cross-cuts have been driven and the anticlinal centre country also found barren of quartz. In such a case, however, a centre country winze is sunk and the reef invariably found, but I know of no case where such work has been done to exploit the synclinal country. I have mentioned where the synclinal reef has been successfully worked, which I think, is sufficient to indicate the importance of searching for them, especially so where the amount of work necessary is small in comparison with that required for prospecting the anticlinal reefs.

From time to time a large amount of information has been gathered to endeavour to trace the same layers of rocks surrounding the auriferous reefs on the one line of reef to other lines of reefs on either side of it. To more clearly convey the importance of this we will assume that at points A (Diagram No. 2) we have a rich reef surrounded by certain rocks. To fix the positions of these rocks at points B, C and D might solve the question that as the reefs at A were auriferous, so are those in the same zone of rocks at B, C and D. Though no definite principle has been evolved so far to decide as to the method of tracing these rocks, still some important move has been made in that direction. To actually decide this question, accurate data and close research are necessary, and with this knowledge at hand some definite scheme may be found to be of practical benefit. In this respect we are not likely to gain much information from the composition of the rocks themselves, as Mr. A. W. Howitt, in his analytical

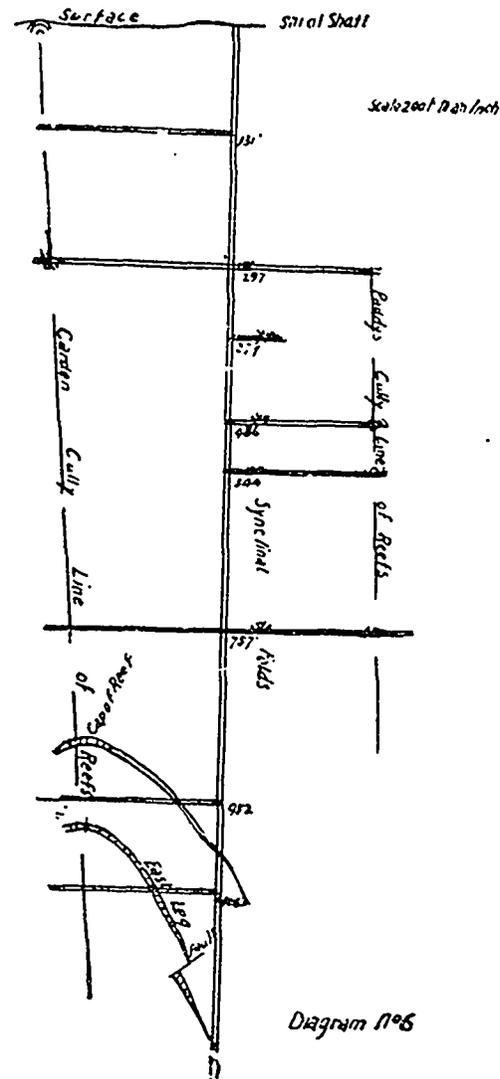
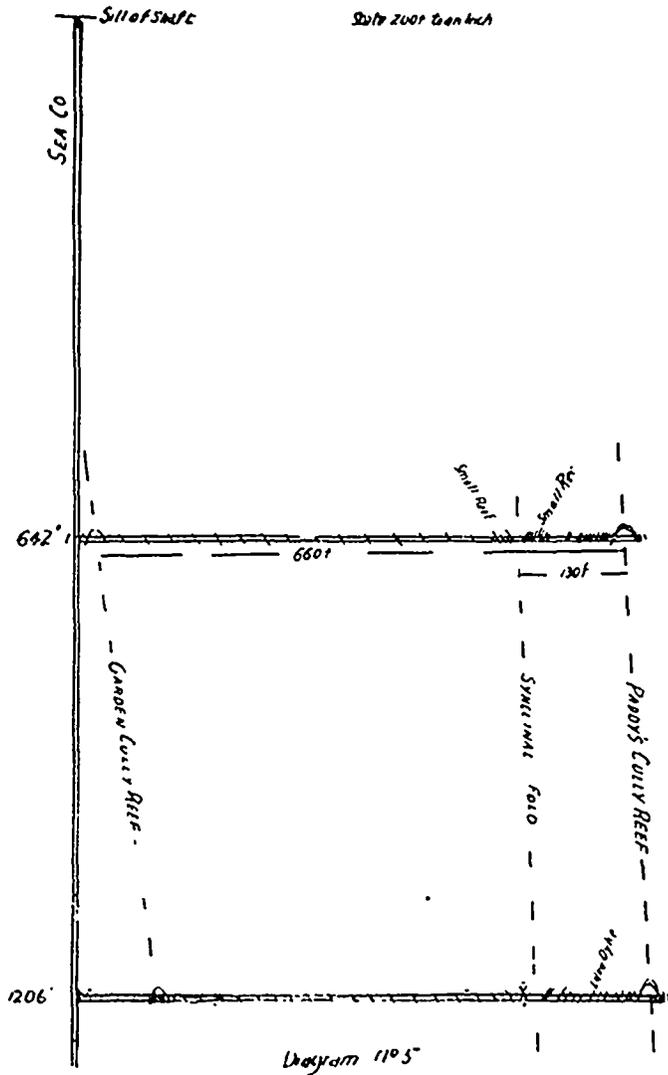
and microscopical examination of the rocks, taken from surface and at frequent intervals to a depth of 3000 feet, from Lansell's 180 Mine, finds that in actual composition there is no difference between them.

In the course of my work on the field, extending over 12 years, I have collected many examples of the synclinal folds under various circumstances, and purpose giving several of them to further illustrate this paper. They are all from actual survey and accurate measurement and will tend to show, in some cases, the practicability of undertaking prospecting work for synclinal reefs at a comparatively

approximately, be found by extending a crosscut at 2,900 feet. Seeing that the reef above 2029 feet was highly payable, it is at least reasonable to assume that the synclinal reef will be auriferous also. It is probable that this highly interesting work will be carried out shortly in this mine, and there are other mines on other lines of reefs where similar work might be done.

Another interesting and perhaps the most conspicuous example of rock bending and reef formation is that at the Johnson's Reef Extended Mine (Diagram No. 4). In this we have the Pyke and Garden Gully lines of reefs clearly exposed with the synclinal folds on either side of them. The anticlinal reefs were both payable auriferous and the synclinal reef between also carried gold. Commencing at A, the same "back" or "wall" can be followed continuously to points B. and C. An excellent photograph has been secured of this synclinal, which is included in Mr. E. J. Dunn's report on the Bendigo field—Part II.

Still another very good section has been secured at the Sea Co's mine and this shows with what regularity the rocks have been deposited (Diagram No. 5). From this it will be seen that the Paddy's Gully anticlinal is a short fold in comparison with the Garden Gully. By



small cost. By a glance at the diagram (No. 1) it will be seen that successive portions of the anticlinal and synclinal folds are not directly under one another, but have a trend eastward in their downward course of about 10 feet in every 100 feet. Thus as great depths are reached the synclinal folds have been getting nearer to the shafts. The shafts on the Bendigo field have, as a rule, been sunk in close proximity to the anticlinal fold or "centre country." Consequently, though the synclinal folds are some hundreds of feet east and west of the shafts, with the trend eastward, one gets nearer and the other further away as depth is reached. In the case of the New Chum Railway Mine (Diagram No. 3) the synclinal is 500 feet west of shaft at surface, but at, say 3200 feet it will only be about 110 feet west, and when the shaft is sunk still deeper will be intersected by it.

In the same diagram I have shown the position of a saddle reef above the 2029 feet cross-cut. This reef was highly auriferous, and it will be an interesting piece of work to trace downward the west leg of this formation until it reaches the channel of the synclinal, which should,

also comparing this diagram with that of the North Johnson's (No. 6) it will be seen that the Garden Gully and Paddy's Gully lines of reefs have converged, as at the Sea Co., they are 660 feet apart, whilst at the North Johnson's they are only 370 feet apart—a distance of 1½ miles separating the two mines on the strike of the Garden Gully line of reefs.

Many other examples of the synclinal folds might be given, but

those selected are typical of the field, and sufficient to illustrate the principle advocated.

The main object of this paper is to draw attention to a subject which I think has been somewhat overlooked, and if the foregoing remarks will cause discussion I shall feel that the time occupied in compiling this short paper has been well spent.

### The Gold Dredging Industry in New Zealand.\*

When the first rush of miners took place on the Molyneux River, in the Dunstan Gorge, the gold was won by means of cradling the gravel, which was shovelled from the various beaches and crevices in the rockbound sides of the river.

The above method of winning the gold was only practicable when the beaches were not covered with water, hence the work was usually carried on during the winter months, the ordinary level of the river during spring and summer months being some ten or twelve feet above winter level. The melting of the snow in the lakes water-shed being responsible for the high summer level of the river.

As the available beaches were worked out, other methods of winning the gold were proposed and worked with more or less successful results; the first advance being to work the bed of the river by means of a spoon dredge. The spoon was made with a round lip or ring of iron, having a steel cutting edge on one half of the circumference, at the opposite side a socket being forged to take a long spar or boom, which was securely fitted thereto. At intervals round the hoop, half-inch holes were bored to enable a bullock-hide bag to be laced on to same. The spoon was worked from a pontoon, which carried a crab winch, tackles, and the necessary washing appliances to treat the washdirt lifted. In starting to dredge, a tackle was attached to near the upper end of the boom, and a line or chain was carried over a cat-head from the crab winch to a point near the lower end of the boom. The spoon, with bag attached, was dropped over the side towards the stern or down-stream end of the pontoon, and dragged up-stream, the boom being kept in a more or less perpendicular position, to cause it to dig into the washdirt. When the workmen judged that there was sufficient gravel in the bag, the upper end of the boom was hauled to a horizontal position. The bag was then lifted on board by means of the crab winch and the contents treated by means of washing. A number of these dredges paid handsomely. Where stony ground was met with, they were, however, of very little use, and owing to the limited quantity of gravel treated per day, only the richest portions of the river bed proved payable.

The next proposal was to sink a pneumatic cylinder, somewhat similar to those used as piers for bridges. There is no doubt that by sinking a cylinder, the crevices in the bottom of the river could be properly cleaned out. However, to reach the bottom a considerable depth of drift and wash in most places had to be passed through, with the result that too much time was lost in reaching bed-rock, and in the nature of things it was not to be expected that the cylinder would go down on a rich patch every time. After a few trials the above scheme was abandoned.

A few enthusiastic spirits then proposed to use a submarine boat, which was actually built and named the "Platypus." This latter got no further than a trial in Otago Harbor. I believe the trial took place about the year 1873. The boat was built conical shape towards the forward end, and nearly square across the stern, about two-thirds of the length being cylindrical with a dome and large manhole in same. At either side there were two paddle boxes open at the bottom, while

underneath there was a rectangular space inside which the men were to work the washdirt. This space communicated with the interior of the boat. In the interior, there were two sets of pumps attached by means of suitable gear to a shaft passing across the boat and through the side of same into the paddle boxes. On the outer ends of the shaft two paddle wheels were fixed, the intention being to operate same by means of the current flowing underneath the paddle box opening. The outer ends of the paddle wheel arms were fitted with sheet iron floats, which were curved to catch the current and at the same time offer as little resistance as possible to the dead water in upper part of paddle box.

In case of accident to the paddle wheels, or in the event of the boat working in slack water, provision was made to disengage the wheels and work the pumps by hand power. Air pipes communicated from the air pumps to the atmosphere above water level. It will be seen from the above description that the proposal was practically an application of the diving bell.

The writer recollects that at the time of the trial of the above boat in Otago Harbour, it was first towed out to be submerged; that part of the performance came off all right. Unfortunately when they wished to make the boat rise sufficiently high to enable the men who were inside to come out, it would not, owing to some mishap to the air pumps, rise high enough to allow the men to come out at the man-hole door. The result was that the boat was towed into shallow water, and when the tide fell the men were able to come out at the man-hole door. Shortly afterwards the boat was sold and cut up into sections, without ever being set to work in the river.

About the same time as the above experiments were being carried out, other proposals were being made to work the river by means of small dredges driven by current wheels fixed on the dredge. A number of the dredges were built for private parties, the machinery, in most cases, being supplied by the late well-known firm of Kincaid, McQueen & Co., Dunedin. The writer was then in the employ of the above-named firm, and recollects the discussion that took place as to whether the dredges were likely to prove payable or not. The buckets of the first of these dredges had only a capacity of one cubic foot, although on the later current wheel dredges, the buckets in some instances had a capacity of two and a-half cubic feet. The water for washing purposes was in most cases lifted by means of rectangular iron cans placed on the arms of one of the current wheels, emptying into a box near the highest part of the wheel.

A number of these dredges paid very well; however, the great trouble was that they could not dredge heavy and deep ground, and in many instances when the runs of gold ran into back waters, or where there was not much current, there was not power to work the dredge.

The more progressive members of the dredging community then began to cast about for some further improvement in the way of dredging. Priestman's steam grabs were advocated by some people, however they did not prove a success. The next proposal was to fit up a steam dredge. After a good deal of thought, Messrs. Kincaid, McQueen & Co. agreed to build a double-ladder steam dredge with iron pontoons, a company being formed for that purpose, the firm also taking a large interest in the venture. The company was known as the Dunedin Gold Dredging Co. During the time the dredge was being built, a small company was formed to put a second-hand engine and boiler on a small dredge; however, the latter venture did not turn out satisfactorily. In due course the Dunedin dredge was built and set to work at Alexandria South, on the Molyneux river. After various delays, incidental to starting a new style of plant, a dividend-paying stage was reached. The buckets had a capacity of about two

\* By WM. WYLIE, in Transactions, Australian Institute of Mining Engineers.

and a-half cubic feet, the engine was an inverted compound condensing engine, the various winches to operate ladder, and moving lines were driven from the main engine by means of suitable gearings and clutches. The sluicing water was lifted by means of a centrifugal pump, the gravel being run through a screen, very much the same as in modern dredges. In designing the above dredge, a mistake was made in putting in two ladders instead of one. The result was that when dredging in rough ground the dredge rolled badly, interfering very much with the work. Wooden pontoons were then built and fixed to both sides of the dredge, outside of the ladders. After a time the dredge was removed down to Millar's Flat, and converted into a single-ladder dredge. After about twenty years' work the company that owns the above dredge is going to be wound up. In passing, I may say that for a long time the above dredge won a great amount of gold, and the shareholders received some handsome dividends.

After a time other steam dredges were built. As more experience was gained, it was found that to give satisfaction the dredges required to be built on heavier lines and with larger buckets. In some of the lately built dredges, the buckets have a capacity of six and a-half cubic feet, with ladders, 74 feet centres, dredging, in some instances, to 42 feet below water level.

Where high banks had to be treated, there was a difficulty in disposing of the spoil. The elevator was then introduced to stack the spoil. As at present designed, the elevators range from 30 up to 130 feet in length, and rise at an angle usually somewhat less than 45° with the horizon. In the small class of elevator, the ladder girder is composed of two wooden beams, while in the larger descriptions it is built up as a light iron girder. On the upper or ascending side of the elevator, there is a series of rollers to carry the bucket chain; while on the lower or descending side either rollers or slides are provided to carry the buckets, there being flanges riveted on sides of the buckets to take the rollers. The buckets of the elevator overlap each other at the edges to prevent gravel passing between them. In the case of a short elevator the bucket chain is usually driven from the top tumbler, by means of a shaft passing up the elevator ladder; while in the case of a long elevator the drive is from the bottom. The tumblers usually have five sides or faces. As a rule the elevator only lifts the gravel, which passes through the revolving screen; the fine material which passes over the tables is deposited at the stern of the dredge.

The average of the dredge buckets on the river have a capacity of from 4½ to 5 cubic feet, the connecting links being in some instances bar iron, 6 in. x 2 in., with steel bushes in eyes of buckets and links. The usual distance between centres of bucket eyes is two feet; the diameter of the pins to connect buckets and links is from 1¼ to 2½ in. according to the nature of the wash and the depth to be dredged. The lower tumbler has five faces, while there are only four faces on thread of top tumbler. At the upper end of the ladder two powerful screws are fixed, these screws are used to extend the length of the ladder, and thereby take up a portion of the slack of the bucket chain as the bushes and pins wear. The lower end of the ladder is hung by means of two strong hanger bars. Across the upper end of the hanger bars, a strong crosshead is fixed to which a set of large sheaves is attached, round which the lifting rope passes. Across the forward end of the dredge pontoons, and crossing the bucket well, a gantry is fixed, built either of iron or wood. The top girder of gantry carries the upper set of ladder lifting sheaves. In a number of dredges the weak part is the gantry. However, the style of gantry designed by Mr. L. H. Reynolds, marine and consulting engineer, of Dunedin, prevents the pontoons from canting inwards towards the

bucket well. To enable the ladder to swing up and down, to suit the various depths of dredging, it is hung on a strong shaft at upper end, the bearings of the shaft being securely fixed to forward side of tumbler framing.

The top tumbler is driven by means of a large spur-wheel, keyed on end of tumbler shaft. In some instances, the shaft which carries the pinion which gears into spur-wheel also carries the main driving pulley. For various reasons I do not approve of the above method of driving; the better way is to have an extra shaft to carry the driving pulley, reducing the velocity of rotation by means of gear wheels, which can be more easily done than by means of one shaft. To prevent undue strains when the buckets get foul of large stones, a powerful friction band with friction pulley is provided on one of the shafts. The friction strap is lined with wood and is in two pieces, the ends are connected with spindles, having right and left hand screws passing into corresponding nuts at back of the lugs on either end of straps. These screws can be set to any tension in a few minutes, and are operated by means of a lever operating a sleeve on the shaft, from the sleeve two bars extend to short levers on the screws; by pulling the lever in either direction, the friction can instantly be thrown in or out of gear. It is not advisable to have the friction too tight, otherwise too much strain is thrown on the machinery.

Where two shafts are used, some engineers, to reduce the speed of engine, put the friction gear on the first motion or fast running shaft. This is a mistake, because when working rough ground the friction gear slips a lot and has a tendency to fire, therefore it is advisable to put it on the slower running shaft. In adopting this course the friction gear has to be of a heavier description than would be the case on a faster running shaft.

Both ropes and belts are in use for main drive from engine. Owing to the limited length available between shaft centres, rope drive does not give satisfaction. I prefer a belt drive. Where the work is heavy we have put two belts on the same pulley, first a ten and then an eight inch on top of that.

On the Cromwell Company's dredge, which the writer has just been superintending the erection of, a double belt was put on with very satisfactory results. In the instance cited the ground is very rough, being strewn with large boulders, in places some of the boulders are four and five feet in diameter.

Usually the main gear is driven off one end of engine shaft and the centrifugal pump is driven off the other end of the shaft. The gravel lifted is dropped into a shoot known as a drop shoot which delivers it into a large perforated revolving cylinder or screen. The screens range from 18 to 32 feet in length and from 3 feet 6 inches up to 6 feet in diameter. The perforations consist of some thousands of round holes, the holes being about three-eighths of an inch in diameter at upper end of the screen, and increasing in diameter towards the lower or discharge end. The screens have an inclination or fall in their length, ranging from 18 inches to 2 feet; however, both the diameter of the perforations and the fall of the screen is governed by the nature of the washdirt and the coarseness of the gold to be saved. Water is carried inside the screen by means of a sheet iron pipe, known as a spray pipe, having a large number of perforations in lower side to enable the sluicing water to fall in jets into the wash inside of screen. The above pipe is connected direct to the centrifugal pump discharge. In some instances an angle iron is riveted inside of the screen in the form of an archimedian screw, the idea being to thoroughly wash the gravel. However, in the writer's opinion, the screw is not necessary when treating river wash. The screen is built up with plates ranging from ¾ to 1½ inch in thickness. The screen revolves on four rollers running in suitable bearings. In some instances the screen is driven

by means of a tooth-gearing attached to the screen roller path; however, an improvement has been introduced in the later dredges by driving the screen by means of friction rollers. The screen makes from 15 to 18 revolutions per minute. As mentioned in a previous paragraph, the stones and larger particles of gravel pass out of lower or stern end of the screen, the sand and fine gravel passing through the perforations in screen on to gold-saving tables, built either of wood or iron. The tables are divided into compartments from 36 in. to 42 in. wide and in the direction of flow of water; there are usually two or more brakes or drops across each compartment. The inclination or fall of the tables ranges from one in ten to one in eight, the length in direction of flow of water being from 14 to 17 feet, the width extending nearly the whole length of the screen. The water drops from the tables into a sluice box, which discharges the sand, gravel and water over the stern of the dredge. The tables are first covered with hessian, on top of which is placed cocoanut matting, which is covered with expanded metal; the whole being held in position by means of suitable cleets or clips. In actual practice in the river, it is found that the principal part of the gold is won from the upper half of the table. However, where much fine gold and heavy black sand occur, such as at Oripuki in Southland, and in the black sand leads in Westland on the west coast of the Middle Island, the writer doubts very much if any modification of the tables as used at present will prove suitable.

The engines used are mainly Marshall's, Robey's and Ruston and Proctor's, all compound surface condensing, the centrifugal pump water being caused to flow through a surface condenser to effect condensation of the steam. All these engines are supplied with governors and expansion valves. The horse power of the engines runs from 12 to 16 nominal. The engines are run up to 150 revolutions a minute. The boilers are internally fired with short combustion chambers and  $2\frac{1}{2}$  in. tubes through to smoke box end. Usually the pressure of the steam carried is 140 lbs. per square inch. The nominal horse power of the boilers range from 16 to 20. Where a 12 horse engine is used, a 16 horse power boiler is employed to provide the extra steam required to operate winches. The fuel used is rather a poor quality of lignite, which is usually found under the surface of the flats comprising the old lake system of Central Otago.

The whole of the ladder, head and side lines are operated by means of powerful steam winches driven by means of a pair of small engines. There are a number of designs of these winches; in many instances the engines for same have been imported, while in other cases they are locally made. One description of winch has a long shaft coupled to engine crank shaft and extending nearly the whole length of the winch; on above shaft there are friction clutches to operate the rope barrels which, with the exception of ladder line, are driven by means of a worm wheel; owing to the ladder line being very much used, open spur gearing is used to drive it. With the exception of the head line and ladder line the other lines are worked in pairs; one friction clutch puts the drum shaft in motion. There is an ordinary claw clutch fixed on the shaft between the barrels, the ends of the barrels also have corresponding claws to fit the clutch. When the clutch is in mid position both drums are out of gear. When moved to right or left, either right or left drum is in gear; powerful brake straps are also provided to hold the drums when the clutches are out of gear. These are powerful winches, and when dredging in a ten knot current plenty of winch power is required. The main drawback to the above class of winch is that they occupy too much space when placed on a small dredge. There is another class of winch made having open spur gearing, this winch does not take up so much as the winch first described and is suitable for the smaller class of dredges.

On the gold bearing flats where water is available, quite a number

of dredges known as dry land dredges are at work. The wear and tear on these dredges are not so great as it is on the river dredges, therefore the ground does not require to be so rich to pay for working. Where much clay is met with in dredging the flats, there is a tendency to discard the revolving screen and use a line of wide sluice boxes in place of the tables; underneath the wide sluice box there is a return box to treat the sand and fine gravel which passes through perforated plates in bottom of main sluice box.

The rule is only to have two men on a shift on the large dredges on the river, that is a winchman and an engine driver.

Nearly the whole of the pontoons are built of wood, different consulting engineers having different styles of construction. So far the stiffest pontoons are those designed by Mr. L. H. Reynolds of Dunedin. They are framed with top and bottom chords and diagonally braced to form a truss. The writer has seen pontoons constructed on the above principle severely tested, and in all instances they have given every satisfaction.

From ten to fifteen ounces of gold per week, according to the size of the dredge and the nature of the ground dredged, will cover expenses.

There is a big future before gold dredging in the middle Island of New Zealand; at the present time there are about 240 dredges in course of construction or ordered. The cost of these dredges will range from £5,000 to £14,000 each.

The following rivers have dredges at work or starting to work on them, viz:—Molyneux, Clutha, Kawarau, Manuarhekai, Dart, Shot-over, Lindis, Waiau, Mataura, Waipori, Nevis, the above rivers are in Otago and Southland; in the Westland and Nelson on West Coast, on the Totaru, Hokitika, Grey, Ahura, Buller, in Inanghua and Orwell Creek. In addition to the above a great number of gold bearing flats are being dredged.

To give an idea of the briskness of the iron founding trade, all the foundries from Auckland to the Bluff have for sometime been working full time and in some instances they have been working day and night; even with all this hurry, orders for dredging plant are being sent to Victoria, New South Wales, Europe and United States of America.

From the writer's knowledge of various places in Victoria, and New South Wales, he is satisfied that with modern up-to-date dredges the ground ought to pay handsomely. The great thing is to have a dredge designed to suit the ground it is intended to work. A dredge that is suitable for one class of ground may not give satisfaction in another place.

In many instances claims that would have proved payable, had an up-to-date dredge been put to work, have been condemned owing to an unsuitable plant being used.

### Thefts of Gold Ores, &c.

MR. B. F. WADE, M.P., MOVES IMPORTANT AMENDMENT TO THE CRIMINAL CODE.

The following interesting debate on the subject of thefts of gold, quartz or amalgam, from mines, sluice boxes, etc., took place in the House of Commons, Ottawa, on the 28th ulto. The occasion being the moving of certain amendments to the Criminal Code by Mr. F. B. Wade, M.P., for Annapolis, Nova Scotia.

Mr. WADE—I would like to suggest to the Minister of Justice the desirability of amending section 343 of the Criminal Code. This section now reads as follows:—

Every one is guilty of an indictable offence and liable to two years' imprisonment who steals the ore, of any metal, or any quartz, lapis, claminaris, manganese, or mundic, or any piece of gold, silver, or other metal, or any wad, black cawk, or black lead, or any coal or cannel coal, or any marble, stone or other mineral, from any mine, bed or vein thereof respectively.

2. It is not an offence to take for the purpose of exploration or scientific investigation, any specimen or specimens of any ore or mineral from any piece of ground uninclosed and not occupied or worked as a mine, quarry or digging.

There has been great difficulty in convicting parties under this section. Parties may be suspected of stealing gold or quartz or amalgam, and in fact may be trafficking in these things, but it is almost impossible to convict them. I have before me a letter from the secretary of the mining society of Nova Scotia asking that a change be made in this section so as to make it substantially the same as the law of Western Australia. The letter is as follows:—

Mining Society of Nova Scotia,  
Halifax, N.S., 23rd May, 1903.

F. B. Wade, Esq., K.C., M.P.,  
House of Commons,  
Ottawa.

Dear Sir,—I inclose you herewith copy of measures recently passed by the parliament of Western Australia with the view of preventing the sealing of gold ores in that country

The stealing of gold ores by men working in the mines has become a serious matter in Nova Scotia. It has frequently been brought to the attention of the Mining Society by the managers of mines in different parts of the province, and the Mining Society has frequently urged that legislation similar to that passed in Western Australia should be adopted here. As you are aware, a great deal of gold ore of Nova Scotia is rich, free-milling ore and is peculiarly the kind of ore where loss of this kind is likely to occur. In the Dominion of Canada statutes for 1869, you will find that there was then put upon the statute-book legislation having a similar object to that just passed in Western Australia.

The necessity for legislation similar to that of 1869 is much greater now than it was then. The necessity for such legislation will not be so apparent in other parts of Canada as it is in Nova Scotia, but as it is the Dominion parliament alone that can pass the Act, the Mining Society has, by a unanimous resolution, instructed me to request you to urge upon the proper authorities at Ottawa for such legislation.

In seeking this legislation, the Mining Society has the approval of the Hon. Mr. Drysdale, Commissioner of Works and Mines for this province.

Yours very truly,  
H. Y. WYLDE,

Sec -Treas.

I have also a letter from the commissioner of mines of the province, in which he says:—

Halifax, May 28th, 1903.

Dear Sir,—The secretary of the Nova Scotia Mining Society has handed me a copy of a letter sent you under the date of May 23rd, and also copy of legislation which is recommended by the Mining Society, and which I understand it is desired that you should promote, or ask the Minister of Justice to undertake the promotion thereof. The matter dealt with in this proposed legislation is of serious moment to the gold mining industry of Nova Scotia.

I am entirely in sympathy with the proposed Act, and anything I can do in the way of explanation or assistance will be cheerfully done. I simply write to you to say that this matter has been brought to my notice on several occasions by the society, and that this department of the government would like to see such legislation placed upon the Dominion statute-book.

The amendment I am asking for is designed to apply only to Nova Scotia, I do not think it would be possible to make it apply to the whole Dominion. In Nova Scotia the circumstances are such that it is the easiest thing in the world for a man to steal large quantities of gold or amalgam and not be detected. The principle I am seeking to introduce into our law is this, that when a party is found with gold or amalgam in his possession the burden will be upon him to show that he came by it honestly. I will read the proposed amendments:—

By inserting immediately after section 343, the following sections.

343a. The provisions of section 343b, 343c, 343d and 343e, apply only to the province of Nova Scotia.

343b. Every one is guilty of an offence and liable on summary conviction to a fine not exceeding \_\_\_\_\_ or to \_\_\_\_\_ months' imprisonment, who has in his possession any gold (as hereinbefore defined) which to his knowledge has been stolen or otherwise unlawfully obtained by himself or others and the burden shall lie upon any person charged with an offence under this section and shown to have had gold in his possession of proving that such gold was not so stolen or unlawfully obtained, or, if it was, that he was ignorant of the fact.

343c. Every one is guilty of an offence and liable on summary conviction to a fine not exceeding \_\_\_\_\_ and to \_\_\_\_\_ months' imprisonment, who assists in the commission of an offence under section 343d, and for the purpose of this section any person shall be deemed to have so assisted who is proved

(a) to have been watching and patrolling outside and in the vicinity of any premises on or about which gold, reasonably suspected of being stolen or unlawfully obtained or held, is found and seized by any peace officer, or by any person acting under warrant of a justice, or

(b) to have been accompanying any person having in his possession any gold reasonably suspected of being stolen or unlawfully obtained or held and who is unable to give or does not give an account of himself satisfactory to the justice who hears the case.

343d. Every one is guilty of an offence and liable on summary conviction to a fine not exceeding \_\_\_\_\_ or to \_\_\_\_\_ months' imprisonment, with or without hard labour, who being found present at the time when any gold reasonably suspected of being stolen or unlawfully obtained or held is

found and seized by any peace officer or by any person acting under warrant of a justice, and who is unable to give or who does not give a satisfactory account of his presence. Provided that no person shall be convicted of an offence under this section if he proves to the satisfaction of the justice that his presence was innocent.

2. A person may be convicted under this section notwithstanding that no other charge is laid or conviction obtained against any person in respect of such gold.

343e. Upon conviction under any of the three next preceding subsections, the justice may order the gold in question to be delivered to the person whose right to the same shall be found by him, and failing any such person, the gold shall be forfeited to the Crown.

343f. In the four next preceding sections and in sections 313, 343, 375, 571 and 707 the expression "gold" or "piece of gold," unless the context otherwise requires, means gold bullion, retorted gold, gold ores, gold amalgam, gold alloys, precipitates containing gold, slag, concentrates, tailings and residues.

I may also read the amendment which I propose to make to section 707. That section refers to stealing gold by employees. My amendment is to repeal section 707, and to enact in its place the following:

707. In any prosecution, proceeding or trial for stealing ores or minerals, or for taking, obtaining, removing or concealing ores or minerals for a fraudulent purpose, the possession of any smelted gold or silver, or any unsmelted or otherwise unmanufactured gold or silver, by any operator, workman or labourer actively engaged in or on any mine, shall be prima facie evidence that the same has been stolen by him.

These amendments are drawn strictly along the lines of the Western Australian Act, making such alterations as are necessary to adapt them to the workings of our own Criminal Code. The matter is one of great importance to the gold miners of Nova Scotia, as well as for the government of the province. It is believed that at the present time the province is losing a substantial amount of the royalty it is entitled to on gold which is extracted, by the operations of the parties who are trafficking in stolen gold, stolen amalgam and stolen ore. This has gone to such an extent that in one case with which I am acquainted a mine owner lost \$1,600 to \$1,700. The traffickers in stolen gold would set up a shanty where they would sell whiskey to the miners in camp, and in payment they would take nuggets and amalgam which they would in turn sell to dealers, or run it down themselves. This has been going on to such an extent that there is a unanimous demand on the part of the mining industry, seconded by the provincial government, to have the Act amended in the form in which I now propose. There will be no hardship on the honest miner. Hon. gentlemen can understand how difficult it is to convict. You might be certain that a party has stolen your gold, and you might have him arrested and find the gold in his possession, and yet it may be impossible to prove that it is your gold, or to prove that it was stolen. On the other hand there is no hardship for the man who has come honestly by the gold in his possession, to tell how he got it. This is the sum and substance of the amendment I propose.

Mr. FRASER—There is more reason in this case that the onus should be put upon the party having the gold or amalgam in his possession, than there is in the case of violators, for example, of the fishing or of the game laws, where a man must show how he came by the fish in his possession or how he came by the wild animal in his possession. He must show where he got it. These amendments are very necessary in Nova Scotia, because up to this date mining in Nova Scotia has been the only means of reaching quartz. Until within a few years people never thought of mining for quartz at all, unless they saw a rich specimen of gold in it. You get a piece of quartz and you may see in it specimens of great value. It is easy for the workman, if he is evilly inclined, to take a piece of quartz that is quite valuable. At present you have to prove where he got it, and it is impossible to do so. This is particularly true in the case of amalgam. There is a clear case where he should show where he got the amalgam, because that is not sold. The man that mines wants his own amalgam, he would not part with it at all because he uses it himself. That is the way he pays for working the mine. Again, there can be no question that the man who has a piece of amalgam in his possession ought to show where he got it, and so also with a piece of quartz. This provision will do no person any harm, because if a man has a piece of gold or a piece of quartz he can easily show where he got it. If it was found in a new place he could show that the gold was not stolen from the mine. There is no hardship in making a man say where he got a valuable piece of property like quartz, or gold, or amalgam. I know there is a good deal of gold mining in the country from which I come and though there are not a very large number of thefts committed, I have known of cases in which a good deal of gold has been taken. I think the amendment is in the interest of gold mining, particularly in the province of Nova Scotia. It can do no harm to an innocent man. There is not very much danger of an innocent man being taken up because an innocent man can easily show how he came by the gold or amalgam that he may have in his possession.

Mr. BORDEN (Halifax)—The first clause, 343b, seems to be very comprehensive. I have no doubt that there is an evil for which some remedy may perhaps be sought, but I would not have supposed that it would have been necessary to make section 343b so extremely comprehensive, because it would be applicable to any person going along the street with a five dollar gold piece in his pocket. He could be arrested at once and it would be necessary for him to prove that he had not stolen it. I cannot make anything else out of the section :

Every one is guilty of an offence and liable on summary conviction to a fine not exceeding \_\_\_\_\_ or to \_\_\_\_\_ months' imprisonment, who has in his possession any gold (as hereinafter defined) which to his knowledge has been stolen or otherwise unlawfully obtained by himself or others and the burden shall lie upon any person charged with an offence under this section.

Under that if you find any man with a piece of gold in his pocket you immediately make it necessary for him to prove his innocence. I think the West Australian statute must contain some particular clause applying to a man working in a mining district or to a person of that kind.

Mr. WADE—The West Australian statute is quite as comprehensive and I think in exactly the same words as this. This subsection 343b deals with the stealing of ores, quartz, &c. It only has reference to that. I do not think the danger which the hon. leader of the opposition (Mr. Borden, Halifax) points out could arise because it only provides that the penalties shall be applicable if a man has gold in his pocket knowing it to be stolen. If he has a sovereign in his pocket knowing that to be stolen, he should be pulled up and made to account for it.

Mr. BORDEN (Halifax)—I was referring to the fact that if he had gold in his pocket it was prima facie evidence that he had stolen it.

Mr. WADE—I think the hon. gentleman is facetious in that.

Mr. BORDEN (Halifax)—Not at all.

Mr. WADE—What is asked by the mining fraternity is that the burden of proof of showing that he came by his gold honestly is cast upon the party who has it. My hon. friend, I assume, is aware of the evil that does exist and the complaints that have arisen. There are two classes of men that are complained of; one is the man who goes and shuts up the shanty that I have spoken of, and the others are the pedlars or perambulating dealers who go around the mining camps amongst the employees or other parties roaming around. I have a request from the mining interests in Nova Scotia that this principle should be conceded and I see no reason why it should not be.

Mr. FRASER—I do not think that gold would be taken to mean gold coin. I think the section taken as a whole makes it clear what we are legislating against and we are not legislating against the possession of gold coin. But, if there is any difficulty, I think the use of the words "gold coin" would cover it.

Mr. WADE—There is no necessity under my interpretation clause. Section 343f provides :

In the four preceding sections and in sections 312, 343, 375, 571 and 707 the expression "gold" or "piece of gold" unless the context otherwise requires, means gold bullion, retorted gold, gold ores, gold amalgam, gold alloys, precipitates, containing gold, slag concentrate, tailings and residues.

So it does not touch the sovereign in the pocket of a man. Nevertheless I would like to point out to my hon. friend (Mr. Wade) that if he should go back to Nova Scotia with a piece of ore in his pocket he might be arrested as soon as he entered the county of Cumberland and put on his trial and be prima facie guilty.

Mr. WADE—I will take my chances on that.

Mr. MONK—Unless the conditions in Nova Scotia are special to that province we should hesitate to enact this legislation which is so contrary to the principle of our Criminal Code, because under this amendment the moment the party is charged he is obliged to prove his innocence.

Mr. WADE—He only has to prove where he came by the gold.

Mr. MONK—That is proving his innocence. If there are peculiar circumstances in Nova Scotia it may be that my hon. friend is right; but we have gold mines in the province of Quebec.

Mr. WADE—It does not apply to Quebec.

Mr. MONK—They may not be as valuable as the mines in Nova Scotia, but if this is useful legislation it should apply generally throughout Canada. It is an innovation and it makes our law analogous to the criminal law of France, which is so very objectionable and under which the party charged is obliged to exculpate himself. We should hesitate before we introduce that principle into our law.

Mr. WADE—It is not unique, because we have the same principle applied in the Customs Act.

Mr. MONK—That is not criminal law.

Mr. WADE—It is a penal statute which imposes heavy penalties, the forfeiture of goods, and imprisonment. An officer of the Customs Department may walk into the store of any merchant and demand his invoices, and if he cannot produce them he is summarily fined and his goods forfeited. This is to meet a case where it is an impossibility to convict. In my experience in my profession, which extends over 25 years or more, I have never known but one party to be convicted of stealing amalgam or gold, and yet it is a known fact that from every mining camp there are thousands and thousands of dollars worth of gold stolen every year. I know what the conditions in Nova Scotia are, and that is the reason why I ask that it apply to Nova Scotia. The government there is directly interested, and if any other province wishes to have these provisions extended to it, I certainly have no objection.

Mr. MONK—The customs laws do not constitute part of our Criminal Code. In the province of Quebec we have a great deal of provincial legislation under which the burden of proof is thrown on the party charged, but this is introducing in the body of our criminal law a principle which is new.

Mr. FRASER—The same principle applies in our game laws. If a person is found with a salmon or a moose taken out of season he has to prove where he got it.

Mr. MONK—That person would be charged with an infraction of the game laws under a provincial statute and not with a criminal offence.

Mr. FRASER—If he does not pay the fine he goes to jail, so that the effect is exactly the same. The taking of the property of others which has been paid for is worse than having a salmon in your possession out of season.

The MINISTER OF JUSTICE—The principle laid down in this amendment is already to some extent in our Criminal Code in respect to taking branded cattle, marked timber or public stores; but the person who has these in his possession has an opportunity of knowing where they came from, because they were branded. This legislation goes further than that, and it appears to be very drastic, because the person who takes the gold has no means at first sight of ascertaining where it came from. I would suggest that we allow this amendment to stand over for consideration, so that I may have an opportunity of looking into one of the Natal Acts, which I believe contains a provision with respect to those who work in the diamond mines. I apprehend that this legislation would be similar to that, and I would like to find out how it operates.

Mr. WADE—I have no objection to that.

### Bounties on Canadian Lead.

In the House of Commons on the 6th inst., Hon. Mr. Fielding, Minister of Finance, moved the resolution granting a bounty of \$15.00 per ton on lead contained in lead bearing ores mined and smelted in Canada.\*

Speaking on the resolution Mr. Fielding said:—

This resolution provides for the repeal of the existing Act passed in 1901 respecting bounties on lead and provides another system of bounties in lieu thereof. The bounties provided by the existing Act are for the refining of lead. A refinery has been established under that Act but it has done very little. At all events we have had occasion to pay but a very small amount so far. I am advised however that the proprietors of the refinery are consenting parties to this legislation, so that although in the form of resolution we are now proposing, no reference is made to refining, the refining process is by no means given up but will still be continued. We propose to provide a bounty equivalent to \$15 a ton on the lead contents of lead bearing ores, when sent to smelters in Canada. I propose to make a slight change in the wording of the resolution but not in its essence. The plan is that the bounty shall be paid on evidence that the lead has been smelted in Canada. It has been pointed out, however, that the lead ores are delivered to the smelter and may not be smelted for a considerable time. We propose that samples shall be taken and assayed and payments made to the miners on these assays. We propose to adapt ourselves to the practice of the mines, and by a slight amendment it is intended that sixty per cent. of the bounty may be paid to the producer who has delivered his lead to a smelter for the purpose of being smelted in Canada. Forty per cent. of the bounty will be retained until it is proved that the actual smelting has taken place. That forty per cent. shall not in any case be paid before the end of the fiscal year for this reason. We provide that that lump sum shall not exceed \$500,000 in any one year. If the output proved larger than the \$500,000 would pay for, then the rate per ton

\*For full text of this resolution see Canadian Mining Review, July, 1903.

shall be reduced accordingly, so that the amount paid shall not exceed \$500,000 in any one year. It has been suggested by those interested in the lead industry that it is possible—and this is not necessarily a reflection on the owners of smelters—that circumstances might arise in which the owners of smelters and transportation line might take such action as would prevent the smelting in Canada at fair and reasonable rates. While that is not likely, it is a possibility which might as well be guarded against, and provision is made that if any such circumstance should arise and the Governor General in Council be satisfied that there is no interference with smelting conditions in Canada, then the lead ore may be exported and the government may make a reduced rate of bounty adapted to that condition. Another condition of some importance is that with regard to the value of lead. Lead has ranged in price from as high as £17 in the last few years to as low as £12 11s. and sometimes lower still. From the best information we have received, there is a standard price of lead in the London market. Whenever it goes above £12 10s. it would be proper for us to reduce the bounty. If it does not rise above that price, this bounty shall stand. If it should advance, as in former years, the lead miners would be receiving such a good price for their lead that this bounty would not be required. We have taken £12 10s. as the standard price of a ton of lead, according to the English method of weight 2,240 pounds. I think the latest quotations are about £12 5s. If the lead advances in price, as it has done in former years, above £12 10s., there shall be a corresponding reduction in the amount of bounty.

Mr. BORDEN (Halifax)—The hon. gentleman speaks of the bounty entirely ceasing when lead has attained a certain price. What price would that be?

Mr. FIELDING—At about £16 10s.—the bounty would cease entirely. I am advised that lead has been as high as that in the last four years and indeed higher. The bounty shall be given for a period ending in 1908. Another clause I propose to insert, which is not in the resolution, is intended to meet a new process which has been brought to our notice. We propose to pay this bounty on lead which is smelted in Canada—a part of it on delivery of the lead ore at the mill and the balance on evidence that the smelting process is completed. It has been represented, however, that there are new processes for the manufacturing of lead which do away with the smelting processes, and that certain products of lead may be made direct from the ore without passing through what is commonly known as the smelting process. It is not likely that that system will be extensively developed, but it is scientifically established that it is feasible, and I propose to insert a clause providing that if at any time it shall appear to the satisfaction of the Governor General in Council that products of lead are manufactured in Canada direct from ores mined in Canada, without the intervention of the smelting process, the Governor General in Council may make such provision as may be deemed necessary to extend the benefits of this Act to the producers of such ores.

I think Sir, that covers all the points mentioned in the resolution. The lead industry, a few years ago, was a very extensive one in British Columbia, the output having been as high, in 1900, as 30,000 tons. I believe the present is about 3,000 tons. However, since these resolutions were placed upon the Notice Paper, there has been quite a revival of the lead industry, and we have every reason to believe that, under the influence of the aid to be given, there will be a large development of this industry in British Columbia.

Mr. CLARKE—When will the payment of this bonus be commenced?

Mr. FIELDING—It will take some time, I suppose, for the mines to get into operation, but if they were in operation at once after the passing of this Act, payments would be begun.

Mr. CLARKE—The bounty will not be paid on any ore that has already been mined?

Mr. FIELDING—My attention has been drawn to that point. From the best information I could gather, the quantity of ore already mined is very small. It would be difficult to distinguish between the ore on the dump and that which is to come out. Still, if it were likely to be a matter involving a considerable sum, we should take steps to make the distinction. But we are advised and believe that it will hardly be worth while to do so.

Mr. CLARKE—The bounty will be paid on the lead ore already mined?

Mr. FIELDING—Yes, that now on the dump.

Mr. ROBINSON (Elgin)—What guarantee will the minister have in paying the bonus? How will he know what quantity has been mined?

Mr. FIELDING—In all bounty legislation we must give, as we do in this case, power to the Governor in Council to make regulations. The Department of Trade and Commerce, under whose direction this matter will come, will have to provide regulations so as to take the greatest precautions against fraud. \* \* \* \* \*

Hon. Mr. BORDEN (Halifax), Leader of the Opposition, said in part:—  
“ This is undoubtedly a very important industry in the province of British Columbia and the hon. gentleman (Mr. Fielding) is not giving the House very much information as to the causes in relation to that industry which have induced the government to adopt this measure of encouragement. I understand that the amount of capital invested in silver lead mines in British Columbia is supposed to be about \$20,000,000. No doubt, the hon. member for Yale and Cariboo (Mr. Galliher) would be able to inform the House as to that. The amount invested in railway and steamship lines which depend largely upon this industry, I understand, is in the vicinity of \$2,000,000 or \$15,000,000. The amount invested in smelters is \$800,000. The lead production in 1900 was 31,670 tons, worth \$1,487,000; in 1901, the production was 25,700 tons, worth \$3,336,600; in 1902, the production was 12,000 tons, valued at \$1,154,000, but the production has fallen at the present time, as the hon. Finance Minister has stated, to about 3,000 tons. What I would like to know from the Minister of Finance is what effect he expects this bounty will have on the maintenance and development of lead-ore production. Is it expected that this will give the Canadian market to the Canadian producer of lead to any greater extent than at the present time? I understand that our consumption of lead in Canada is somewhere in the vicinity of 14,000 tons annually. I do not know whether that is correct, or whether the Minister of Finance has different information.

Mr. FIELDING—That is about correct as I am advised.

Mr. BORDEN—And all that we consume is imported, I understand, with the exception of about 3,000 or 4,000 tons. Is that in accordance with my hon. friend?

Mr. FIELDING—Yes.

Mr. BORDEN—Then, is the bounty expected to have the result of giving the Canadian market to the Canadian producers to any greater extent than at present? In the next place, will the bounty have the effect, that we all desire, of establishing in this country any of the industries allied to the production of lead—for example, works for the corrosion—I think that is the expression—of lead and other industries, which, I believe, might be expected to result from the encouragement of this industry by a protective duty? I do not know whether the Minister of Finance has any information for the House on these subjects; but it seems to me that it would be extremely desirable that some policy of encouragement to the lead-mining industry should be adopted which would bring about results of this kind. If this bounty will not give to the lead-producers of British Columbia the control of the home market to any greater extent than they have control at the present time, it will amount, in a great measure, to a bounty on export. If the lead producers have to send to a foreign market to sell all the lead they produce in excess of 3,000 or 4,000 tons sold in Canada, practically we are paying a bounty to encourage production first, but, in the second place, to encourage the export of what we produce.

Now, I am desirous of supporting the government in any measure which will have the effect of developing this industry in British Columbia and of increasing the production of our own lead mines in Canada, but I would rather see that accomplished in a way which would give the lead producers of this country control of their own market. I dare say, that if it were attempted by means of a revision of the customs duties, it would be necessary to make changes in the customs duties for the purpose of increasing the protection to other industries, but would it not be desirable to do that if by doing so you could not only give the Canadian producers of lead control of the Canadian market, but at the same time give encouragement to the establishment in this country of the other industries to which I have referred? I have no doubt that all these matters have been under the consideration of the hon. Minister of Finance, but I think it would be well that he should give some information to the committee on this point, because I think he will agree with the rest of us, that if it is possible to accomplish the results which I have indicated, it is desirable to do so. I have a good deal of doubt, myself, as to whether the system of bounties which is proposed by these resolutions would accomplish the result in anything like the way it could be accomplished by increased protection in the shape of customs duties. At the same time, I realize to so very great an extent the importance of this industry, not only to British Columbia, but to the country as a whole, that I am willing to support the government even in this measure which the hon. Minister of Finance has introduced, although I am of the opinion, which I think is very well founded, that a better result might have been accomplished in the way I have indicated. I would like if the hon. Minister of Finance would give us an idea as to the causes of the depression in the lead industry.

Mr. FIELDING—It is very largely due to the attitude of the American trusts and combinations, which have practically shut our lead out of the market: but as to the general question as to the effect of this bounty upon the home market, I think my hon. friend will agree with me that the home market is entirely a question of price. If the producer of lead in British Columbia can sell his lead low enough, he will have control of the home market. This bounty will enable him to sell his lead at a lower rate than he could otherwise sell it for, and in that way he can get access to the market. I do not think the lead producers contemplate dealing in this way with the export trade. They will have to export some, because the total consumption is only 14,000 or 15,000 tons, and they contemplate an output of at least double that, and some portion will have to be exported; but I anticipate they will supply a much larger amount to the home market than has been done in former years. However, I imagine that with the bounty and with lead being produced under more favorable conditions, it will enable other manufacturers to take this lead and to develop their industries, although it is only a conjecture as to that. I understand, however, that there are parties who propose proceeding in the production of white lead, which is a product of the corrosion process, and it is very likely that that product will be made in Canada under the assistance given in this way."

A long discussion followed as to the respective merits of bounties and straight protection, participated in by Messrs. Sproule, Galliher, Pope, Macpherson and others, after which, with reference to a new chemical process for the extraction of lead by electricity which may be established by Canadian capitalists at Niagara Falls, Hon. Mr. Fielding moved to insert the following:—

If at any time it shall appear to the satisfaction of the Governor in Council that products of lead are manufactured in Canada direct from lead ores mined in Canada without the intervention of the smelting process the Governor in Council may make such provisions as may be deemed equitable to extend the benefits of this Act to the producers of such ores.

Mr. BLAIN—Does the government expect that such a process will be soon adopted?

Mr. FIELDING—I had an application since this resolution was placed upon the paper from some gentlemen in Toronto, who stated they were engaged in an industry by which they proposed to produce the products of lead without the smelting process. I asked for information, and they gave me the opinion of experts that it was reliable and would probably be put in operation. I thought it right to make the resolution wide enough to cover that operation as well as the smelting, if it should turn out satisfactory.

The motion was then agreed to and Bill read the first time.

### Iron and Steel Bounties.

The following resolution was moved by Hon. Mr. Fielding in the House of Commons on Aug. 4th —

That it is expedient to enact as follows:—

1. The Governor in Council may authorize payment of the following bounties on the undermentioned articles manufactured in Canada from steel produced in Canada from ingredients of which not less than fifty per cent of the weight thereof consists of pig-iron made in Canada, viz.:

(a.) On rolled round wire rods not over three-eighths of an inch in diameter, when sold to wire manufacturers for use in making wire in their own factories in Canada, a bounty of six dollars per ton;

(b.) On rolled angles, tees, channels, beams, joists, girders, or bridge, building or structural rolled sections, and on other rolled shapes not round, oval, square or flat, weighing not less than thirty-five pounds per lineal yard, and also on flat eye bar blanks, when sold for consumption in Canada, a bounty of three dollars per ton;

(c.) On rolled plates not less than thirty inches in width and not less than one-quarter of an inch in thickness, when sold for consumption in Canada for manufacturing purposes for which such plates are usually required and not to include plates sheared into plates of less width, a bounty of three dollars per ton.

2. The Governor in Council may make regulations to carry out the intentions of the foregoing section.

3. That chapter 8 of the statutes of 1899 be so amended as to provide that the bounties on steel and iron authorized by chapter 6 of the statutes of 1897 shall be continued until the thirtieth day of June, one thousand nine hundred and seven, and that the rates of such bounties shall be as follows:

(a.) From the first day of July, one thousand nine hundred and three, to the thirtieth day of June, one thousand nine hundred and four, both inclusive, the bounties shall be ninety per centum of the amount fixed by the said chapter 6 of the statutes of 1897;

(b.) From the first day of July, one thousand nine hundred and four, to the thirtieth day of June, one thousand nine hundred and five, both inclusive, the bounties shall be seventy-five per centum of the amount fixed by the said chapter;

(c.) From the first day of July, one thousand nine hundred and five, to the thirtieth day of June, one thousand nine hundred and six, both inclusive,

the bounties shall be fifty-five per centum of the amount fixed by the said chapter;

(d.) From the first day of July, one thousand nine hundred and six, to the thirtieth day of June, one thousand nine hundred and seven, both inclusive, the bounties shall be thirty-five per centum of the amount fixed by the said chapter.

The MINISTER OF FINANCE (Hon. W. S. Fielding)—The House has had before it from time to time during the present session the question of granting some aid to the iron and steel industry. The government have come to the conclusion to propose certain legislation as set forth in the resolution now before the committee. The reasons which have led the government to prefer to grant aid in this shape rather than by making material changes in the customs tariff have been explained in previous discussions on the question of bounties. The resolutions now before the committee deal with the bounty question in two forms. First, we have certain resolutions dealing with the bounties which are already on the statute-book, and then we have a further resolution by which we propose to grant bounties for new forms of the steel industry which are not at present in operation in Canada. Dealing first with the question of the bounty as provided by existing legislation, I may remind the House that in the year 1897, the bounties were fixed at \$3 per ton on steel, \$3 per ton on pig-iron made from native ore, and \$2 per ton on pig-iron made from imported ore. By subsequent legislation, a sliding scale of bounties was provided whereby the bounties fixed in 1897 should begin to diminish. That sliding scale took effect last year, and last year the bounties were payable on the basis of 90 per cent of the bounties as established by the Act of 1897. Provision was made that these bounties should be further decreased in the following year to 75 per cent, then to 55 per cent, then to 35 per cent. What is proposed in the present legislation touching bounties on pig-iron and steel is that we shall suspend for a year the operation of the sliding scale, so that, for the present year, instead of paying on the basis of 75 per cent of the bounties as at first established, we shall continue to pay for this year 90 per cent of the bounties fixed in 1897, the same as last year. The manufacturers will thus receive for two years 90 per cent, instead of one year 90 per cent and the other 75 per cent. As a means of forming some estimate of the probable difference this will make to the steel industry in the current year—

Mr. BENNETT—May I ask the Hon. Finance Minister if it makes any difference whether it is manufactured entirely from Canadian ore?

The MINISTER OF FINANCE—The bounties established in 1897, as I have said, were at certain fixed rates, one on native and one on imported ore; but the reduction was on the basis of a percentage which applied to all. From a statement made a short time ago as to the amount paid in bounties in the past year, it appears that that amount was \$1,098,359. This was on the basis of 90 per cent of the bounty fixed in 1897. Some accounts will probably come in later which will increase that sum, but we are speaking now entirely of the approximate estimate which I had the privilege of presenting to the House some days ago.

Mr. WILSON—That is not the statement that appears in 'Hansard' in answer to the question asked.

The MINISTER OF FINANCE—Yes, but my hon. friend (Mr. Wilson) will find that the figures given in 'Hansard' included some balance from the previous year. Am I not correct?

Mr. WILSON—Yes.

The MINISTER OF FINANCE—I am dealing with the estimate of last year with a view to getting an approximate estimate of what the difference is to be. As shown in 'Hansard' the payments are somewhat larger than I have given, and they include some bounties earned in the previous year. And it is only fair to say that there will be some later payments to add to the figures I have given for the past year. All I can give now is an approximate statement. On the assumption that the sliding scale would remain without change and that the output would be the same, we should pay to the companies for the coming year, on the basis of 75 per cent, \$915,299. But, instead of paying them on the basis of 90 per cent; and, assuming that the output is substantially the same, they will receive for the present year the same as they received for last year. If the output should increase, the amount they will receive will increase proportionately. On the basis of the figures I have given, the difference would amount to \$183,059, that being the difference between paying on the basis of 90 per cent, as paid last year, and 75 per cent, as would have been paid this year had we made no change in the regulation. We do not by this resolution increase the period of bounties, but we change the percentage in the way I have described. So much then with reference to the difference it will make for the present year.

Mr. CLANCY—Does the hon. gentleman not increase it one year by

reason of repeating the 90 per cent, and then continuing the balance of the year on the sliding scale, as was formerly provided under the Statute? Is there not an increase of one year by that

The MINISTER OF FINANCE—No, not of time, there is an increase in the amount payable, because in the original arrangement the five years was with respect to the payment on the basis of 25 per cent, as it stands now, by the suspension of the operation of the sliding scale for one year, in the final year they will receive a payment on 35 per cent. For the present year and for each of the succeeding years, payments will be made at a higher percentage than was contemplated by existing legislation, and giving the whole difference it will make for the current year, it will make for each of the succeeding years a difference to the extent of the variation of the percentage in each case. By moving the sliding scale forward you pay them at a higher percentage than you would pay them by adhering to the present sliding scale.

Hon. Mr. HAGGART—For the subsequent years then there will be an increase of the bounty to what was proposed under the Statute.

The MINISTER OF FINANCE—There will be in the percentage. But while the starting period remains the same, we will this year pay them 90 per cent of the total instead of 75 per cent, as now proposed, we will next year pay them 75 per cent of the total instead of 55 per cent; in the following year we will pay 55 per cent instead of 35 per cent; and in the final year we will pay them 35 per cent instead of 25 per cent. The effect therefore is that you move forward the sliding scale one year, but you give them, during this year, a higher rate of percentage than you would otherwise, but terminating with 35 per cent instead of 25 per cent, as proposed in the existing legislation.

Then, Sir, beyond that we have made some proposals with respect to articles which are now manufactured in Canada. It was thought desirable that, if we were to grant further aid to the iron and steel industry, we should not only have regard to the manufactures which are now in progress, but we should endeavour to secure some advance in the manufacturing industry by the production of lines of goods not at present produced in Canada. We have therefore proposed to grant additional bounties to the extent set forth in these resolutions on two classes of goods, one upon wire rods, an article which is used largely in making wire, and ultimately in making wire nails and manufactures of that character; and also on structural iron and steel. These things are not now made in Canada. They are consumed to a large extent, and the manufacturers have been very desirous that we should so frame our legislation as to encourage the development of these lines of industry. Therefore, instead of dealing with the tariff as already mentioned, we propose to make grants of bounties on the articles which I have named: On rolled round wire rods not over three eighths of an inch in diameter, when sold to wire manufacturers for use in making wire in their own factories in Canada, a bounty of \$6 per ton. Then we proceed. On rolled angles and other forms of structural iron, a bounty of \$3 per ton. In the adjustment of these bounties regard is had to the existing conditions of the tariff. Whatever differences of opinion we may have as to the effect of duties, I suppose it will be generally acknowledged that the duty is an advantage to the manufacturer, and if he does not get it in the form of a duty but in the form of a bounty, he certainly receives considerable advantage. If he is already receiving a large advantage in the shape of the tariff, then there would be less reason for giving him a large advantage in the shape of bounties. In dealing with these articles of goods we are dealing with items which are either on the free-list, as in the case of wire rods for the manufacture of wire and wire nails, and in the case where rods are free for that purpose, or as in the case of structural iron and steel where the duty is a low one of ten per cent. We have reason to believe these grants in aid of the iron and steel industry, while they may fall short of what some manufacturers desire—for it is too much I suppose to hope that we should be able entirely to satisfy applicants who come to us in matters of this sort—we have some reason to believe that these grants will be regarded by the manufacturers as a moderately satisfactory encouragement. At all events they will serve the purpose of enabling industries whose position was somewhat in question a short time ago, to continue their operations, and not only to produce pig-iron and steel as they have been producing in the past, but also to make some progress in the more advanced operations by turning out these wire rods and structural iron, and the various other items mentioned in the resolution.

I have already indicated what the charge upon the treasury will probably be by reason of the change which we are making in the bounties as respects pig-iron and steel. What the charge will be for these new bounties which are providing, is not easy of determination. The best we can do is to call attention to the imports of these articles, and perhaps we can form some

estimate of the quantity of the goods which are likely to be manufactured in Canada.

Mr. BLAIN—Might I ask the Minister of Finance if that includes every thickness of wire and steel?

The MINISTER OF FINANCE—No, if my hon. friend will read the resolution he will see it is very carefully drawn in that respect, it is drawn, as I have already said, with regard to existing tariff legislation. There are some forms of steel which have a considerable duty upon them, and we do not in that case propose to allow any bounties. There are others which are either on the free list or subject to quite a low duty, and it is in the case of articles which are subject to a low duty that we are allowing these bounties. There is a difference in the matter of plates as to the size. Now, as to what the probable charge will be, the only method that we can have of forming an opinion is by taking the imports of the articles in question, and forming, if we can, some estimate as to what proportion of these articles will be made in Canada instead of being imported. I have prepared a statement of the imports of these articles which will show approximately the probable amount we might make in Canada. The imports last year of wire rods amounted to 55,182 tons; the imports of structural iron and plates amounted to 47,512 tons. What proportion of this we might be able to manufacture in Canada is of course a matter of conjecture, it is difficult to form any understanding

Hon. Mr. HAGGART—Do steel rods include steel nails?

The MINISTER OF FINANCE—No, the wire rod is the first form towards the production of steel. We pay no bounty except upon the wire rod itself.

Mr. KEMP—May I ask the hon. Minister of Finance to give us the values as well as the tonnage of these articles imported?

The MINISTER OF FINANCE—The value of heavy angles, structural steel as it is generally described, imported during the year 1902 was \$789,644; of plates imported, \$571,291; and of wire rods imported, \$1,523,792.

Mr. BORDEN (Halifax)—Before the hon. gentleman leaves that I would like to ask a question. He gave us a statement of 55,182 tons which I understand applies to paragraph (a) of the resolution, and he gave us 47,512 tons, but I did not quite understand whether that applies to paragraph (b) and (c) together or only one of them.

The MINISTER OF FINANCE—Yes, it includes everything except rods amounting to 55,812 tons. The other item covers the remainder of the resolution.

Mr. BORDEN (Halifax)—You have separated (b) and (c) as to values?

The MINISTER OF FINANCE—Yes, I have a statement showing the values, the figures of which I have just given. If we manufactured in Canada one-third of the quantity of these articles which were imported in the year 1902 then we shall pay bounties to the extent of \$150,000 a year. If we manufactured two-thirds of the amount we imported we would pay bounties to the extent of \$300,000 a year. Some little time will elapse probably before the manufacturers will have their mills equipped for the manufacture of these articles and I think we are probably within the mark when we say that the year's output will not exceed one-third of the import. That is only a matter of judgment and perhaps a matter of guess. Hon. gentlemen who have the information before them may form an opinion as to whether it is correct or not.

Mr. BORDEN (Halifax) There is no period of time during which the bounties shall continue fixed by the resolution?

The MINISTER OF FINANCE—No, we have thought it better for the present that we should not name the period and for this reason that where you name the period of the bounty you, in a sense, create a contract with the parties entering into these operations under which you would feel that you were bound to continue these bounties for the full term of the contract so called. We have thought it better to leave the matter indefinite so that the House will be entirely free to deal with the question at any future date in connection with any revision of the tariff that may be made. On the whole we think it is better that this bounty should not be offered for a specified time because it might create something like a specific contract. Our impression is that considering that it will take the companies several months before they can get into operation to earn these new bounties we probably would not be very far astray if we were to say that they will not during the current year produce more than one-third of the quantity imported during the year, the figures for which I gave, and if that is so we pay about \$150,000 in the form of bounties on the new articles and there would probably be the same proportion of increase in the bounties on pig-iron and steel. These are

the leading fact of the matter and with that statement we beg to submit the resolution to the consideration of the House.

Mr. WILSON—Would the hon. gentleman be kind enough to give us a statement of the changes made since the present government came into office in the bounty on iron and steel and the change in the duty if any?

The MINISTER OF FINANCE—In 1897 there was an increase of the bounties on pig-iron and steel at which time there was a reduction of the duty—I cannot give the exact figures in regard to all the details—but there was a reduction of from \$4 to \$2.50 a ton on pig-iron and steel, and of course a further reduction under the preferential tariff. The bounties at that date were increased to compensate the industry for the disturbance which otherwise would have been created by a reduction in the duties.

Mr. WILSON—Would the hon. gentleman bring down a statement of those changes?

The MINISTER OF FINANCE—I shall be glad to bring down a statement in detail showing the change made in each of these items.

Mr. KEMP—I should like to ask the hon. Minister of Finance why it was that he came to the conclusion that the items of plates, steel ingots, puddled iron bars, and pig-iron should be dealt with on the bounty basis instead of by imposing a sufficient duty.

The MINISTER OF FINANCE—Because, as I stated earlier in the session, a change in the duty on articles of this kind which are the very basis of a great many manufacturing industries would probably involve material tariff changes and we did not deem it in the interest of the country to make such changes at present.

Mr. KEMP—Shall we draw the conclusion from that that later on these articles may be protected by a duty and the bounties taken off?

The MINISTER OF FINANCE—The matter will be purposely left entirely open to the House so that it may deal with it in that way. It is quite possible, but of course, we can make no undertaking in regard to the future.

Mr. BORDEN (Halifax)—I am sure that we can all congratulate the hon. Minister of Finance (Hon. Mr. Fielding) on having awakened to a realization of the condition of iron industry in this country. He did not seem to be very fully alive to it at the commencement of the session when we were told that the only difficulty in regard to all our Canadian industries was that there were not sufficient men for the purpose of carrying on the work and that the warehouses were not large enough to contain the manufactured product.

The MINISTER OF FINANCE—Not as to all.

Mr. BORDEN (Halifax)—I have a pretty vivid recollection of what the hon. gentleman stated and I do not remember of any exception. If he made any exception I am sure he will be glad to correct me as he will have an opportunity of doing. I think we might also congratulate ourselves that the right hon. leader of the government as well as the right hon. Minister of Trade and Commerce, those redoubtable free-traders, took occasion to leave the House while the hon. Minister of Finance was making his statement realizing no doubt that a bounty is the most extreme form of protection and that the measure which is now being brought down by the hon. Minister of Finance is absolutely out of touch with the principles which these right hon. gentlemen up to a very late date, in fact up to the present session, have announced to the House and to the country as their political creed. Under the tariff which was established by the late government when Sir Charles Tupper was Minister of Finance, some progress was made in the iron industry and I have no doubt a very much greater development would have taken place except for the fact that the price of pig-iron fell all over the world and the development which might have been expected in Canada at that time did not take place. This government introduced its tariff in 1897 and I have already given the House the particulars of the decreases made in the iron duties at that time so that it will not be necessary to go over them again. It is sufficient to say that the decrease was very considerable in regard to many of these items. For example, on pig iron there was a reduction to \$1.50 per ton on scrap (cast); a reduction to \$1.50 per ton on billets and blooms; a reduction to \$3 on scrap (wrought); a reduction of \$3 on steel beams to \$3; on steel bands to \$2; on steel fish and tie plates to \$2; on plates to \$3; on shaftings and forgings, a very considerable reduction, and so on through all the list which I then read to the House.

Very shortly afterwards this Government came to the conclusion that so serious a reduction in the duties on iron and steel was a mistake, and that that mistake might be remedied by acclamation of the bounties; and the measure with regard to the bounties was brought down, although in proposing it the Government went back on all previous professions of policy

which it had preached to the country for eighteen years in regard to bounties. I need only, in that connection, refer to the language of the present Minister of Trade and Commerce (Rt. Hon. Sir Richard Cartwright), both with regard to duties on iron and steel and with regard to bounties. In 1890 the Rt. Hon. Sir Richard Cartwright said to this House:

I doubt exceedingly whether among the many injurious duties which the policy of the present Government has heaped on the producers of this country, there is one which is calculated to do more harm on a larger and wider scale than the enormous duties which have been placed upon iron.

Then this Government, having reduced the duty on iron, proposed immediately afterwards to equalize to some extent the advance which they made in that direction by bringing down their bounty scheme a few years ago. But the Minister of Trade and Commerce, on the occasion to which I refer, continued as follows:

There is just this advantage in the proposition that to a certain extent it enables the people to see more clearly than in other cases how much the exchequer has been plundered because plunder it is and how much the people are being impoverished by this policy.

It is pleasing to know that the Minister of Trade and Commerce, at the present time—I regret he is not here to-day—joins most heartily and cordially in this measure for the impoverishment of the people in placing bounties on iron and steel. The Rt. Hon. Sir Richard Cartwright continued as follows:

This is merely a concession to certain favoured individuals, or certain favoured corporations to be paid for in all human probability by contributions to election funds, just as we know that other combines are in the habit of earning the gratitude of hon. gentlemen opposite.

Well, I do not know whether any comment is required on this or not. It would be, I suppose, out of place to ask my hon. friend the Minister of Finance whether there is any connection between the bringing down of this measure now and the reported approach of the general elections, having special regard in that behalf to the language which I have quoted from the Minister of Trade and Commerce. When it came to a question of bounties four years later, in 1894, the present Minister of Trade and Commerce (Rt. Hon. Sir Richard Cartwright) thought the proposition was so absolutely absurd that he refused to discuss it at all. He said:

I am not going to raise a discussion now as to bounties on pig-iron. I disapprove of the whole business altogether.

And he brushed it aside with a waive of his hand, and now his colleague, the Minister of Finance, brings down this resolution with the approval of the Minister of Trade and Commerce, but happily in that right hon. gentleman's absence at the moment.

Some hon. MEMBER. Hear, hear.

Mr. BORDEN (Halifax) The late Conservative Government, and particularly Sir Charles Tupper, when he was in that Government, were extremely anxious that this industry should be developed in Canada; and I have more than once referred, not in this House, but out of this House, to an incident which took place when Sir Charles Tupper was made aware that the Government proposed to give bounties to this industry. I remember very well the occasion, and I remember very well what Sir Charles Tupper said. He said he was glad that the Government had done it, and he added with some emphasis: He was glad indeed that the Government had done it, even though it should have the effect of giving them another five years in power. That is the aspect in which Sir Charles Tupper looked at this industry in this country, and it is not out of place at the present time to say that Sir Charles Tupper, by the stand which he took with regard to this industry at that time, both openly in this House and by means of negotiations outside of the House, contributed very largely to the establishment of these bounties, and in that way to the development of the iron and steel industry in the maritime provinces. And, as some time ago, I think at the very time these bounties were introduced, there was certain correspondence read in this House, by means of which it was sought to discredit Sir Charles Tupper's statement as to the part which he had taken in this matter, it is not out of place now for me to read a communication addressed to Mr. Henry M. Whitney, whose name was brought into that discussion; and addressed to him, not at the instigation of Sir Charles Tupper, but quite independently of him, by a gentleman who had very excellent means of knowing what share Sir Charles Tupper had in these negotiations—I refer to Mr. Graham Fraser, whose experience in the iron industry, and whose efforts in developing that industry in the maritime provinces are well known throughout Canada. This is the letter to which I refer:—

New Glasgow, N.S.,  
September 5th, 1900.

H. M. Whitney, Esq.,  
95 Milk Street,  
Boston, Mass.

Dear Sir,—In the Halifax 'Morning Chronicle' of Saturday, September 1st (cutting from which I mail herewith), I notice an article referring to a discussion carried on in the Canadian Parliament, Ottawa, during last session by the Hon. W. S. Fielding and Sir Charles Tupper relative to the extension of the iron bounties, &c.

Owing to my absence in Great Britain when the discussion took place, I knew nothing of it until reading the article in last Saturday's 'Chronicle.' As my name comes up somewhat prominently in the matter, and as I think your letter is hardly fair to Sir Charles, I consider it my duty to state the facts as I know them.

By referring to my notebook, I find that on November 24th, 1897, I met you at your office in Boston, when we had some conversation relative to a supply of coal for a furnace plant which the Nova Scotia Steel Company proposed to establish at Sydney or Louisburg. On November 25th I went to Philadelphia and returned on Saturday the 27th, and again met you in your office and then gave you some figures as to the cost of making iron in Cape Breton. You then suggested a larger plan than outlined in our proposal. On Monday, November 29th, I saw you again, when you spoke in a very enthusiastic way of the proposed blast furnace project, and we then arranged for 10,000 tons of Cape Breton coal for coking test at the Ferrona works. At that interview you stated that if the tests proved satisfactory and we could get the Dominion iron bounty extended for five years from the time the furnaces went into blast, you would join us in the enterprise and help us get the necessary capital. This was said in the presence of Mr. Windsor, the vice-president of the Dominion Coal Company.

The 10,000 tons of coal was shipped to Ferrona, the test proved satisfactory, and on January 25th, 1898, I again met you in Boston, when the results of the coking tests were submitted to you. You then suggested that legislation be at once got from the Government of Nova Scotia incorporating a company and that in the meantime the Nova Scotia Steel Company should, through their solicitor and agents, do all they could to induce the Dominion Government to extend the bounties.

We did secure from the Nova Scotia Legislature an Act incorporating the company (The Nova Scotia Steel and Iron Company, Limited), but entirely failed to get during that session of the Dominion Parliament any legislation extending the bounties, and on June 4th, 1898, I wrote you as follows: 'I regret to inform you that we did not succeed in getting the Bill through Parliament extending the bounties on pig-iron; so the matter of erecting furnaces at Sydney or Louisburg is, I suppose, off for the present.'

I heard nothing more from you until I received a telegram asking me to meet you at Sydney on the 17th of August, which I did. You then stated that you thought we had better go on with our new works as you did not believe the Dominion Government would extend the bounties, and as Sir Charles Tupper was going over to England you would get him to introduce us to parties who would find the capital. In reply, I said: 'If you begin to build the large plant you are taking of, I do not believe the bounties will ever be extended. Sir Charles came in later, when you repeated to him our conversation. Sir Charles then said: 'Mr. Fraser is quite right about the bounties. You should get the Finance Minister to get an Order-in-Council passed extending the bounties before starting your works—it will be a great help in getting the capital. I will see that there will be no opposition to it from the Conservative party, and I will see Mr. Fielding and take up the matter personally.' When I saw Sir Charles about a month later, namely, September 16th, at the Windsor Hotel, Montreal, in the presence of yourself and Senator Mackeen, he told us that he did see Mr. Fielding at the Royal Hotel, St. John, and had a discussion with him in regard to the matter of extending the bounties.

Now, in view of the above facts you can hardly say that you were not interested in the iron and steel business at the time Sir Charles Tupper referred to, namely, August 17th, 1898. While we personally did not visit Ottawa to interview Mr. Fielding on the bounty matter, he was approached at your suggestion by the agents of the Nova Scotia Steel Company and also, I understand, by Messrs. W. B. Ross and B. F. Pearson, of the Dominion Coal Company, but without result at that session.

I well know that you are a busy man and unlikely to recall conversations such as referred to with the dates on which they took place, but when I repeat them to you as above you will, I think, recall them and agree with me as to their accuracy, and I know that you are fair enough to give Sir Charles credit for the part he took in securing such bounty legislation as was finally passed, although it is not as favourable as you asked for, namely, 'five years from the date at which the furnace went into blast,' as provided by the Bounty Act introduced by the late Finance Minister, Hon. George E. Foster, during the session of 1894.

The difference it would make to your company you can no doubt appreciate, as it would have been unnecessary to rush construction at excessive cost.

Don't you think that some acknowledgment should now be made to Sir Charles?

The favour of your early reply will oblige.

Yours respectfully,

(Sgd) GRAHAM FRASER.

To that letter Mr. Whitney sent the following reply:—

Boston, September 7th, 1900.

Graham Fraser, Esq.,  
New Glasgow, N.S.

Dear Sir,—Replying to your letter of the 6th instant, I have to say that I am well aware that Sir Charles Tupper was always friendly to the extension of the iron and steel bounties and gave to the proposed bounty legislation his hearty support.

The statement which I felt obliged to correct in my letter to Sir Charles was that Mr. Fielding was unfriendly to the matter and that I visited Ottawa with you and implored Mr. Fielding 'to extend that measure of assistance

necessary to the organization of this great enterprise and that we went home utterly discouraged.'

As you yourself say this was not true of either of us; and, so far as my expression goes, Mr. Fielding was, as I stated in my letter, 'friendly to the matter of the extension of the bounty period from the time of my first mention of the subject to him.'

Yours truly,

H. M. WHITNEY.

I thought it was only fair to Sir Charles Tupper that this letter, written not at his instigation, written entirely without his knowledge, should be brought to the attention of the House, as other correspondence from Mr. Whitney was at the time introduced into this House for the purpose of somewhat contradicting Sir Charles Tupper as to the share he had taken in the legislation at that time.

Now, coming to the proposal of the government, I regard it as a mere makeshift, a mere temporary expedient. I believe the iron industry of Canada can never be put upon a permanent basis until the duties are so revised as to give the home market, to a large extent at least, to our own people. That, the government's present proposal will not do. The effect of a bounty and the effect of customs duties are very distinct. If by means of customs duties you can give the home market to our own people and in that way build up the production of iron and steel in Canada, the result will be that the competition thus stimulated in our own country will reduce the prices of the products to a fair and reasonable basis, and eventually there will be no burden on the people at all, because they will get their iron goods in Canada as cheaply as they can get them in any other country. But the effect of the bounty is precisely the opposite. The more you develop the industry by means of a bounty, the greater burden you impose on the people. If you increase the production four-fold by means of a bounty, you increase the burden of the people four-fold. Now, there is good reason, it seems to me, for endeavoring to give our people the home market in respect to this great industry, I do not disguise from myself, nor does the hon. Minister of Finance, disguise from the House, the necessity, in case the duties on iron and steel are revised, of revising the duties on other articles which are intimately associated with the use or the production of iron and steel. But is our home market worth anything? It is estimated that we used during the past year more than 800,000 tons of iron and steel, of which we imported 544,548 tons produced by blast furnaces and rolling mills of other countries. Surely there should be some opportunity for our own manufacturers to acquire the control of a market like that. We imported last year \$33,681,625 worth of iron and steel and manufactures thereof. A considerable portion of those goods could be and ought to be manufactured in Canada. But I submit to the House, and particularly to the Minister of Finance, that it is impossible to give to our manufacturers the home market by a simple system of bounties such as that which he is proposing at the present time. My hon. friend has referred to a possible revision of the tariff in the future. Indeed, he has put these resolutions in such a form as, coupled with his remarks, to suggest that possibly he may be looking forward to a revision of the tariff at an early date. I would have thought, as I suggested at an early part of the session, that it would have been better to make a revision of the tariff at once, and not resort to this makeshift and temporary expedient, which will have to be abandoned if the iron and steel industry of Canada is to be put on a permanent basis. If that result is achieved, it can only be done by a very thorough revision of the tariff on these articles. I do not know whether the hon. Minister of Finance has any understanding with the manufacturers of iron and steel with regard to that. The way in which he has dealt with the matter in the House would seem to give colour to that supposition. While I am glad that these resolutions have been brought down and that this small measure of protection has been given for the purpose of aiding and developing this great industry, nevertheless I regret that my hon. friend has not seen fit to adopt the only means by which in my opinion this industry can be put upon a permanent basis in this country, that is, a revision of the customs tariff in such a way and to such an extent that the Canadian producers will enjoy the Canadian market. I still trust that the government will take the very earliest opportunity—I am afraid they will not have any opportunity if they do not begin very soon—to give adequate assistance to the iron and steel industry in the way I have mentioned. \* \* \* \*

After a lengthy discussion in which many members took part including Messrs. Tarte, Monk, Gourlay, Lennox Bennett, Henderson, Bell and others the resolution was read the first and second times and agreed to.

Mr. H. B. Ames, a wealthy manufacturer of Montreal, and also a large stockholder in the Payne Mining Company, is on a visit to British Columbia, looking after his varied mining interests.

## MINING NOTES.

**The Inverness Ry. and Coal Co.**—This company's output of coal for the half year ending June 30th, 1903, is much in excess of the output for the corresponding period in 1902. In fact it is understood that the shipments during the time mentioned were only a few thousand tons less than the total shipments from the county of Inverness during the whole of last year.

**Nova Scotia Steel and Coal Co.**—The output of coal made by this company at Sydney mines during July was very much decreased owing to the fact that about 4% of the employees seemed inclined to take a few holidays during the heated term. The result was that only half the usual amount of coal was hoisted. The night shift in No. No. 1 Sydney has been laid off and equally good results are expected to result from the remaining shifts. Some of the miners have gone to work in other collieries because of the difficulty encountered in removing the coal from the face.

**Belmont Gold Mine.**—Reports from Hastings county are to the effect that this mine will increase its present development of 1,000 horse-power in the near future and bring its present plant of 30 stamps up to a total of 120.

**The Canada Corundum Company.**—According to late advices this company which is at present operating quite extensively and employing upwards of one hundred men, will in the near future increase the capacity of its plant which is now 20 tons to a daily output of 200 tons.

**The Sapphire Corundum Company.**—A compulsory winding-up order having been made against the Sapphire Corundum Company, Ltd, the statutory meetings of the creditors and shareholders were held on Tuesday, July 28th, at the Board of Trade Offices, Carey Street, London, before the Assistant Official Receiver. Accounts have been filed under the liquidation showing liabilities £3,096, against assets valued at £112,259, but a deficiency of £805,845 to the contributories. The failure and insolvency of the company were attributed by the officials to want of working capital. Since the date of the winding-up order, various Canadian creditors had obtained judgment against the company, under which the property had been seized, and the High Court of Justice in Canada had now made an order to wind up the company, such order to be ancillary to the order of the High Court in England. At the meeting of creditors, Mr. W. H. Hudson, Broad Street House, New Broad Street, London, E.C., was selected to act as liquidator with a committee of inspection.

**Crow's Nest Pass Coal Co.**—The output of coal from the various collieries of this company for July amounted to 71,462 tons an increase of 209 tons. The output was seriously affected by holidays during the month as it is estimated that had no interruption occurred the production would have reached about 80,000 tons. For the two weeks ending August 14th, the output amounted 33,202 tons. The coke shipments during July from the ovens at Fernie and Michel came to 16,335 tons. These are the largest shipments so far made in any one month. Some of the new ovens at Morrissey are now in operation and shipping has begun.

**The International Coal and Coke Co.**—The first shipment of coal from the mines of the International Coal and Coke Co. at Bairmore, Alberta, was made towards the end of July, when one carload of coal was shipped to Phoenix. The coal will be used for operating the steam shovel in the surface quarries of the Granby mines. Another carload of coal has been received at the Granby smelter. Although work at the coal mines is only at the initial stage, about twenty-five miners are employed and two carloads of coal being taken out daily in course of daily development.

**War Eagle Consolidated.**—The following despatch has just come to hand from Rossland, B.C.: "The War Eagle mine is on fire at the thousand feet level station. The timbers were ignited presumably by a candle left burning. When discovered smoke and fumes prevented anyone approaching the seat of the fire, and General Manager Kirby and Superintendent Davis suffered considerably from smoke and gas in endeavoring to reach the scene of trouble. An effort to go down was abandoned as the shaft was sealed up at the 900 feet level. The blocking of the air was expected to extinguish the fire with the steam vapor now being introduced in large quantities. A portion of the upper level was not interfered with, and the company will not lose heavily. The fire is practically unprecedented in the history of Rossland."

**The Velvet Mine.**—The Velvet mine has suspended operations indefinitely. The management has made no statement, but it is generally understood the suspension, which will be of long duration, is occasioned by the fact that the payable ore under existing conditions is exhausted, and the London directors have declined to put up funds necessary for further operations on a considerable scale.

**Granby Consolidated Mines.**—A despatch from Phoenix, B.C., to the Nelson News dated the 5th instant, says:—With this week's tonnage the Granby mines' ore shipments for the year to date run over two hundred thousand tons. Both the B.C. mine and Sunset having closed for the present, they do not appear in this week's shipments, but the Emma is again on the list. Following are the tonnage figures of Boundary shippers for the current week: Granby mines to Granby smelter, 8,17 tons; Snowshoe, to Greenwood and Sunset smelters, 1,320 tons; Mother Lode, to Greenwood smelter, 2,325 tons; Emma, to Trail smelter, 99 tons; Ore Denoro, to Sunset smelter, 517 tons; Athelstan, to Sunset smelter, 60 tons. Total shipments for the week, 12,658 tons. Total for the year thus far, 346,020. The Granby smelter this week treated 8830 tons of ore, making a total of 195,177 tons for 1903 to date.

**The Northwestern Smelting and Refining Co.**—The ore shipments to the Crofton smelter for the month of June were approximately as follows: From Marble Bay, Texada, 1560 tons; from Lone Pine, Republic, 970 tons; from Trade Dollar, Republic, 45 tons; from Comstock, Yreka, Quatsino, 122 tons; from Lenora, Mount Sicker, 3,000 tons; from Redwing, Opper Mountain, Prince of Wales Island, 110 tons; from Van Anda, Texada, 50 tons.

**The Waterloo Mine.**—From Camp McKinney it is learned that the

Waterloo mine has in 40 day running produced gold bricks valued at \$8,000. Operations were started on June 16th but many shut downs have been made in the interval. The mill with five stamps is treating about 12 tons daily. From shipments of high grade ore to the smelter at Trail nearly \$4,000 has also been received. A carload of concentrates is going out before the end of August.

**The Ymir Gold Mine, Limited.**—A London cable as to the mine's June return says: "Seventy stamps ran 28 days and crushed 4,950 tons (2,000 lbs.) of ore, producing 1,163 ozs. bullion. The estimated realisable value (gross) of the product is \$12,850; 300 tons of concentrates shipped, gross estimated value, \$7,750; cyanide plant treated, 3,050 tons (2,000 lbs.) of tailings, producing bullion having estimated gross value of \$2,150; sundry revenue, \$1,060—\$23,810; less working expenses, \$21,000 profit, \$2,810. There have been expended during the month on development, \$5,000.

**The Le Roi Mine.**—A recent cable to the London Board says: "Shipped from the mine to the Northport smelter during the past month, (June) 11,289 tons of ore, containing 4,500 ounces of gold, 4,480 ounces of silver and 227,700 pounds of copper. Shipped from the dump to Northport smelter during the past month, 5 tons of ore containing 26 ounces of gold, 36 ounces of silver and 927 pounds of copper. Estimated profit on this ore, \$8,000."

**The Silver King Mine.**—From Nelson, B.C., comes the report of a strike made early in the month at the Silver King mine. The owners of the property—The Hall Mines Co. Limited—shut down over a year ago, as after considerable work on the lower levels done by the diamond drill, the results proved rather unsatisfactory. Shortly afterwards, Mr. M. S. Davys, formerly in charge of the company's operations, took the mine on lease and worked on a small scale for several months. About this time, while operating on the fifth level, a rich stringer of ore was encountered which gave values sufficient to pay all working expenses and leave a very respectable margin of profit besides. The work being continued along this stringer has now broadened out into a lead said to be nearly five feet wide with walls very clearly defined. Thirty-eight men are now at work and it is expected that this force will be largely increased almost immediately. When working full strength the company formerly employed from 170 to 190 men.

**The Bosun Mines, Limited.**—The manager of this mine reports by cable to the Board of Directors in London that the shipments made during the month of July, were 20 tons of galena and 80 tons of zinc.

## NEW COMPANIES.

### BRITISH COLUMBIA.

**Dandy and Ollie Consolidated Mines, Limited.**—Incorporated under the statutes of British Columbia, 11th May, 1903. Authorized capital \$500,000, in 1,000,000 shares of fifty cents (50c.) each. Formed to acquire the properties known as "The Dandy and Ollie Consolidated Mines, Limited."

**Pilot (Ymir) Gold Mining and Milling Company, Limited.**—Incorporated under the statutes of British Columbia, 11th May, 1903. Authorized capital \$50,000 in 500,000 shares of ten cents (10c.) each. Formed to acquire the properties known as "The Pilot (Ymir) Gold Mining and Milling Company, Limited."

**Selkirk Copper Mines, Limited.**—Incorporated under the statutes of British Columbia, 15th May, 1903. Authorized capital, \$500,000, in 500,000 shares of one dollar (\$1.00) each. Formed to acquire the properties known as "The Selkirk Copper Mines Limited."

**Wagner Mines, Limited.**—Incorporated under the statutes of British Columbia, 9th May, 1903. Authorized capital \$2,000,000, in 2,000,000 shares of one dollar (\$1.00) each. Formed to acquire the properties known as "The Wagner Mines, Limited."

**British Columbia Standard Mining Company, Limited.**—Incorporated under the statutes of British Columbia, 11th June, 1903. Authorized capital \$200,000, in 200,000 shares of one dollar (\$1.00) each. Formed to acquire the properties known as "The British Columbia Standard Mining Company, Limited."

**Aztec Mining Company, Limited.**—Incorporated under the statutes of British Columbia, 25th June, 1903. Authorized capital \$15,000, in 15,000 shares of one dollar (\$1.00) each. Formed to acquire the properties known as "The Aztec Mining Company, Limited."

**Western Oil and Coal Company, Limited.**—Incorporated under the statutes of British Columbia, 8th June, 1903. Authorized capital \$1,000,000, in 1,000,000 shares of one dollar (\$1.00) each. Formed to acquire the properties known as "The Western Oil and Coal Company, Limited."

### ONTARIO.

**Temiscaming and Hudson Bay Mining Company, Limited.**—Incorporated under the statutes of Ontario, 29th July, 1903. Authorized capital \$25,000, in 25,000 shares of one dollar each. Directors—G. Taylor, A. McKelvie, A. I. Ritchie, E. P. Smith, A. Burwash, T. McCamus, J. Bancroft, J. J. Grills, D. T. K. McEwen. Head Office—New Liskeard, Ont. Formed to acquire the properties known as "The Temiscaming and Hudson Bay Mining Company, Limited."

**Peninsular Oil and Gas Company, Limited.**—Incorporated under the statutes of Ontario, 15th July, 1903. Authorized capital \$100,000, in 400,000 shares of twenty-five cents each. Directors—A. McCallum, E. A. Mounteer, A. J. Bedford, F. T. Merrill, G. Smyth. Head Office—Chatham, Ont. Formed to acquire the properties known as "The Peninsular Oil and Gas Company, Limited."

**Eagle Copper Company.**—Incorporated under the laws of the State of Michigan, and licensed under the statutes of Ontario, 17th June, 1903. Authorized capital for use in Ontario, \$50,000. Frederick Rogers, Sault Sainte Marie, Ont., Attorney. Formed to acquire the properties known as "The Eagle Copper Company."

**Wakefield Mica Company, Limited.**—Incorporated under the statutes of Ontario, 22nd June, 1903. Authorized capital \$50,000, in 500 shares of one hundred dollars each. Directors—C. E. D. Chubbuck, K. B. Holland, H. M. Johnson, T. R. Kennedy, C. A. Johnson. Head Office—Ottawa, Ont. Formed to acquire the properties known as "The Wakefield Mica Company, Limited."

**New York and Lake Erie Oil and Gas Company, Limited.**—Incorporated under the statutes of Ontario 22nd June, 1903. Authorized capital \$1,000,000 in 1,000,000 shares of one dollar each. Directors—C. I. Meyer, J. W. Lovell, W. B. Lightfoot, J. W. Fox, A. H. Clarke. Head Office—Windsor, Ont. Formed to acquire the properties known as "The New York and Lake Erie Oil and Gas Company, Limited."

**Hermia Mining Company, Limited.**—Incorporated under the statutes of Ontario, 17th June, 1903. Authorized capital \$2,500,000, in 500,000 shares of five dollars each. Directors—J. Hermann, P. Primeau, H. Appleton, O. J. Larson, W. H. Green, J. A. McPhail, L. Sibilsky. Head Office—Sault Sainte Marie, Ont. Formed to acquire the properties known as "The Hermia Mining Company, Limited."

**Cluxton Oil and Gas Company, Limited.** Incorporated under the statutes of Ontario, 10th June, 1903. Authorized capital \$100,000, in 50,000 shares of two dollars each. Directors—F. C. Cluxton, A. B. Booth, R. J. Gaffney, P. D. McKellar. Head Office—Chatham, Ont. Formed to acquire the properties known as "The Cluxton Oil and Gas Company, Limited."

**King Edward Mine, Limited.**—Incorporated under the statutes of Ontario, 10th June, 1903. Authorized capital \$200,000, in 20,000 shares of ten dollars each. Directors—A. S. Burrows, J. S. Dohie, W. R. Smyth, C. J. Brown, B. G. Coryell. Head Office—Bruce Mines, Ont. Formed to acquire the properties known as "The King Edward Mine, Limited."

**Loon Lake Iron Company, Limited.**—Incorporated under the statutes of Ontario, 10th June, 1903. Authorized capital \$3,000,000, in 600,000 shares of five dollars each. Directors—J. F. Carey, G. Wagner, S. B. Martin, P. J. Hart, J. L. O'Flynn. Head Office—Sault Ste. Marie, Ont. Formed to acquire the properties known as "The Loon Lake Iron Company, Limited."

**Vermillion Bay Mines Company.** Incorporated under the laws of the State of Delaware, and licensed under the statutes of Ontario, 10th June, 1903. Authorized capital for use in Ontario, \$50,000. Newton Higbee, Rat Portage, Ont., Attorney. Formed to acquire the properties known as "The Vermillion Bay Mines."

**Bussman-Gray Molybdenum Mining and Reduction Company of Ontario, Limited.**—Incorporated under the statutes of Ontario, 31st July, 1903. Authorized capital \$1,000,000, in 1,000,000 shares of one dollar each. Directors—P. F. Bussman, W. J. R. Gray, C. R. Gray, T. A. Hyland, W. L. Baker, R. M. Choate. Head Office—Fort Erie, Ont. Formed to acquire the properties known as "The Bussman-Gray Molybdenum Mining and Reduction Company of Ontario."

**Long Lake Gold Mining Company, Limited.**—Incorporated under the laws of the Imperial Parliament of the United Kingdom of Great Britain and Ireland, and licensed under the statutes of Ontario, 31st July, 1903. Authorized capital for use in Ontario, \$25,000. P. E. Mackenzie, Rat Portage, Ont., Attorney. Formed to acquire the properties known as "Long Lake Gold Mining Company, Limited."

## PERSONAL MENTION.

Mr. G. R. Atkinson, formerly of the Athabaska Gold Mining Company, and the London and British Columbia Gold Fields Company, at Nelson, B.C., has gone to Siberia, where he will enter the service of a large Copper Company, developing extensive properties in that country.

Dr. Joseph Struthers, who has been for some time connected with the Engineering and Mining Journal, of New York, as associate editor, has resigned his position to accept that of assistant to Dr. Rossiter W. Raymond, secretary of the American Institute of Mining Engineers.

Mr. Justice Britton of Kingston, and Mr. B. T. A. Bell, of the Canadian Mining Review, Ottawa, who were recently appointed as commissioners to investigate the charges of illegality in connection with the securing of the Treadgold and other mining concessions in the Yukon, have arrived in Dawson City. The commission opened its session at 11 o'clock on the 17th inst., when the reading of the terms of the commission and an explanation of the scope of the inquiry was made.

Mr. A. P. Lowe, of the Geological Survey Department, who has explored the Labrador region and spent considerable time in the Ungava Bay district and along the Hudson Bay coast, has left Halifax in charge of the Dominion Government expedition, lately fitted out by the Department of Marine and Fisheries.

Mr. W. Sandford of Sydney, New South Wales, a gentleman largely interested in Australian iron deposits, where he is the owner of the Esbank Collieries and the Esbank Iron Works at Lithgow, New South Wales, is on a visit to Canada. He is looking more particularly into the bounty system as applied to our iron and steel industries with a view to discovering whether that system is the best method of assistance that can be given to the industry in his own country.

Mr. T. G. Blackstock, K.C., of Toronto, managing director of the War Eagle-Centre Star Companies, is on a visit to the Slocan district, and will spend some time in looking after the various properties with which he is connected.

Mr. R. Roscoe Leslie, who has been superintendent of the Le Roi mine during the past year, has resigned his position with the company to devote his attention to mining interests elsewhere. His successor will be Mr. Robert H. Anderson, at present manager of the Oro Duro and B. C. mines in Summit Camp. The change will take place about the end of the present month.

Sir James Hector, K.C.M.G., an eminent geologist and the discoverer of the famous Kicking Horse Pass through the Rocky Mountains, is on a visit to Canada. Sir Hector is at present Chancellor of the New Zealand University and Director of the Colonial Museum and Observatory and the New Zealand Institute.

Mr. W. A. Carlyle, Managing Director of the Rio Tinto Copper Mines, one of the largest and oldest in Europe, is on a visit to Canada. Mr. Carlyle will not return to Spain until October.

Dr. Eugene Haanel, Dominion Superintendent of Mines, has returned from a visit to Lockport, N.Y., where in company with prominent capitalists he has been witnessing secret tests of the electric furnace, invented by Marcus Ruthenbourg, which have been going on at the Cowles Electric Smelting and Aluminum Works. No information as to the success or otherwise of the experiments has so far been given out.

Dr. Robert Bell, acting Director of the Geological Survey Department, sailed for Europe early this month. He will travel to Vienna, Austria, where, as envoy of the Dominion Government, he will attend the session of the International Geological Congress which takes place during the present month. On behalf of the Government and Royal Society of Canada, he is the bearer of an invitation to the Congress to hold its tenth triennial session (which falls in 1906) in Ottawa.

## CONCENTRATES.

The total number of persons employed in and about all the mines of the United Kingdom during 1902, was 855,603, of whom 824,791 worked at the 3,349 mines under the Coal Mines Act, and 30,812 at the 703 mines under the Metalliferous Mines Act. Compared with 1901 there is an increase of 18,056 persons at the mines under the Coal Mines Act, and a decrease of 1,631 persons at the mines under the Metalliferous Mines Act.

An Associated Press despatch from St. John's, Newfoundland, dated August 18th, states that several of the larger slate quarry firms at Trinity Bay are planning to move to this colony their business at the Welsh quarries, which have become almost exhausted except for deep mining. One quarryman has under consideration plans for the removal of an entire town near his Welsh quarry to Newfoundland, where he can give three thousand men employment. The Welsh slate has been known as the best in the world, but experts who are prospecting and working the Newfoundland beds on Trinity Bay and the Bay of Islands say the Newfoundland slate is superior to the Welsh, besides being easier to quarry and almost inexhaustible.

Up to August 5th the gold shipments of the Klondike this year have reached \$5,500,000, which is only \$3,000,000 less than the figure of last year at this time. The total would have been far greater were it not for the big water famine on the gold creeks. The unanimous opinion of all the visiting experts and those of local repute is that the camp must have a large water system for future operations.

It is announced that the Belleville Rolling Mills have been purchased from Messrs. Kirkwood and McKinnon by a syndicate composed of C. E. Carbonneau of Paris, France, Dr. Alf. Wills of Dawson City, and M. Jackson of Paris. It is the intention of the syndicate to at once put the mills in first-class repair and operate them to their full capacity, in which case the owners will secure a bonus of \$5,000 per year from the Belleville corporation.

Advices brought by late steamers arriving at Vancouver from the Antipodes state that the likelihood of 40,000 people is adversely affected by the closing down of the silver-lead mines at Broken Hill, New South Wales, Australia. From news just to hand it appears that Broken Hill is passing through a period the darkest ever known in the history of the Barrier. The failure of the water supply is the cause. The town was faced to face with a really desperate situation when the mail left. Five thousand men were thrown out of work and the business people decided to refuse credit because the wholesale houses had suspended the system with them. Most of those who could leave the district were doing so. Water is being brought in by train from South Australia at a cost of \$10 per thousand gallons. A facetious correspondent remarks that whiskey drinkers are rendering valuable assistance in preserving the more precious fluid by taking their whiskey straight.

The Russman & Gray Molybdenum Reduction and Refining Co., of Buffalo, has secured 4,700 acres of mineral lands in northern Frontenac, Renfrew and surrounding district. They expect to open mines and to erect in Kingston a smelter costing \$130,000. It is also the intention of the company to construct a railway from near Tweed to Killaloe Station, on the Canada Atlantic Railway.

Eight large dredging machines are to be placed on the Stewart River next season by the Ogilvie Company. The Company has had its prospecting dredge at work continually this summer and intends to increase its equipment this winter and have it ready for use next season. The new dredges are each to have a capacity of 900 cubic yards in ten hours. Each dredge will cost approximately \$45,000. The big dredge on Discovery on Bonanza, the only large plant of the kind in operation in the territory, has a capacity of 500 yards in ten hours.

The recent reports circulated as to the discovery of an immense body of coal lands in the Peace River District have been confirmed by Mr. Hugh Campbell of Cow Bay, Nova Scotia, who was lately on a visit to the Capital after an extended sojourn in that district. The location which was discovered by Mr. Campbell and his prospecting party is said to be in the district near Hudson Hope, a short distance from the entrance to the Peace River Pass. The area is calculated to contain some 250,000,000 tons, and the seams in some places are said to be nine feet thick.

The Krupp Steel Works of Germany have been reorganized and incorporated as a joint stock company, dating from June 30. The new company

owns the steel works at Essen and Anuen, a firing or gun proving ground at Meppen, the Gruson works at Buchan, the Germania shipbuilding yard at Kiel, four blast furnace plants, smelting works and machine shops at Sayn, three coal mines and a number of iron mines in Germany. According to the census of April 1, 1902, the total number of persons employed by the Krupp Works was 41,013, of whom 4,016 were officials.

A wonderfully rich strike is reported from Atlin as having been made towards the end of last month. It is said that Messrs. William and Charles Queen who are located on No 55 below discovery on Spruce Creek, have struck a pay streak in the benches which quite eclipses anything previously encountered in the Atlin country. The first three pans yielded no less than \$60.60. A Mr. Murdock McKay, who heard of the find, panned out \$27.20 for one single pan. In the next 22 hours sluicing the clean up totalled \$2,365.00 with only four men shoveling into the boxes. As an evidence that the strike on the Queen Bros. property is not the only pay dirt on this well known creek, it may be mentioned that Messrs. Irving Bros. on 83-4 below who averaged last season over three ounces a day to the man are now taking out 40 ozs. per day with six men working.

In connection with the British Iron and Steel Institute, which will meet at the beginning of September at Barrow-in-Furness, Mr. J. F. Stead says that he will disclose a discovery that will revolutionize the manufacture of steel. He finds that by simply heating dangerously crystalline steel to a certain temperature, however bad the steel, it is possible to restore it to a normal condition and even to improve it.

The deal for the purchase of iron ore lands on the Mesaba range, Minnesota, by the United States Steel Corporation which has been reported occasionally since the first of the year and which was completed some months ago, is now verified by officials of the corporation. By this purchase the steel corporation takes off the market the last large single block of ore property in the Mesaba range which is for sale. The purchase is considered very important. In all about 70,000,000 tons of ore, much of it high grade Bessemer, has been measured up and acquired, and it is estimated that even a larger yield will be obtained. The properties were purchased from the holdings of the Chemung Iron Company of Duluth.

**GOLD OUTPUT.**—The exact output of the Rand Mines in July was reported by the Johannesburg Chamber of Mines at 251,643 ounces, against 238,320 in June. Comparison with previous months and years is as follows:

|                 | Ounces. |                 | Ounces. |
|-----------------|---------|-----------------|---------|
| July, 1903..... | 251,643 | July, 1902..... | 149,179 |
| June ".....     | 238,320 | " 1901.....     | 25,959  |
| May, ".....     | 234,125 | " 1900.....     |         |
| April, ".....   | 227,871 | " 1899.....     | 456,474 |
| March, ".....   | 217,465 | " 1898.....     | 359,345 |

#### Newfoundland Iron Bounties.

Recently in the Newfoundland Legislature the Premier introduced the following regulations in relation to the working of the coal areas and iron deposits of the Colony:—The Governor-in-Council may authorise the payment of the following bounties on pig-iron, puddled into bars and steel ingots made in Newfoundland: (1) A bounty of \$1.50 per ton on pig-iron made in Newfoundland from ore, fuel, and flux, the products of the Colony. (2) A bounty of \$1.00 per ton on pig-iron made in Newfoundland from ore and flux, the products of the Colony. (3) A bounty of \$1.00 per ton on puddled iron bars manufactured from pig-iron made in Newfoundland from Newfoundland ore. (4) A bounty of \$1.00 per ton on steel billets manufactured in Newfoundland from pig-iron (made in Newfoundland from Newfoundland ore), and such other ingredients as are necessary and usual in the manufacture of steel ingots, the proportion of such ingredients to be regulated by order of the Governor-in-Council. Provided that in computing the bounty no payment shall be made with respect to foreign ores or metal produced therefrom used in the products herein mentioned.

#### THE BOSUN MINES, LIMITED.

The fourth ordinary general meeting of the shareholders of this company was held at Winchester House, London, on Wednesday July 22nd the presiding officer being Mr. E. L. Heatley, chairman of directors.

The Chairman said. Gentlemen,—The report and audited accounts of the Company for the last financial year are before you. Of the matters referred to therein, I think there are two which will mainly interest the shareholders. The first has reference to the conditions and results under which the mine is at present being worked, and the second is, as to whether the past workings show a basis on which we can judge as to what conditions would enable the mine to be worked at a profit in the future. As regards the first, in view of the difficulties under which we have been working in recent years, I think it will not be unsatisfactory to you to learn that during the year the mine has been worked at a margin of profit, although a somewhat narrow one. Having regard to this, the Board have been most anxious to consider what is the best policy to pursue in the interests of all concerned, and their views are indicated in the report. While there is a margin of profit, it is a pity not to continue operations, as, of course, further development work may open up further good ore, and it is also quite possible that better prices for the minerals may again be obtainable on the market. As you well know, from previous reports, when we originally took over this mine, the ore contents were of a higher grade than we have them at present; while at the same time, the values of minerals, lead and silver, were also higher than those now ruling. As regards the quality, we cannot help feeling that what has occurred in the past may recur in the future. There is not, perhaps, such a great diminution or difference; but every little difference tells in connection with the working costs; everything in the nature of narrow lodes

in the hard ground in which we have to work means not only that there is less ore got out of the same working but also that the cost of working on a narrow vein, as compared with a wide one, is a very much more expensive matter. As to values of our products, it is impossible to forecast, but certainly they do not seem to be getting out the same quantity of lead in Australia as they used to do, and, in the opinion of many people, it is not improbable that lead may yet again stand at a considerably higher price than it has done recently. Therefore, it is apparently desirable to have our mine in operation, in case we have a better quality or better prices ruling, so that we may be in a position to take advantage of such improvement. While we have been working recently, a new condition has indeed arisen which may somewhat help us. The Government of the Dominion of Canada have decided to grant a bonus of £3 per ton under certain conditions, which are not fully before us, to aid the British Columbia lead mines, and we are awaiting with some interest the exact particulars of the proposal which is at any rate intended to benefit the industry. No doubt this scheme has been formulated with the idea of its being a set-off against the Mining Act which was passed in favor of diminished hours of labor.

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## Sale of Valuable Zinc Mine IN CANADA

Pursuant to the order of the High Court of Justice, for the winding up of the Grand Calumet Mining Company, there will be offered for sale by Public Auction at the Local Master's Office, in the Court House, in the City of Ottawa, in the Dominion of Canada,

On the Sixth day of October, 1903,

AT 2.30 P.M.

Mining Location 30 T, in the District of Thunder Bay, in the Province of Ontario, containing 160 acres, and known as "The Zenith Zinc Mine." The property is about twelve miles from Rossport Station on the C. P. Railway. A considerable amount of development has been done, and about 2,000 tons of ore have been extracted.

The property will be offered for sale subject to a reserve bid, and to a royalty of \$3.00 per ton on all ore to be mined thereon. With it will be put up for sale, a quantity of mining plant and machinery, consisting of engine, derricks, cables, drills, carpenter's tools, blacksmith's tools, bar steel and iron, rope, saws, stoves, &c.

A detailed inventory of the chattels, an expert analysis of the ore, and any other information may be obtained from the liquidator.

Ten per cent. of the purchase money must be paid at the time of sale, and the balance in thirty days.

Dated the 13th day of June, 1903.

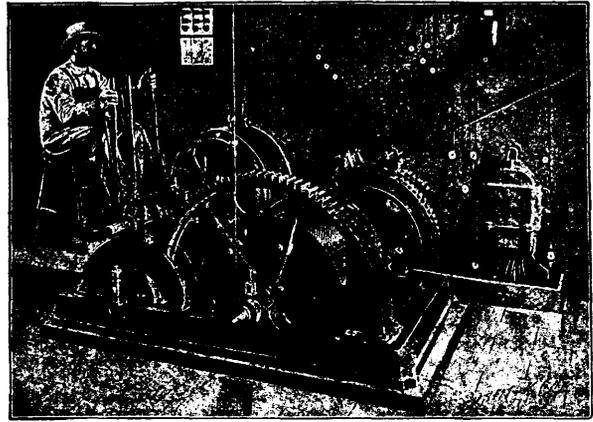
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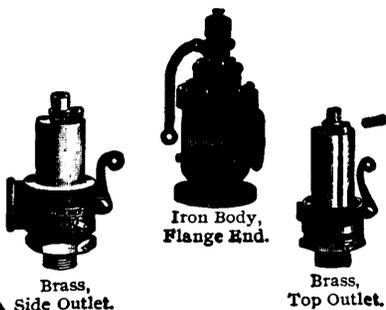
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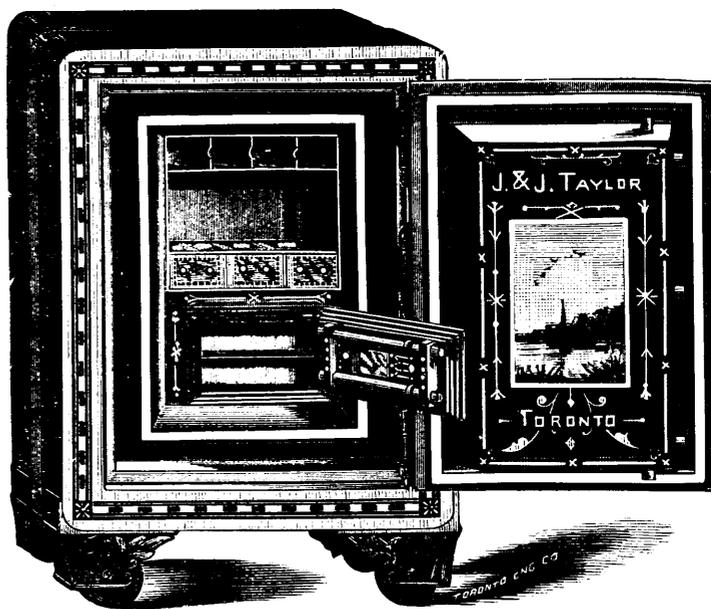
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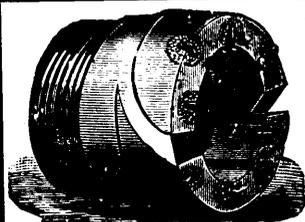
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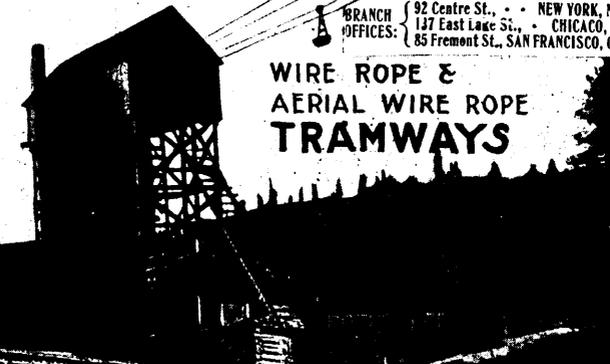
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# Canadian Mining Institute

INCORPORATED BY ACT OF PARLIAMENT 1898

### AIMS AND OBJECTS.

(A) To promote the Arts and Sciences connected with the economical production of valuable minerals and metals, by means of meetings for the reading and discussion of technical papers, and the subsequent distribution of such information as may be gained through the medium of publications.

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

(C) To take concerted action upon such matters as effect the mining and metallurgical industries of the Dominion of Canada.

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

### MEMBERSHIP.

MEMBER shall be persons engaged in the direction and operation of mines and metallurgical works mining engineers, geologists, metallurgists, or chemists, and such other persons as the Council may see fit to elect.

STUDENT MEMBERS shall include persons who are qualifying themselves for the profession of mining or metallurgical engineering, students in pure and applied science in any technical school in the Dominion, and such other persons, up to the age of 25 years, who shall be engaged as apprentices or assistants in mining, metallurgical or geological work, or who may desire to participate in the benefits of the meetings, library and publications of the Institute. Student Members shall be eligible for election as Members after the age of 25 years.

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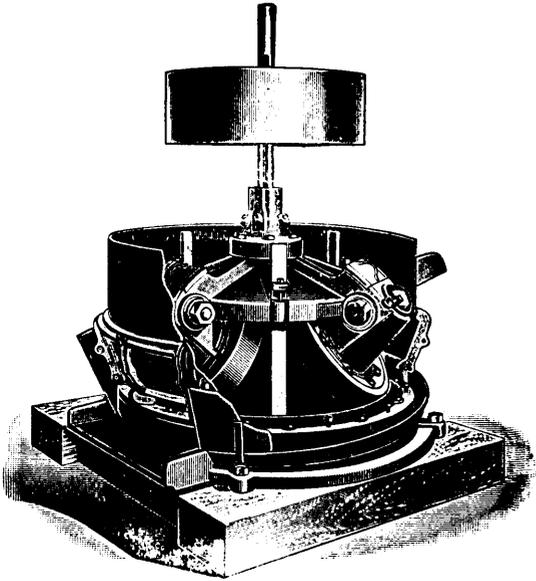
### PUBLICATIONS.

Vol. I, 1898, 66 pp., out of print.  
Vol. II, 1899, 285 pp., bound red cloth.  
Vol. III, 1900, 270 pp., " "  
Vol. IV, 1901, 333 pp., " "  
Vol. V, 1902, 700 pp., " "  
Vol. VI, 1903, 600 pp., now in press.

Membership in the Canadian Mining Institute is open to everyone interested in promoting the profession and industry of mining without qualification or restrictions.

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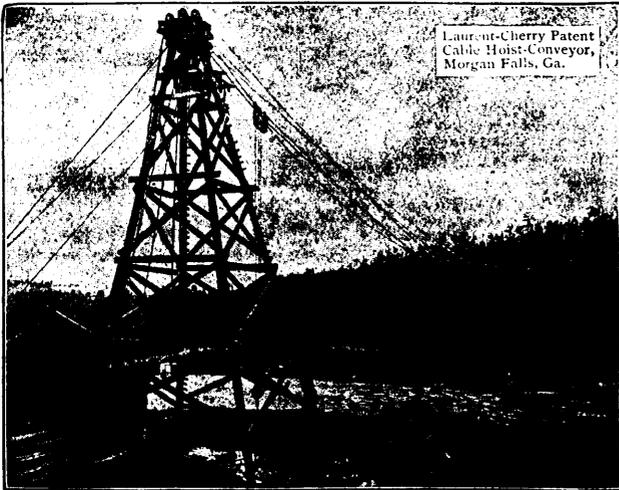
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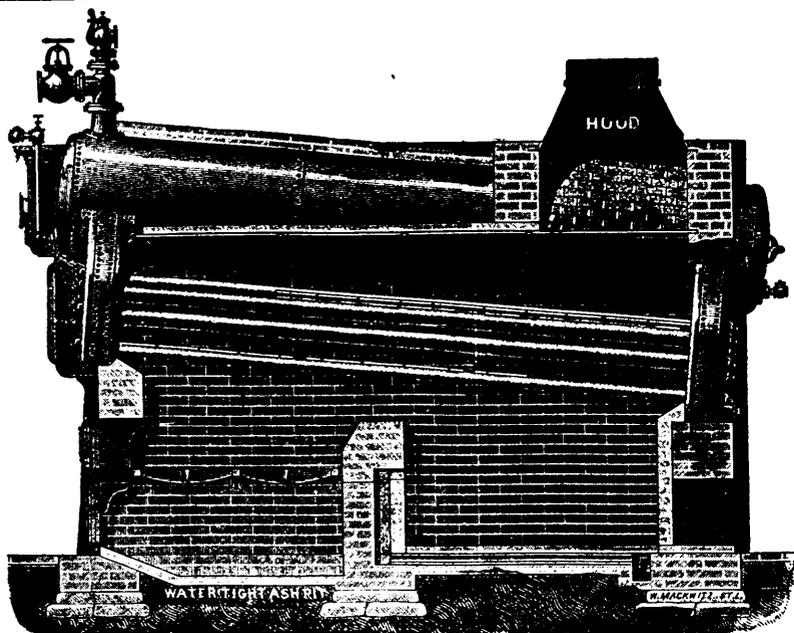
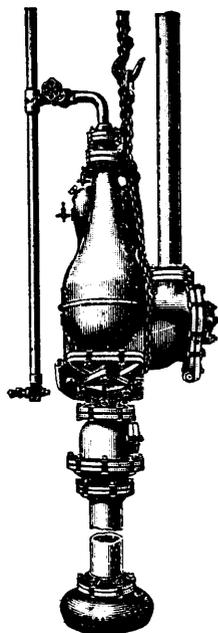
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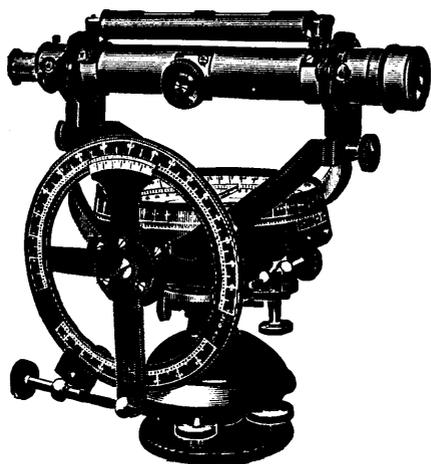


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ORNAMENTAL AND STRUCTURAL MATERIALS IN ABUNDANT VARIETY.

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

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 or 100 ; if the mine is on Crown lands (1) in unsurveyed 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.

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**GOLD AND SILVER.**

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

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

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

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

**MINES OTHER THAN GOLD AND SILVER.**

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

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

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

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

The royalties on the remaining minerals are: Copper, four cents on every unit; Lead, two cents on 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. A. DRYSDALE,**  
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# 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 \$10.00 per acre for soft coal, and \$20.00 for anthracite. Not more than 320 acres can be acquired by one individual or company. Royalty at such rate as may from time to time be specified by Order-in-Council 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 \$10.00 per annum for an individual, and from \$50.00 to \$100.00 per annum for a company, according to capital.

A Free Miner having discovered mineral in place may locate a claim 1500 x 1500 feet by marking out the same with two legal posts, bearing location notices, one at each end of the line of the lode or vein.

The claim shall be recorded within fifteen 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 \$5.00.

At least \$100.00 must be expended on the claim each year or paid to the Mining Recorder in lieu thereof. When \$500.00 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 per 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 exceeding 160 acres.

The patent for a mining location shall provide for the payment of royalty on the sales not exceeding five per cent.

#### PLACER MINING, MANITOBA AND THE N.W.T., EXCEPTING THE YUKON TERRITORY.

Placer mining claims generally are 100 feet square; entry fee, \$5.00, 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 \$10.00 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 \$10,000.00.

#### 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 rivers 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, \$100.00 per mile for first year, and \$10.00 per mile for each subsequent year. Royalty ten per cent on the output in excess of \$15,000.00.

#### 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 obtained 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 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 \$15.00. Royalty at the rate of 2½ per cent. on the value of the gold shipped from the 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 \$2.00. 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 \$200.00, or in lieu of work payment may be made to the Mining Recorder each year for the first three years of \$200.00, and after that \$400.00 for each year.

A certificate that work has been done or fee paid 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*.

#### HYDRAULIC MINING, YUKON TERRITORY.

Locations suitable for hydraulic mining, having a frontage of from one to five miles, and a depth of one mile or more, may be leased for twenty years, provided the ground has been prospected by the applicant or his agent; is found to be unsuitable for placer mining; and does not include within its boundaries any mining claims already granted. A rental of \$150.00 for each mile of frontage, at the rate of 2½ per cent. on the value of the gold shipped from the Territory. Operations must be commenced within one year from the date of the lease, and not less than \$5,000.00 must be expended annually. The lease excludes all base metals, quartz, and coal, and provides for the withdrawal of unoperated land for agricultural or building purposes.

#### PETROLEUM.

All unappropriated Dominion Lands shall, after the first of July, 1901, be open to prospecting for petroleum. Should the prospector discover oil in paying quantities he may acquire 640 acres of available land, including and surrounding his discovery, at the rate of \$1.00 an acre, subject to royalty at such rate as may be specified by Order in Council.

**JAMES A. SMART,**

Deputy of the Minister of the Interior.

# Ontario's Mining Lands..

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

Iron in large bodies of magnetite and hematite ; copper in sulphide and native form ; gold, mostly in free milling quartz ; silver, native and sulphides ; 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 1900 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

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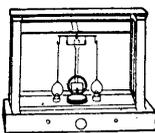
or

**THOS. W. GIBSON,**

Director Bureau of Mines,

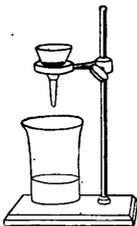
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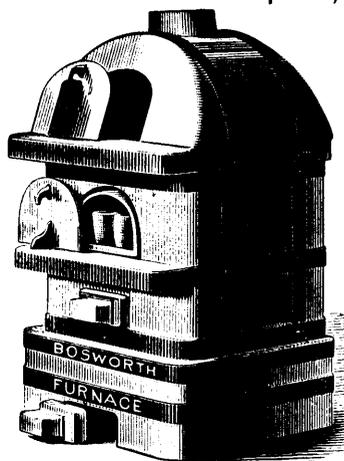
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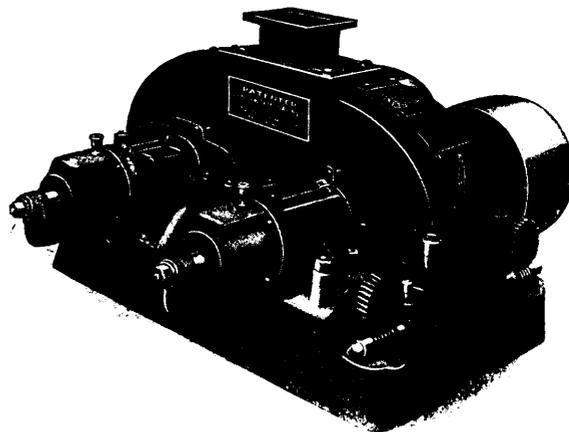
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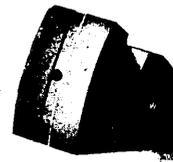
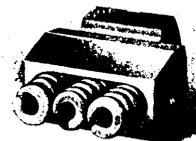


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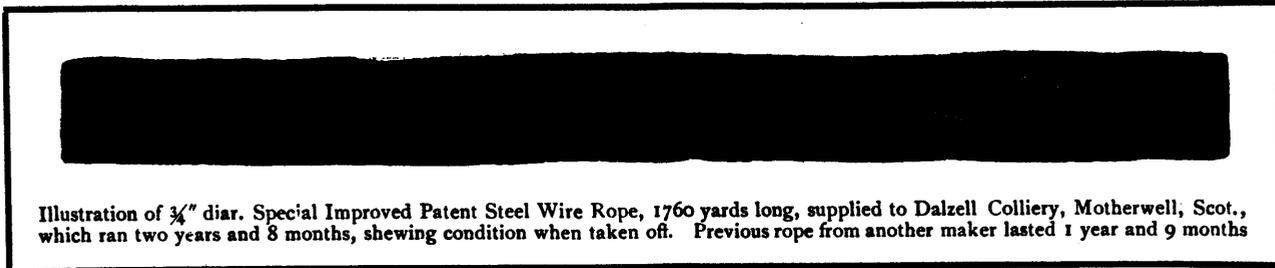


Illustration of  $\frac{3}{4}$ " diam. Special Improved Patent Steel Wire Rope, 1760 yards long, supplied to Dalzell Colliery, Motherwell, Scot., which ran two years and 8 months, shewing condition when taken off. Previous rope from another maker lasted 1 year and 9 months

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

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