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CONTENTS.

Editorial 541
(a) The Use and Care of Mine-Rescue Apparatus 541
(b) The Penniac Reef Gold Mines 542
(c) The Eight Hours Act in Operation 542
(d) Flim-Flam 543
(e) Tin and Topaz in New Brunswick 544
(f) Editorial Notes 544
Correspondence 545
Reciprocity and the Mining Industry, by A. B. Willmott 546
Tin and Topaz in N. B., by R. W. Brock 549
Prospecting Three Centuries Ago, by J. C. M. 551
Auriferous Ferro?Dolomites of California, by William H. Storms 553
McIntyre-Porcupine Mines, Limited, by V. H. Emery 555
A Visit to the West, by W. E. H. Carter 558
Electro-thermic Smelting of Zinc Ores 558
Tentative Programme and Rules 559
Suggestion About Treatment of Porcupine Ores, by Phil. H. Moore 560
Canadian Mining Institute—Western Branch 562
Consolidated Mining and Smelting Company 564
Industrial Section 565
Special Correspondence, etc. 566

THE USE AND CARE OF MINE-RESCUE APARATUS.

The United States Bureau of Mines is attacking vigorously the problem of educating the coal miner in the use of mine-rescue breathing apparatus. In addition to distributing carefully written pamphlets, the Bureau has arranged to hold a National Safety Demonstration late in October of the present year. The Demonstration is to be held in Forbes' Field, Pittsburg, under the joint auspices of the Bureau, the American Red Cross Society, and the Pittsburg Coal Operators' Association. The date selected is October 27th. Elsewhere in these columns the reader will find full details.

This is but one of the steps taken by the Bureau to give the movement right publicity. The most effective step is the distribution of educative literature.

The latest bulletin, Miners' Circular 4, compiled by Mr. James W. Paul, is most informing. After a general statement , in which reference is made to the fact that the Government of British Columbia requires breathing apparatus to be kept at coal mines, Mr. Paul proceeds to describe four types of apparatus — the Draeger, 1907 type; the Draeger No. 2, 1910 type; the Westphalia; and the Fleuss or Proto. He advocates the use of mouth-breathing types, in which the eyes are protected by detached goggles and the nose by clips. The helmet, he believes, is not necessary for safe and effective service in unbreathable gases. The chief disadvantages of the mouth-breathing types are that the wearer is forced to breathe through his mouth and is unable to carry on any conversation, although audible signals are used successfully.

The most important preliminary tests to be applied to any breathing apparatus before it is to be used are as follows:

The quantity of oxygen and air circulated is determined by attaching a measuring bag to the inhalation tube leading to the helmet or mouthpiece, opening the exhalation tube, turning on the oxygen, and then noting the time required to fill the bag. The pressure in the intake tube and vacuum in the return tube; the condition of connections and regenerators; the fit of helmet, and the condition of the complicated reducing valves, should all be determined. Simple directions are contained in Mr. Paul's pamphlet covering all these points.

Especial emphasis is placed upon the proper care of apparatus. Such items as the best lubricant to use are clearly stated. The method of disinfecting is given, and so on. These directions strike us as being thoroughly practical and sane.

In discussing actual rescue work, it is recommended that a rescue party should consist of at least five or or six members. In no circumstances should the men, while working in unbreathable gases, separate. Every member of the party should be within easy reach of the others. Relief parties should be stationed at the nearest point in good air, in readiness to start at a moment's notice. Every large mine should have four crews, each of six men, including a captain and a lieutenant. Weekly practices are imperatively necessary.

The Federal Bureau of Mines has organized and established a course of training for miners. At various stations gas-tight rooms, containing imitation mine entries, and overcasts, have been erected. The air is fouled in various ways, such, for instance, as burning straw, damp hay, animal refuse; or by spraying ammonia, or by burning formaldehyde.

* * * *

The efforts of the United States Bureau of Mines should be followed keenly by Canadian coal-mine operators. It is to be hoped that our own Federal Mines Branch will profit by the example set. The Pittsburg demonstration should be attended by many Canadian representatives.

THE PENNIAC REEF GOLD MINES.

A pained subscriber has sent us a marked copy of The Star Lake Mining News, along with a prayer that we do what we can "to stop this sort of thing."

It may be explained that The Star Lake Mining News is one of those journalistic ephimera that live but for a day. It is published in Winnipeg. Its sole object in life is to induce its readers to buy shares in the Penniac Reef Gold Mines, whose mining claims lie in the district of Star Lake, Manitoba, "only 85 miles east of Winnipeg."

So weary are we of "this sort of thing" that only by the exercise of a very stern sense of editorial duty were we able to read through the sheet. Duty performed brought its own reward. A sentence on the first page caused us to prick up our ears. It ran thus: "The first step of the owners was to interest capital, and to this end one of Canada's most promiment mining engineers was invited to inspect the property, and give a valuation of the mining claims." The "most prominent engineer" came and saw and was conquered. We are informed by The Star Lake Mining News that he offered $100,000 for the claims out of hand. This offer was incontinently refused — largely because the owners hankered to give the public a chance. The "engineer," therefore, made a report and received "his usual fee."

That report, if we may judge by quotations, must have been a jewel. It is asserverated that the ore in sight (this term should have no vulgar definition) amounts to 3,000,000 tons, of an estimated value running up to $34,200,000. The engineering feats that have put this ore "in sight" consist in one 5-foot shaft, two cross-trenches, each 200 feet in extent, and four 20-foot pits. Thirty-five (God save us!) assays have been made. The average, and one can imagine that average, gold content is $11.33 per ton!

Why pursue the subject further? We marvelled at the expedition with which that ore, three million solid tons, was visualized—"in sight" is to prosaic a phrase. What wizard had waved his wand? What conjurer has cozened cold Mother Earth?

The first line on page 2 illumed us. There we discerned and recognized with great joy the name of George R. Thurber, a name honoured (for a time at least) in other parts of Ontario! Now did we know the inwardness of things!

That our readers may join with us in admiring Mr. Thurber, in hailing him as Canada's greatest professional achievement, we need only quote from an editorial that was printed, published, and distributed by the CANADIAN MINING JOURNAL on October 15, 1909. The caption of that editorial is "Fairy Gold." The text runs thuswise:

"A certain son of Belial is loose in the Lake of the "Woods. Here, at Kenora, he has built him a plant "wherein, by occult means, he renders from the ore "gold not extractable by fire-assay nor by any other "device known to man.

"Indeed, if you wish to get some idea of what this "gentleman at Kenora can do to a gold ore, all that is "necessary is to multiply by three or four the results "obtained by an ordinary or garden variety of as-"sayer. And so convincing is the manner of this "Kenora person, that several mature persons have not "abstained from chipping in with him.

"We are not unfamiliar with the kind of process "that is being exploited at Kenora. There are many "such varieties, based upon the alleged existence of "'queen' gold, 'latent gold,' etc., etc., and etc. But "the real object of search in all these processes is an-"other allotropic form of the metal named 'fool's' gold."

Our opinion of Mr. Thurber is evident. Evident, also, is the fact that he is, consciously or unconsciously, the High Priest of the Order of Fakirs. This is an honourary degree attained only by years of hard labour — and usually followed by a longer term of the same.

THE EIGHT HOURS ACT IN OPERATION.

In the annual report of the Inspector of Mines for the Yorkshire and North Midland District, Great Britain, the working effect of the Eight Hours Act is fully discussed. The Act has been in operation for a year. During that time enough has been learned to discredit many prophecies.

When the Act was being debated, before it had become law, its opponents predicted that accidents would increase immediately after the adoption of the new legislation. This has not been the case. The Act has had no effect upon the accident rate in either direction. Thus both those who advocated the Act as a means of reducing the number of casualities, and those who believed that mischief would result through speeding, have been proven mistaken.

As to the economic effect of the Act, there is no room for questioning the fact that the output per man has been reduced; or, putting it another way, the number of men employed has been increased without a corresponding increase of output. Working costs are higher, except in a few instances where conditions are peculiarly favourable. The most serious loss, however, falls upon wage-earners, especially upon those who were formerly accustomed to work overtime.

Specific facts are given by the Inspector to show how one large group of collieries, producing 15,000 tons per day, has been affected.

In this group the following changes have been noted:

1.—The number of coal getters was increased 9.5 per cent.

2.—The working costs were increased 3d. per ton.

3.—The number of tons obtained per man decreased 7 per cent.

4.—The stallmen's wages decreased by 6d. per day.

5.—The output increased 2 per cent.

To meet the requirements of the Act, many changes in equipment were necessary. At one large colliery new boilers, increasing the steam pressure from 50 to 100 pounds, were installed; the winding engines were fitted with larger cylinders; cages of four decks were substituted for those of two decks; more pit room was provided, and the number of underground workers was increased by 11 per cent. By these steps the output was enlarged 16 per cent., and the working cost per ton was put up 2.5 per cent.

Other similar instances are on record. In general, the Act has made for higher costs, lower wages, less output per man, and lower wages. On the other hand, there is a more equitable distribution of wages. Contrary to expectation, there has been little or no "speeding up." Despite the shortened hours, there is nothing to show that the men are working at high pressure. The facts adduced above afford valuable information for Canadian coal miners. Both operators and employees can draw morals from this authentic report.

FLIM-FLAM.

A well known mining engineer, who resides in Cobalt, recently took upon his own shoulders the task of correcting certain scurrilous editorials that were printed in the columns of a third or fourth-grade English weekly. The name of that weekly — and we hope that it is familiar to but an insoluble residue of our readers—is The Winning Post.

Our Cobalt engineer disposed of The Winning Post's arguments in very short order. However, such is the advantage of an editorial chair, The Winning Post gained a Pyrrhic victory over its correspondent by the simple expedient of having the last word. This, however, does not destroy the correspondent's position. The Winning Post asserted that Canadian mining ventures, organized by Canadians and floated in London, had never paid a dividend. To those who know anything about Canadian mining this contention was too absurd to require refutation. In any case, yellow or pink sheets can never be refuted.

As the Cobalt engineer pointed out, it is lamentably true that many of the worst frauds perpetrated in the name of Canadian mining originate in countries other than Canada. On this point we need not dwell —it is obvious. But we shall animadvert for a moment upon a singularly rank instance that is of putative English birth — although Canadian parentage is possible.

"The Field" is ordinarily a reputable paper. It is a dignified London publication, and its wits are quite as nimble as one may be led to expect.

In the advertising columns of The Field, April 22, 1911, there appeared the following:

"Canadian Exploring Expedition to secure known rich gold deposits, etc., under leadership prominent engineer, will RECEIVE Two more GENTLEMEN; small capital required, sharing pro rata; also few more subscriptions £250, sharing pro rata interest; Government endorsement; bank references — Address 'Box 60,' 'Field' Newspaper, Windsor House, Bream's Buildings, E. C."

Instead of comment we are tempted to insert lurid asterisks. For our Canadian readers no remarks are necessary. Only for the sake of our English contributors are we induced to say a few things.

These few things are as follows: Innumerable "exploring expeditions" are organized every year in Canada. One out of a hundred is successful. Canada has a plethora of prospecting talent. Canada, also, has much discovered mineral wealth. Prospecting, to be quite frank, is not usually a paying game. Big corporations avoid it. The man that is fond of the bush and that knows his business, prospects successfully. He is, however, a rare bird. The rarer bird is he who makes money out of his discovery. Usually someone of the vulture species robs the discoverer of his reward.

Just here we are fearful of being misunderstood. Canada needs the prospector. Canadian prospectors are the best and most vigorous of men. But "expeditions" organized by interests that know not Canada,

or by persons who are making money before discovering anything of value, are foredoomed to failure.

All this, however, is incidental to the real point. The reader will notice that the phrase "Government endorsement" is used in the advertisement. Of this we may say, without equivocation, that it is an unmitigated falsehood. No Canadian government gives its endorsement to any mining enterprise, much less to a vague prospecting "expedition." In short, such an advertisement is a fraud, and the advertiser should be punished promptly and severely.

TIN AND TOPAZ IN NEW BRUNSWICK.

Our readers will be interested in Mr. Brock's description of tin and topaz occurrences in New Brunswick. The discovery of topaz crystals an inch in length is noteworthy. The subsequent discovery of tin by Mr. Brock suggests commercial possibilities. The whole association of minerals (quartz, muscovite, mica, feldspar, topaz, fluorite, wolfrfamite, molybdenite, pyrrhotite, chalcopyrite, and cassiterite) is analogous to combinations found in localities where a certain amount of tin is being produced to-day. For example, Beck's description of the Erzebirge tin deposits in Saxony indicates a close resemblance to the New Brunswick occurrence. From the former both tin and tungsten have been mined in considerable quantities.

In Lunenburg County, Nova Scotia, almost precisely the same geologic surroundings are found near the contact of the granite, or greisen, and the pre-Cambrian gold-bearing slates and quartzites.

Mr. Brock's article deserves attention. Tin is a much sought for metal. It is quite within the range of probabilities that parts of the eastern territory will yield tin in commercial quantities.

EDITORIAL NOTES.

The net income of Granby Consolidated for the fiscal year ending June 30th, 1911, was $282,000. The actual output of copper was the smallest on record since the year 1906.

The next general meeting of the Western Branch of the Canadian Mining Institute will be held at New Denver, Slocan Lake. The Slocan district will receive especial attention. Several papers on mining in the Slocan will be read.

On June 30th, the El Oro mine, Mexico, showed reserves of ore totalling 318,720 tons. The average gold content was $9.50; the silver content 6.1 ounces.

In the week ending August 19, Cobalt mines shipped 13 cars of high grade ore and 8 cars of low grade, making a total of 660.24 tons. La Rose was responsible for 4 cars high and 2 cars low; and Drummond appeared on the list after a long absence. This increase is the more gratifying for the reason that the proportion of high grade ore is constantly growing greater.

An export duty upon crude ores is being discussed in Australia. The reason adduced is that transportation and labour are so costly that foreign smelters have an undue advantage over Australian plants.

Personal and General

Mr. O. N. Scott, mining engineer, Toronto, has removed his office from 14 King Street west, to the Royal Bank Building, King street east.

Mr. R. E. Hore, has been examining mining properties in the Lake of the Woods region.

Mr. F. G. Stevens, Albert St., Kingston, Ont., has returned from a professional visit to the Gaspe peninsula.

Mr. J. B. Woodworth, Toronto, recently inspected several gold properties in Nova Scotia.

Mr. J. B. Tyrrell has returned to Toronto from London, England.

Mr. J. E. McAllister, consulting engineer to the British Columbia Copper Company, was in the Boundary district of British Columbia about the middle of August, looking into conditions at the company's several mines and its smelting works.

Mr. W. J. Dick, mining engineer to the Canadian Conservation Commission, was in British Columbia last month. Among other mining districts he visited was the coal mining region in Nicola valley, where several coal mines are being operated.

Mr. Jay P. Graves, of Spokane, Washington, U.S.A., vice-president and general manager of the Granby Consolidated Mining, Smelting, and Power Company, Ltd., went up to the company's newly purchased Hidden Creek mine, near Goose Bay, Observatory Inlet, about the middle of August. He was accompanied by Mr. F. M. Sylvester, assistant manager.

Mr. J. R. Roaf, who for several years had been in charge of the Crow's Nest Pass Coal Company's engineering department at its several collieries in the Crow's Nest Pass district of British Columbia, has retired from that company's service and gone to one of the new coal districts about Edmonton, Alberta.

Mr. George Alexander, managing director of the Antoine, Jackson, Ruth, and other mining companies owning mines in British Columbia, recently arrived in Kaslo, West Kootenay, from England. The Ruth-Hope group of silver-lead mines, near Sandon, Slocan, and the Silver Cup, in Ferguson camp, Lardeau district, are both operating mines owned by Mr. Alexander's companies.

Mr. Francis H. Shepherd, chief inspector of mines for British Columbia, of Nanaimo, B. C., has returned from Seattle, Washington, where he took the regulation mine-rescue course of training at the United States Mine-Rescue Training Station, on the campus of the University of Washington. The station had been closed while the officials were away giving instruction in coal mining districts, but through the courtesy of the director of the United States Bureau of Mines, arrangements were made for Mr. Shepherd to take the regulation training course at the Seattle station.

Mr. W. E. H. Carter, Toronto, reported lately upon two groups of mining claims in Porcupine.

Mr. R. W. Brigstocke passed through Toronto on his way to Montreal on August 23rd.

Mr. D. Lorne McGibbon has resigned from the Nipissing board of directors. No explanation has yet been vouchsafed. Internal dissension is the probable cause.

Mr. Walter Baelz, a German mining engineer connected with the Imperial Civil Service, is making a tour of inspection through Canada. Mr. Baelz was in Porcupine at the time of the fire, and there lost nearly all his baggage. He is at present in western Ontario.

Mr. H. W. Hardinge has just returned to New York from an extended trip in the west, and expects to go to Europe on professional business next month.

Mr. Duncan McMartin is the Conservative nominee in Glengarry, his place of birth. Mining men are needed in Parliament .

Mr. Reginald Hore, Houghton, Mich., has been examining mines near Kenora, Ont.

CORRESPONDENCE

Editor CANADIAN MINING JOURNAL:

Sir,—In your issue August 1st, there is an editorial entitled "Geology and Mining." I wish to take exception to several points in that article. In the first place the editorial implies strongly that the geologist should not report upon mines, and that he is not qualified to do so. Here you are wrong. The best mining men I know have begun their careers not as operators or managers, but as geologists. The width of view and the habit of close reasoning that characterize the geological training can not be got in any other way.

Again, I believe that the mine manager, or the operating mining engineer is too often poorly fitted to give any opinion at all upon geology. His point of view is narrower and far more specialized than the geologist's.

I hope that you will be able to see that there are two sides to the question.

Yours, etc.,

J. C. C. L.

PALLADIUM FOUND, NOT PLATINUM.

Editor CANADIAN MINING JOURNAL:

Sir,—Recently there was much excitement at Nelson, British Columbia, relative to an alleged discovery of platinum in a mining camp distant a few miles from that city. Undue importance was attached to the reported find and press despatches were sent out, giving wide publicity to the stated occurrence of the metal mentioned. It transpires, however, that the excitement was premature, and the statements published somewhat extravagant.

The first report was, in part, as follows: "An event which is likely to prove of far-reaching importance in the history of mining in the Kootenays, is the discovery of the platinum group of metals which has been made by A. Gordon French, the eminent metallurgical chemist, while investigating for the best means to obtain fuller results from the treatment of the ores from the Granite-Poorman mine. The discovery was made while Mr. French was examining the float gold and slimes caught by means of a new process, invented by him to meet the requirements of the local ores. . . . The platinum group consists of six metals, and of these Mr. French has identified five. . . . as follows: Platinum, iridium, palladium, rhodium, and osmium. Results from a great many trial assays made by Mr. French show highly payable quantities of these metals, especially in platinum and iridium."

Other similarly highly-coloured reports were published, until warning was given that the mining industry of the district must eventually suffer from a reaction should such an unwarranted course be persisted in, and those responsible for the exaggeration were checked and desisted from their folly.

With the object of preventing "wild-catting," E. R. Widdowson, an assayer of years of local experience, and holding the provincial certificate of efficiency requisite for those practising assaying in British Columbia, informed the Nelson Daily News that "palladium is the predominating metal of the platinum group discovered here by Mr. French. It is obtained from a serpentine dike which is probably an alteration of a peridotite dike. The dike material varies in colour from a dark green to a dark yellow, and is so soft that it can be mined with a pick. The metal is a hard silvery white substance, but is not visible in any of the ore I have assayed. In all, I have made some 50 or 60 determinations for palladium, and the other rare metals, for my various clients, and I am well able to confirm the presence of the metals discovered by Mr. French. However the find may turn out commercially, I think the thanks of the mining community are due to Hr. French for the careful research work he has carried out and is continuing at the present time."

Later in the interview, from which the foregoing is quoted, Mr. Widdowson said: "I can safely say that the metals are present and that I believe they are in sufficient quantities to be of commercial value when a satisfactory method of treatment shall have been decided upon. The various interests are at present going fully into this branch of the question, and no doubt before long a process will be discovered which will extract the metals on a commercial scale."

Since the interview with Mr. Widdowson was published I have ascertained that the investigations had been going on during several weeks before the newspaper man indulged in his hyperbolics. The results obtained by local chemists were confirmed by others in the United States, so that the occurrence here of palladium has been definitely established. The value of the discovery commercially has yet to be determined.

Victoria, B. C., August 16, 1911.

E. JACOBS.

RECIPROCITY AND THE MINING INDUSTRY

(Written for the CANADIAN MINING JOURNAL by A. B. Willmott.*

Now that an election on the reciprocity issue is near at hand, it seems opportune to consider the effects which the proposed changes will have on the mining industry. In the table below all the changes that affect the mineral industry are given.

Import Duties on Products of the Mine.

Article.	Imports into Canada Present Rate	Imports into Canada Proposed Rate	Imports into United States. Present Rate	Imports into United States. Proposed Rate
Asbestos, crude	20 p.c.	Free	Free	Free
Asbestos, ground	25 p.c.	Free	25 p.c.	Free
Asbestos further manufactured	25 p.c.	22½ p.c.	25 p.c.	22½ p.c.
Cement per 100 pounds	12½c.	11c.	8c.	8c.
Coal, slack, per short ton	14c.	14c.	13.4c.	13.4c.
Coal, bituminous, per short ton	53c.	45c.	40.2c.	40.2c.
Coke	Free	Free	20 p.c.	Free
Feldspar, crude	Free	Free	Free	Free
Feldspar, ground	Free	Free	20 p.c.	Free
Fluorspar, crude, not ground, a ton	Free	Free	$3.00	Free
Grindstones, not mounted, per cwt.	15-25 p.c.	5c.	8¾c.	5c.
Gypsum, crude, not ground, per ton	Free	Free	30c.	Free
Iron ore, per long ton	Free	Free	15c.	10c.
Mica unmanufactured	Free	Free	5c. lb. and 20 p.c.	Free
Mica, ground	20 p.c.	Free	20 p.c.	Free
Mineral Waters, not bottled	Free	Free	8c. gal	Free
Oxide of iron as a colour		22½ p.c.		22½ p.c.
Paving stone and paving brick	22½ p.c.	17½ p.c.	25 p.c.	17½ p.c.
Salt in bulk, per ton	$1.00	Free	$1.40	Free
Salt in packages, per ton	$1.50	Free	$2.20	Free
Salt cake, per ton	Free	Free	$1.00	Free
Soda ash, per lb.	Free	Free	¼c.	Free
Slate, roofing, per 100 square feet	75c.	55c.	20 p.c.	55c.
Stone, building, undressed	15 p.c.	12½ p.c.	10c. c.ft	12½ p.c.
Talc, ground	Free	Free	35 p.c.	Free

A study of this table shows that there are no very startling changes. The most striking are the reductions on cement, coal, and salt when imported into Canada, and the reduction on coke and gypsum when imported into the United States. In considering the changes, the view-point of the writer has been that of the Canadian producer of minerals. Changes in the tariff may benefit the producer by enlarging his market or decreasing his cost of production. Per contra, the changes may be injurious by decreasing the market or increasing his cost of production. Many changes may have little effect either way. As there have been no changes in the import duties on dynamite, machinery, drill steel, and other items entering into cost of production, there has been neither benefit nor injury from the operating standpoint. The only exception is that in the case of coal, producing mines in the Province of Ontario will benefit to the extent of 8c. a ton on the coal consumed, which may amount to some thousands of dollars a year in the aggregate.

Beneficial Changes.

COKE.

Coke is produced in the Provinces of Nova Scotia, Alberta and British Columbia. That of Nova Scotia is consumed in the steel industries of that province and none is exported to the United States, there being no smelter industries in the New England States. Alberta and British Columbia sold in Canada in 1909, 291,453 tons of coke, which were consumed by the lead and copper smelters of British Columbia. In addition there were marketed from these provinces in the United States 77,407 tons. The Crow's Nest Pass district produces the best coke west of Pennsylvania, and so it has been sought by the copper smelters of the Northwestern States, because of the lower freight rates and in spite of the American duty. It is probable that the abolition of the United States import duty of 20 per cent. may extend somewhat the area over which this coke can be marketed.

GYPSUM.

By the proposed agreement the American import duty on crude gypsum is reduced from 30c. a ton to nothing, while the duty of ground gypsum remains the same at $1.75 In 1909 the production of Canada was as follows:

Crude. . . . . 423,474 tons, worth per ton, $1.08
Ground . . . . . 8,814 tons, worth per ton, $2.97
Calcined. . . . . 40,841 tons, worth per ton, $7.99
Total 473,129 tons, worth $809,632.

Of this amount the exports amount to 315,201 tons of crude, almost entirely from the Provinces of Nova Scotia and New Brunswick. Ground and calcined gypsum were not exported, and cannot be, owing to the high rate of duty. Canadian exporters will probably reap the benefit of this reduction of 30c. a ton,

*Consulting Mining Engineer, Lumsden Building, Toronto.

and one would expect will extend their markets.

MICA.

In 1909 the United States imported in all 403 tons of mica. Of this, 167 tons were sent by Canada, valued at $133,000, and on which a duty of 5c. a pound and 20 per cent. was paid. Canadian producers will henceforth have a perference in American markets by the abolition of this duty and should extend their sales as well as receive more for their products.

TALC.

There is in Canada one mine producing talc, and one mill grinding it. The production in 1909 was 4,350 tons, valued at the mine at $10,300. The ground product is consumed largely by the paper trade of Canada, though small amounts have been marketed in Great Britain and the United States. The reduction of the import tariff of the United States from 35 per cent. to nothing will undoubtedly enable this mill to increase its sale in the United States.

Injurious Changes.

CEMENT.

In 1909 Canada produced cement valued at $5,346,000, which constituted 97 per cent. of the Canadian consumption. From the United States was imported cement to the value of $51,222, and from Great Britain to the value of $104,060. There were 22 plants in operation, with a capacity of 50 per cent. above the Canadian requirements. These requirements, however, are rapidly growing and in a couple of years may overtake the capacity of the mills. The reduction on the import duty from 12½c. to 11c. per 100 pounds will, however, tend to increase the importations and so limit the possible markets for Canadian producers. It should also be noted that one of the chief items in the cost of manufacturing cement is fuel, and that the 14 plants located in Ontario are paying 53c. a ton duty on all the coal they use. This is sufficient reason why they should have a higher protection than the American plants, which have the advantage of duty-free fuel

COAL.

Coal is produced in Canada in the Provinces of Nova Scotia, Saskatchewan, Alberta, and British Columbia. The Nova Scotian coal is marketed in the Maritime Provinces and the St. Lawrence Valley as far west as Montreal. Ontario and Manitoba procure their steam coal from Pennsylvania. Saskatchewan has supplies of lignite for domestic purposes and procures its steam coal from Alberta. Alberta and British Columbia have their own supplies of excellent steam coal.

Owing to the American duty of 45c. a long ton, Nova Scotia coal is shut out of the New England market, which it could otherwise reach. This coal is, however, shipped by the St. Lawrence as far as Montreal, where it begins to meet Pennsylvania coal. The reduction of the Canadian import duty from 53c. to 45c. a short ton will undoubtedly make the competition for the Nova Scotia miners in the St. Lawrence Valley much more difficult. Their market will practically be restricted by the terms of the pact, no compensating advantage in the New England market being given them, as the American duty remains unchanged.

Alberta and British Columbia have in the Crow's Nest Pass some of the best coal on the continent, the market for which is at present not large. The companies operating there would welcome a very substantial reduction in the American duty, as it would enable them to ship large quantities of coal southwards into the United States. They would even welcome absolute free trade in coal between the two countries, a policy to which the Nova Scotia operators are quite opposed. The latter argue, and quite properly, that free trade in coal would cause them the loss of the Quebec market, for which they have spent large sums of money in terminal plants for handling. They would at once be compelled to abandon these plants and construct similar ones in New England and would have to spend, in addition, large sums of money in building up a new trade. All of this might be lost through the sudden cancelling by the United States of free importation.

The proposed arrangement has done nothing to increase the markets for the western operators and has without any compensating advantage lessened the market for the eastern producers. It would seem that a true reciprocity would have brought about a reduction of 8c. a ton on the American duty as well as on the Canadian. The loss of the Canadian trade in the St. Lawrence valley would then have been offset by a gain for the Canadian producers in the Crow's Nest Pass district.

SALT.

Last year Canada imported from the United States 81,900 tons of salt, and exported to them 683 tons. Salt is imported free from Great Britain and free from all countries when used in the fishing trade. 61 per cent. of the Canadian consumption is imported and 39 per cent. produced in the counties of Ontario bordering on Lake Huron. There is here a large area underlain by salt of the finest quality, but it finds a limited market in Ontario and Manitoba alone. The eastern provinces and Quebec are supplied by Britain, and all brought in free of duty on merely nominal freight rates by vessels seeking a return cargo from Britain.

Under the proposed free exchange of salt the Canadian producer is bound to suffer severely. One of the chief items of expense in producing salt is the evaporation of the brines. The Canadian producer pays 53c. a ton duty on his coal which the American across the Detroit River receives free. Further in the vicinity of Bay City waste slabs from the saw mills provide the necessary fuel. There are good reasons why the import taxation on coal should be kept up. One of these is that this country requires large sums of money for running expenses and there is probably no easier or more equable form of taxation than one on coal. The transportation companies and manufacturers are the original payers, and through them it is distributed fairly equally over all classes of the community. But if the salt producers, cement producers, and other mining industries are called on to pay this coal taxation they should be given compensating protection for their own products.

SALT CAKE.

One of the most natural industries for Canada would be the development of the alkali trade. The raw material for this is salt, which exists abundantly in western Ontario and is so located that the materials of production can be cheaply assembled. The consumption in 1909 was as follows:

Soda ash	30,560,464 lbs,, valued at	$249,882
Salt soda..	11,318,633 lbs., valued at	106,440
Sulphate of soda	1 961,561 lbs.,valued at	7,511
Total value		$363,933

Some years ago a plant was established at Sault Ste. Marie, Ont., well equipped and able to produce and sell these commodities in Canada at the current market prices in the United States. As soon as this plant was in operation the American alkali trust cut the prices until they finally succeeded in destroying the business, and the plant was dismantled. Mr. Fielding was appealed to to put a small duty on the production of this plant, sufficient to give it the Canadian market, which market it was willing to supply without any advance in the usual market prices. This protection was refused, and after the plant was dismantled American prices were advanced to the usual point.

Under the proposed arrangement alkali products are put permanently on the free list and the possibility of building up this industry in Canada is practically annihilated.

Inconsequential Changes.

The other changes proposed do not appear to be of much value to the Canadian producer, either one way or the other. Ground asbestos is reduced from 25 per cent. to nothing, and manufactured asbestos from 25 to 22½ per cent. The United States produces no asbestos and this may allow of a little ground asbestos being exported. The United States takes our crude asbestos free and still maintains the prohibitory tariff of 22½ per cent. against manufactured articles.

FELDSPAR.

The reduction of ground feldspar from 20 per cent. to nothing is not likely to induce the establishment of any mill in Canada for grinding. As the market for ground feldspar lies almost wholly in the United States, and as the treaty may be abrogated at any time, a manufacturer preparing to grind feldspar will almost certainly put his mill on the American side of the line.

FLUORSPAR.

This material is at present not produced in Canada, though there is a considerable market here. One promising prospect is known which may be able to supply the Canadian market. The admission of crude fluorspar from the United States free of duty will prevent the development of Canadian deposits and will therefore work as much harm to Canadian industry as the opening of the American market will bring benefit.

GRINDSTONES.

Nova Scotia and New Brunswick produced last year 4,275 tons of grindstones, valued at $54,664. Of these, stones to the value of $13,451 were exported to the United States, and Canada (mainly Ontario and Quebec), imported from the United States grindstones to the value of $66,922. The maritime provinces may possibly extend their New England trade slightly by reason of the reduction in duty, and will lose a corresponding part of their trade in Quebec.

IRON ORE.

The reduction in duty on iron ore passing from Ontario to the United States of 5c. a ton, is not likely to increase the exportation of that commodity by a single ton. Ontario consumed in 1909 543,000 tons of foreign ore and 220,000 tons of Ontario ore. The exportation amounted to 43,000 tons, or one-thirteenth of what was imported. As there is no probability of Ontario meeting her own requirements for years, the advantage of an export market is slight. Iron production in other provinces of Canada is practically nil.

MINERAL WATERS.

The reduction in the import duty of the United States on unbottled mineral waters from 8c. a gallon may induce a slight export trade. Bottled mineral waters are now admitted into both countries at the rate of 17½ per cent.

ROOFING SLATE.

The Canadian duty on roofing slate has been reduced from 75c. per 100 square feet to 55c., and the American duty from 20 per cent. to 55c. The only Canadian quarry is located in Richmond County, Quebec, from which last year 4,000 tons, valued at $19,000, were produced. The imports in that year amounted to $72,000 from the United States. As the Canadian producer was quite unable to take care of his own market one fails to see how the change in tariff rates can be of any advantage to him. Besides this, the reduction of the Canadian duty will discourage the development of the slate deposits that have been recently found near Haileybury.

PAVING MATERIAL.

Last year Canada imported from the United States paving blocks of the value of $58,335. As the total exports from Canada to all countries of all kinds of stone, wrought and unwrought, amounted only to $59,000, the amount of paving blocks exported must have been very small. The reduction on the import duty should increase the market for the American producer and with no corresponding increase for the Canadian producer. Imports into Canada of paving bricks amounted in value to $101,000, and there were no exports. The Canadian reduction in duty will probably here also increase the market for American material and discourage further Canadian production.

BUILDING STONE.

In 1909 we imported from the United States building stone to the value of $102,000, and exported to them similar material worth $27,000. The mutual reduction in duties will probably result in advantage to the American producer and discourage Canadian production.

Sins of Omission.

An impartial consideration of the proposed arrangement would seem to indicate that the Canadian mineral industry will receive no great advantage. On the other hand it may suffer considerable loss. The changes are not large, and while some are benefitted, and some injured, the industry as a whole is left about as it was.

One cannot help regretting, however, that the opportunity was not taken to bring about changes which would have been of the greatest value to the industry. For instance, the zinc producers of British Columbia, who have large and valuable deposits of zinc, are suffering severely because of being shut out of the American markets. The American import rate is a variable one, but on the material which would have to be shipped is at the rate of 1c. a pound, or about 20 per cent. on the value of the refined material. This is a prohibitive rate. As Canada accepts American metallic zinc free of duty it would have been a fair thing to have asked them to have accepted our raw ore free. This would have been a true reciprocity.

Again, cobalt oxide is subject to a heavy duty going into the United States, while our cobalt ores are accepted free of duty. This militates against the five Canadian smelters engaged in treating cobalt ore and tends to make it more advantageous to ship ore to the United States for treating. The Government could have fairly insisted that a true reciprocity would have admitted not only cobalt ore but the refined product

free into the United States, particularly as we receive back the refined metals free of duty.

The same conditions of affairs applies to the large nickel industry centering around Sudbury. The United States has no nickel mines of its own, and receives Canadian nickel ore and nickel matte free of duty. It puts, however, a duty of 6c. a pound (which is a prohibitive rate) on refined nickel, and so prevents the establishing of a nickel refining industry in Ontario. We take back from their refiners metallic nickel free of duty. A fair reciprocal deal would be the abolition of the American import duty on metallic nickel, thus giving the opportunity for the establishment of a nickel refining industry in Ontario. This question has been up for consideration before, but usually with the idea of compelling the refining of nickel ore in Canada by means of an export duty. This is perhaps a questionable policy, but there can be no doubt about the fairness of allowing a nickel refiner to operate in Canada on the same terms as in the United States.

On lead ore the Americans place a duty of 1½c. a pound, which effectually prevents the operating of many British Columbia mines. Here, also, we are taking back from the United States metallic lead made from our own ores at a low rate of duty. It would have been of the greatest advantage to our lead producers if lead ore could have been placed on the free list.

In New Brunswick and Nova Scotia two promising antimony mines have been operated, but the Canadian market is limited. The American duty on metallic antimony amounts to 1½c. a pound, while it is received into Canada free of duty. The removal by the Americans of this import taxation would have been of great advantage to the producer.

Corundum ore is admitted free into the United States, whereas the ground product is taxed $5 a ton. Owing to freight rates, it is necessary to concentrate this material at the mine, and so the bulk of the exports from Canada pay a heavy taxation. The reduction of the rate on corundum would have been of very great advantage to the producer.

Crude graphite is admitted into the United States free of duty, but the partly manufactured material is taxed at the rate of 20 per cent. Here also is exemplified the usual attitude of the Americans, who are willing to take our raw material but strive in every way possible to put the industries dependent on these raw materials in their own country.

Crude barite is subject to an American duty of $1.50 a ton, whereas the manufactured article pays $5.25 a ton. The abolition of this duty would lead to a large industry in Canada.

A consideration of the very numerous ways in which the tariff might have been changed to the advantage of the Canadian mineral producers leads one to criticize adversely the changes which have been made and the methods by which they were brought about. No two ministers of the Crown, no matter how clever, could known the details of the mineral industries of Canada, far less of all the industries of the country. Sir Wilfrid Laurier was perfectly right when he declared that no changes would be made in the tariff until the question had been considered by a commission. A serious mistake was made in allowing the matter to be dealt with by two men who were without adequate advice. It seems that in a few cases personal friends of the ministers advised them on a few items. The great majority of the men engaged in the mining industry were entirely unconsulted as to the changes that ought to be made. The agreement and the method in which it has been brought about, reflect no credit on the commissioners, nor do they accomplish for the mining industry what they might have done.

TIN AND TOPAZ IN NEW BRUNSWICK

Written for the CANADIAN MINING JOURNAL by
R. W. Brock.*

Topaz and tin have been found by the Geological Survey near Burnthill brook, southwest Miramichi River.

Molybdenite in small amount in quartz veins has long been known to occur at this point, being noted in the reports of the Geological Survey for 1866-69 (page 206), for 1879-80 (part D, page 45), and in Vol. XIV. (page 206A).

Last summer the locality was visited by Dr. T. L. Walker for the Mines Branch of the Department of Mines, who found that wolframite, as well as molybdenite was a constituent of the veins.

Last winter Mr. Lodge, of Moncton, and Mr. Frieze, of Doaktown, who took up a mineral location at this point, sent in specimens from their claim, which on examination by Mr. R. A. A. Johnston, mineralogist of the Survey, were found to contain topaz as a gangue mineral with the quartz. The crystals were weathered. Some were fairly large, exceeding an inch in length and three-quarters of an inch in diameter. Except as a microscopic constituent of a British Columbia granodiorite, this was the first known occurrence of topaz in Canada.

As there seemed a possibility that tin might also be found with such an association of minerals and that fresh crystals of topaz might be clear and of gem quality, I recently availed myself of an opportunity to spend a day or two at the occurrence. It is reached from Boiestown, on the Fredericton branch of the Intercolonial Railway, by driving about nine miles to Campbell Settlement, and a day's poling up the southwest Miramichi in a canoe.

The rocks are argillites, considered by Bailey and Ells to be of Cambro-Silurian age, that have been invaded by a granite batholite. Along the contact of the granite the argillites are metamorphosed to spotted schists and hornfels.

Granite porphyry and aplitic dykes form the country rock. A few basic lamphrophyres were also seen, but at least some of the latter are old-

*Director Geological Survey.

er than the granite, as the quartz veins run uninterruptedly through the basic dykes.

Within the highly metamorphosed zone of the sedimentaries which forms a border, roughly half a mile or so wide, along the granite contact, the mineral bearing quartz veins are developed.

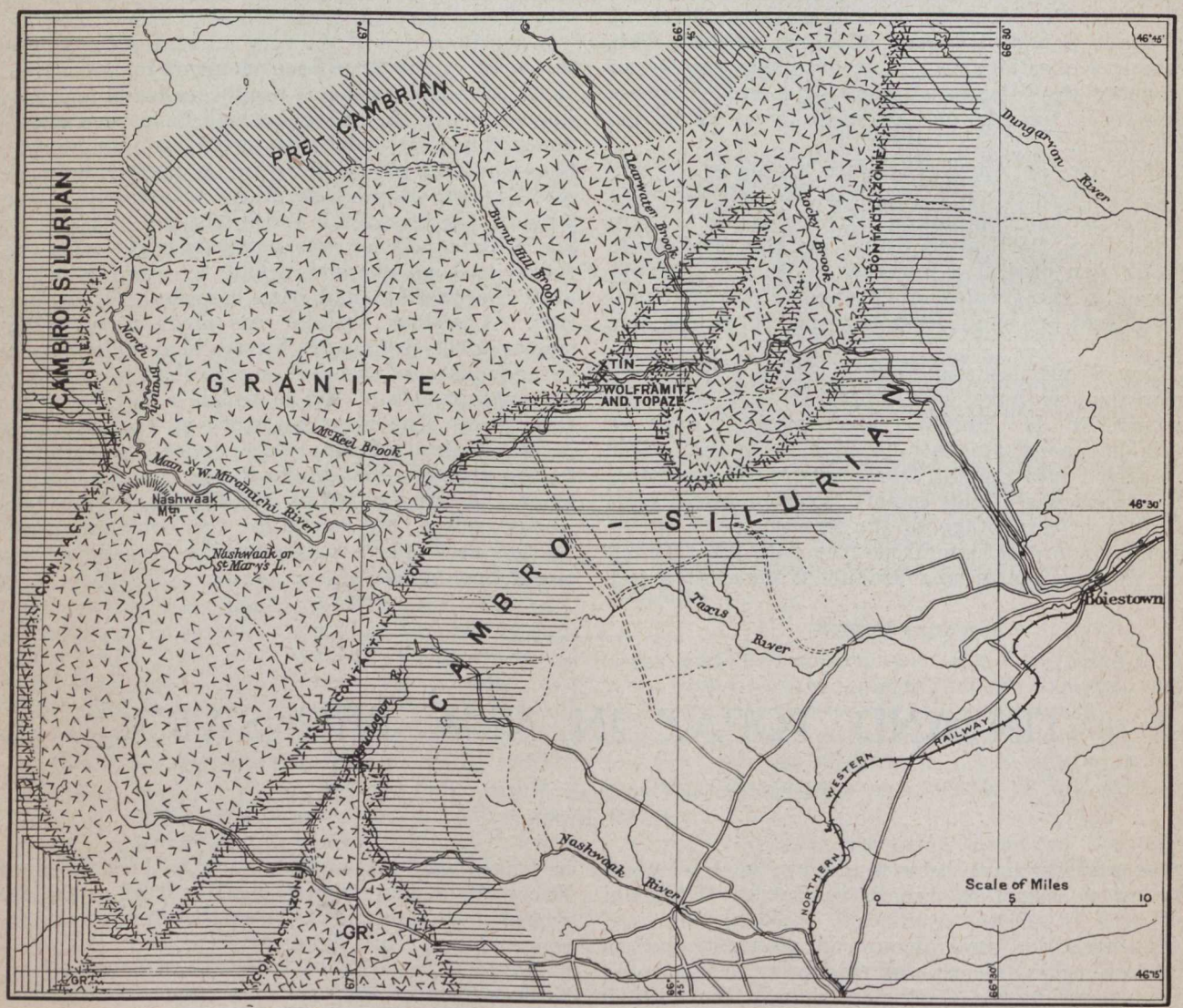
About Burnthill brook the veins appear to be best developed and most highly mineralized on the side-hill facing and opposite the mouth of the brook. Near the granite contact, which crosses the brook about a quarter of a mile from its mouth, veins do not seem so numerous nor so well mineralized.

The strike of the country rock varies somewhat but is about N. 67 deg. E.* dip 55 deg. N. Both the sedimentaries and the granite are heavily jointed, the joint planes having a direction of from N. 20 deg. to N. 40 deg. W.

Quartz is developed parallel to the strike of the schistosity of the sedimentaries and parallel to the joint planes. Parallel to the strike, the quartz is irregular, forming lenses and sending irregular stringers into the country rock. Between such stringers the country rock is often silicified. Parallel to the joint planes the quartz occurs in well defined, regular veins which can be traced in some cases for several hundred feet, but some can be seen to pinch out. Some inclusions of country rock occur in the veins and the wall rock is occasionally silicified, so that there has been replacement as well as vein filling. The majority of the veins are under a foot in width but at the point where the specimens were obtained last winter (they were mostly float), I had a vein uncovered for about 50 feet that averaged at least two feet.

On the east side of Burnthill brook, at its mouth, a mineral-bearing quartz vein is bordered by greisen, a rock consisting of silvery mica and quartz. The mica of the greisen, which is muscovite, is often segregated in bands. A little farther north is another vein in which greisen predominates. North of this, near the granite contact, I found a four foot dyke of greisen, parallel to the joint planes and the quartz veins. In it were a few quartz stringers and druses of quartz. It was in this greisen that I found tinstone (cassiterite). There is, therefore, evidently a gradation from the greisen to the quartz veins, and the veins are clearly contact phenomena of the intruded granite. The following minerals were observed in these veins: quartz, muscovite, brown mica, feldspar, topaz, fluorite, wolframite, molybdenite, pyrrhotite, chalcopyrite, and cassiterite.

The quartz, which is milky and vitreous, is the chief gangue mineral. It occurs massive and crystallized in vugs and druses. Muscovite is most plentiful in



*Directions are magnetic.

the greisen but is also found in the typical quartz veins. The brown mica was seen in one of the quartz veins.

Feldspar was found in one of the banded quartz-greisen veins.

The topaz occurs in a great many, if not in most, of the quartz veins and in considerable quantity. It is most frequently found as crystals lining vugs and druses, but it also occurs massive. The crystals are microscopic to thumb-large in size. Little unweathered material could be obtained, and the topaz seen was mostly cloudy, or stained with iron oxide. Some crystals were almost milk white, but some small clear yellow crystals of gem quality were found. In one small vein a druse with a surface area of about eight square feet was completely coated with topaz crystals. The dark blue fluorite also occurs in druses but sparingly.

The brownish black wolframite occurs in considerable amount, usually more or less segregated into bunches which are commonly near the centre or along the edges of a vein. Although bunchy, it is sufficiently plentiful to warrant some prospecting. The molybdenite is less abundant. Its occurrence is similar to that of the wolframite.

The pyrrhotite and chalcopyrite are only sparingly present. The iron sulphide is later than the wolframite. The brown cassiterite was found in the greisen in small amount only, but it may occur also in the quartz veins.

The granite in the neighbourhood of Burnthill brook is for the most part drift-covered, but some is exposed in the brook itself. Some small quartz veins and pegmatite dykes were observed in it. The quartz veins were similar to those in the sedimentaries, but only molybdenite was observed in them. There is no reason, however, why tin-bearing greisen, or wolframite-topaz veins should not be found in the granite, especially in fractures near its contact with the sedimentaries, where pneumatotytic action would be as apt to occur as in the sedimentaries near the contact.

The district is one that is worth some prospecting. While one cannot yet state that it is present in commercial quantity, the wolframite is present in sufficient amount to warrant prospecting, and there is a chance that prospecting might reveal larger and richer veins. There is also a possibility of finding more tin. Greisen is notably a tin-bearing rock, and the association of minerals is favourable. Some topaz of gem quality would no doubt be found. The stone in the rough is not worth much, but it has some value.

While there are no roads, if a workable deposit were found, transportation would not be difficult. In winter supplies might be brought on the ice or a road would not be difficult of construction; in summer they might be floated on scows down the river from the National Transcontinental Railway and the products floated on down to Boiestown. The chief difficulty in prospecting is the paucity of rock exposures, the wooded nature of the country and the depth of wash and drift over much of it.

To prospect, the contact of the granite should be sought and followed, and prospecting carried on both in the granite and in the metamorphosed zone of the argillites. In the latter the strike of the rocks should be followed as the promising mineral-bearing veins are parallel to the joint planes at right angles to the strike. Where float is found in quantity the source is usually close at hand.

PROSPECTING THREE CENTURIES AGO

To Mr. W. F. Ferrier, of Toronto, the writer is indebted for the opportunity of glancing over, gloating over is the apter phrase, a beautifully preserved little volume printed in the year of our Lord, 1639.

The title page, a delightful example of Carolian type-setting, is so explicitly descriptive that I reproduce it here. Cold, modern print robs this title of half its charm; yet the naivete cannot be missed.

Here is the page:

A DISCOVERY OF SUB-
terraneall Treasure, viz.
Of all manner of Mines and Mineralls, from the Gold
to the Coale; with plaine Directions and
Rules for the finding of them in all
Kingdomes and Countries.
And also the Art of Melting, Refining, and Assaying
of them is plainly declared so that every ordin-
ary man, that is indifferently capacious, may
with small charge presently try the value
of such Oares as shall be found
either by rule or by accident.
Whereunto is added a reall Experiment whereby every
ignorant man may presently try whether any
piece of Gold that shall come to his hands be
true or counterfeit, without defacing or
altering the forme thereof, and more
certainly than any Goldsmith or
Refiner could formerly dis-
cerne.
Also a perfect way to try what colour any Berry,
Leafe, Flower, Stalke, Root, Fruit, Seed, Barke,
or Wood will give: with a perfect way to
make Colours that they shall not stayne
nor fade like ordinary Colours.
Very necessary for every one to know, whether he be
Travailer by Land or Sea, or in what Country,
Dominion, or plantation soever hee shall
Inhabite
Imprinted at London by I. Okes, for Iasper Emery,
and are to be sold at his shop at the signe of the
Eagle and Child in Paul's Church-yard next
Watlin-Street.
M D C XXX IX

What sublime assurance exudes from every line of this fascinating page! With what eager credulity the good subjects of King Charles must have proceeded to read, mark, and inwardly digest every hint of the way to wealth! Note the seductiveness of the wording—"so that every ordinary man, that is indifferently capacious, may with small charge presently try the value of such Oares." Was ever better phrase coined—"indifferently capacious"! The quaint priggery of it!

The ingenious author, one Gabriel Plattes, dedicates the child of his brain "TO HIS WORTHY FRIEND-

MASTER William Englebert Esquire, Health and Happinesse Temporal and Eternall, is heartily wished." In the course of the dedication we learn that the author desired to share with others his knowledge of the secrets of nature. "Also," he writes, "when I heard the manifold complainings of indigent people, of the hardnesse of the World, and of the difficultie of obtaining their livings: I have knowne many people of indifferent vertuous dispositions, for very want of meanes, to take in hand some actions which were not laudable." What a soul-searching confession!

The dedication concludes with a petition to William Englebert, Esquire, to cause the light of his countenance to shine upon the author, "your bounden Servant, Gabriel Plattes."

There follows a foreword addressed to the reader, a foreword as ingenuous, and as full of self-appreciation as one could wish. Gabriel Plattes explains his reasons for perpetrating the book. "Whereas" quoth he, "divers reasons have joyned together to move mee to take in hand this Taske: I will declare some few of those that may give the best satisfaction to the Reader, in this manner following. First, when I considered the great number of Treasure and riches which lyeth hidden in the belly of the Earth, and doth no good at all: and also the great benefit which might accrew to divers Kingdomes and Countries, by setting people on worke; . . " and so on. In praise of his own prospecting methods he has this to say: "I dare hazard a Wager of twenty to one, that there will be more good Mines discovered within seven years after the divulging of these Rules and directions, than hath beene in twenty-seven yeares before." How rarely modest is our good friend Gabriel Plattes!

There is a strong tincture of caution, however, in Mr. Plattes. He admonishes his readers not to risk everything in prospecting, and not to deem the "rules and directions . . . unpossible ever to faile: but rather to make this a part of his businesse, when hee shall come to such places as yeeld strong probabilities."

He then proceeds no longer "to stay the Reader with Preambles," and signs himself "Your hearty Well- wisher, G. P."

Like all of the chapters, the first is a strange admixture of common-sense, imagination, and superstition. One can see that the author was more than ordinarily observant. In his own quaint way he was part philosopher and part charlatan. He opens his discourse with what is intended for a study in geology, Chapter 1 being "a plaine Demonstration of the naturall cause of the generation and production of Mountaines and Mettals: whereby the Seekers may obtaine a good competent measure of Knowledge to guide them where to seek for the other External signes" of mineral deposits. By a beautiful process of reasoning it is shown that "there is no probability that any metalls can be generated neare unto the North and South poles of the globe, for those can by no meanes have any convenient Matrix for such a generating, being by all probabilities nothing but two Islands of Ice." To this effect the thesis is further developed: "Now whereas the North and South, by reason of their coldnesse, cannot suffer the said condensed Meteors to descend in forme of Water, but in the forme of Snow, Haile, or some substance of like nature, which there cannot melt in the superficies for want of heate, it is very probable that the new Accretion this way produced, doth presse downe still with its weight the said Islands of Ice towards the Center, where the centrall heate melteth it off continually, by which meanes the spherical forme of both Earth and Water are perpetually preserved." Thus we are asked to look upon the cumulative pressure of snow and ice at the poles as preserving the sphericity of the globe.

So confident is Mr. Plattes in his belief that only the mountains of the middle zones contain valuable metals, that he utters the following challenge: "And if any man be of a contrary opinion, I will not envie him; but as for my owne part, I will sell my Interest and hope of Mettalls in those places [this refers to the poles] for a Farthing, although I had a device that the cold there could not prevent my seeking for them."

It is now shown that "in Vallies and plaine Champion Countries, there is no hope" of finding mineral deposits. The reason adduced is that "the wombe of such earth is not apt for such a generation." Mountains, and mountains only, are to be prospected. And, touching the origin of mountains, the belief is expressed that they are the result of the action of water, "but whether this was done by Noahs Flood, or by the Sea in former Ages, is doubted."

result that no further work was done on these. On

Chapter 2 is practical. In it are given "the signes of Mines and Minerals, with the manner how to work to find the same." The first paragraph directs the prospector how to begin: "When we come to the Rocky and Craggy Mountaynes, the first thing we are to observe, is the barrenesse of them; For the more barren they are, the greater probability there is that they containe rich Mines and Minerals." The word "barren" evidently means absence of vegetation.

Next, the searcher is instructed to hunt for springs of water issuing out the said mountains. The water being found, it is to be boiled in a "new cleane pipkin," to the consistency of "thinne Oyle, but no so thicke as a Syrrup," When cold it must be placed in an "urinall" and set for three days in the coldest place that can be found. The reader is then enjoined "to observe it exquisitely what residence [residue] it yieldeth: if nothing settle but a black earth or muddle, it is a signe of COALES: if some part thereof shoot into Ice [crystallize], or a substance like Ice or Vitrioll, then to observe the colour thereof." If the colour be green, it is an evident sign of copper. If whitish, "then it may signify any other Mettall without exception."

J. C. M.

(To be continued.)

A press despatch sent out from Seattle, Washington, early in August was as follows: "One thousand tons of copper from the Guggenheim Alaska mines is being loaded on the steamer Protesilaus for shipment to Hamburg. This is the first consignment of Alaska copper for Europe." In connection with the foregoing, it will be recalled that the first through train carrying freight over the Copper River & Northwestern Railway left Kennicott, the interior terminus of the line, for Cordova, Prince William Sound, on April 6, last, loaded with 1,100 tons of copper ore from the Bonanza mine. This ore was shortly afterwards shipped from Cordova Bay by steamer to Tacoma, Puget Sound, Washington, distant about 20 miles from Seattle.

The Auriferous Ferro-Dolomites of California

By William H. Storms.*

There is a remarkable similarity between the gold-bearing ferro-dolomites of the now famous Porcupine district, of Ontario, Canada, and those of the Mother Lode of California. To such an extent is this true, that, in some instances it is difficult to distinguish in a hand specimen between those for Porcupine and those from the California localities. This makes the geology of these far separated regions of particular interest to geologists, mining engineers, and, in fact, to all who are engaged in mining in either region. A number of interesting and valuable contributions, descriptive of the Porcupine district, have appeared during the past few months in the CANADIAN MINING JOURNAL, and I believe a brief description of the ferro-dolomite veins of the Mother Lode of California cannot fail to be of equal interest at this time.

The gold-bearing belt of California extends in a northwest direction from the Mexican border, the entire length of the state, and beyond it into Oregon, but that portion commonly known as the Mother Lode is restricted to five counties in the east central part of the state, and within this area it possesses distinctive features that entitle it to be considered almost as a separate mineral province.

The impression commonly entertained by those unfamiliar with this world-famous gold-producing region is that the Mother Lode forms a great and continuous vein, or lode, which runs uninterruptedly through the country for several hundred miles. Such, however, is not the case. What is known in California as the Mother Lode is not confined to a single vein, nor is it really continuous throughout its length of over 100 miles, but occurs as a series of fissures of branching type, which have an approximate parallelism. These fissures are found cutting indiscriminately through the various kinds of rocks which happen to be in its course. Beginning at its southern end, it appears as a large outcrop of white quartz, near the site of the old village of Bridgeport, in Mariposa county. Bridgeport, together with many other of the towns of early days, is now merely a memory. This quartz outcrop occurs in clay-slate, and is near a large mass of granite, which sweeping down from the Sierra Nevada, cuts off the southeasterly extension of the earlier rocks. From this place in a northwesterly direction, through Mariposa and Tuolumne counties and extending into Calaveras county, the great dolomitic lode appears at frequent intervals, usually as a wide mass of dolomitic rock, which is undoubtedly of intrusive origin. In some localities the vein is but a few feet in width, but within a short distance swells to a hundred feet or more in width, with occasional branches into the country, one notable instance being found about a mile north of the Rawhide mine, in Tuolumne county. Often the composition of this dolomite is varied by the occurrence in it of a greater or less amount of iron carbonate, forming, then, the rock ankerite (ferro-dolomite). This rock appears in huge outcrops, often more than 100 feet, and from that up to 300 feet in width, being always accompanied by quartz in the form of veins, lenses, or masses of irregular shape. Generally the larger of these masses take the form of an elongated lens, which lies practically parallel to the strike of the Lode, these lenses being scattered throughout its width. The more prominent lenses are usually connected by smaller veins of quartz which cross the intervening mass of ferro-dolomite in varying direction. Very often, in fact nearly always, the entire mass of ferro-dolomite is a perfect network of quartz veins, large and small, with masses and stringers. Sometimes the smaller veins have a radial arrangement about a larger nucleal mass, branching out from it like the spokes of a wheel, though without any regularity as to separating distance.

The quartz being much harder than the dolomitic rock, has been better able to withstand erosive agencies, and as a consequence often forms wall-like outcrops of dazzling whiteness, conspicuous objects in the picturesque landscape. These huge outcrops of ferro-dolomite and quartz frequently appear as conical hills in the centre of the mountain valleys, or as ridges rising above the general level of the adjacent country. Among those of the first mentioned type are Mount Ophir, and Penon Blanco (white cliff), in Mariposa county; McAlpine hill, and Quartz Mountain, in Tuolumne county, and Carson hill, in Calaveras county. Typical ridges formed by the great ankerite and quartz vein are those near Coulterville, in Mariposa county, and Golden Rule Hill, Whiskey hill, and the Rawhide hill, in Tuolumne county. Numerous outcrops of the same material appear elsewhere, but usually these merely form a portion of a group of hills or ridges, not being particularly conspicuous. Outcrops of this material also occur in the northern part of Calaveras county, near San Andreas, and in Amador county, in the town of Jackson, where it outcrops for nearly a mile and then disappears to reappear in El Dorado county, nearly 20 miles away. There are several long intervals of this kind along the Mother Lode where the dolomitic vein is not seen for miles, though quartz veins are of frequent occurrence in these intervals, being in schists or slates.

Throughout the entire length of the Mother Lode, wherever the ferro-dolomite is found, it presents essentially the same characteristics, one of the most important of which is the almost constant occurrence of a bright-green micaceous mineral called mariposite. The colour is due to the presence of chromium, and not to copper, as was supposed in early days, considerable work having been done then on some of the claims in the belief that the ore was rich in copper. Serpentine very commonly occurs along the Lode, in irregular intrusive masses often of great size, and it is in the proximity of the serpentine that the mariposite is most abundant. There are large masses of dolomitic rock, however, in which little or no mariposite is visible. While the serpentine does not always accompany the dolomitic vein, it occurs at many places along the Mother Lode where no sign of the dolomite can be found. As a rule, however, they are both found in the same localities.

Aside from their geological interest, the economic features of these occurrences are of importance. In most of the mines the dolomitic mineral is auriferous, the gold occurring in both the "free state," and intimately associated with pyrite. It is usually more abundant in that which is intersected by numerous veinlets of quartz, but the dolomite is itself gold-

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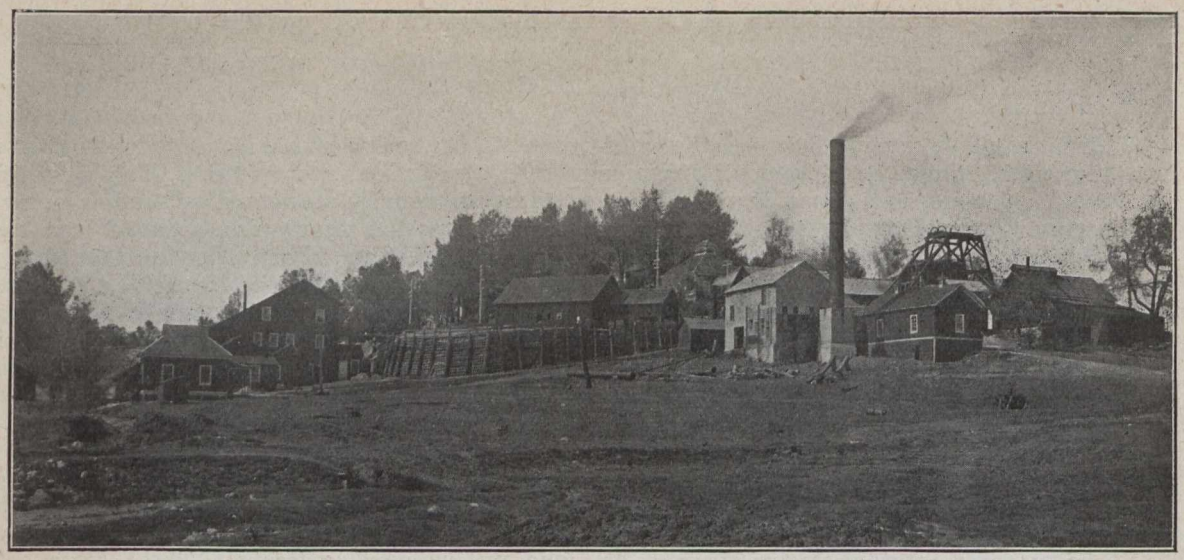


Rawhide Mine, Tuolumne County. California

bearing when little or no quartz can be seen. In value these ores range from the merest trace of gold up to thousands of dollars per ton. In the Rawhide mine, near Jamestown, in Tuolumne county, was found a shoot of ankerite a great deal of which contained from ten thousand up to over twenty thousand dollars per ton in gold. These were not hand specimens, but tons of astonishingly rich ore. Similar ore has been found in the App mine, at Quartz Mountain, about three miles south of the Rawhide. It is scarcely probable that these two instances are the only occurrences of rich ankerite along the Mother Lode. In many places the mineral constitutes pay ore, and in some of the mines it is the chief source of the gold. The quartz so commonly associated with the ferro-dolomite is usually gold bearing in all of the mines in which it occurs, but like its occurrence elsewhere, it is by no means always rich.

As to the origin of the dolomitic veins, there seems to be no doubt (as far as the California occurrences are concerned), that they are the result of the alteration of ancient basic dikes which were intruded into the slates and schists in which they are now found, and in most instances they are undoubtedly older than the other dike-rocks with which they are associated. These intrusives are principally diorite, diabase, various phases of granite (chiefly aplite), serpentine, and gabbro. It seems not unlikely that these great masses of ferro-dolomite may have originally been gabbro, or some similar rock. There are many instances along the Lode where the gabbros have been altered to serpentine, every stage of transition between the two rocks being found, but the serpentine for most part has evidently been derived from peridotitic rocks.

It is well known that a lime-magnesian carbonate, and a lime-iron carbonate associate themselves in many proportions to form ferro-dolomite, and for this reason the dolomitic lode presents many phases. In some instances the outcrop consists of great masses of red and brown iron oxide and quartz, as at the Pine Tree mine, in Mariposa county, and at Quartz Mountain, in Tuolumne county, while in other localities it appears as a gray, lustreless mass, with little sign of the presence of iron in any form. Again, it is bright and "lively," filled with scales of mariposite and minute veins of quartz. Usually the rock is rather coarse in texture, occasionally fine-grained, sometimes dull, sometimes glistening, like the surface of newly fractured marble.

Too little careful study has been given to the origin and the subsequent alteration of these great dolomitic masses, and we still have much to learn concerning them. Investigation of these deposits has thus far been almost wholly confined to the economic features, and it is, after all, the economic phase that makes the proposition attractive, for this succession of outcrops of ferro-dolomite and quartz constitutes one of the largest, and in many respects, one of the most interesting series of auriferous deposits in the world.

COAL AND GOLD ORES.

Coal and gold ores are not often found in close proximity, but the Rand is a notable exception. In the shallower portion of the Far Eastern Rand, between the Apex mine and the Welgedacht, the coal measures are found near the surface, and are underlaid by the auriferous banket beds. The coal measures also contain a small percentage of the yellow metal, and many years ago an attempt was made to recover this gold from the ashes. The recovery was, however, so very small as to be unpayable. At the Buffelsdoorn mine a small seam of coal was found in the banket bed.

SUGGESTED AUSTRALIAN EXPORT DUTY ON ORES.

For some time there has been an agitation in Australia for an export duty on crude ore, the contention being that the dear labour and high railway rates in Australia prevented the local smelters from successfully competing with foreign smelting works. An export duty would, it is contended, mean an increase in supplies to local works. But it would be adverse to the outlying districts, such as Whim Well. This mine, being near the seaboard, can ship its ore at a cheaper rate to European smelters than it would cost to ship to the smelters in New South Wales, and it costs much less to smelt on this side than in the colony. An export duty would, therefore, be such a burden on some mines that it might compel them to close down entirely.

McIntyre - Porcupine Mines, Ltd.

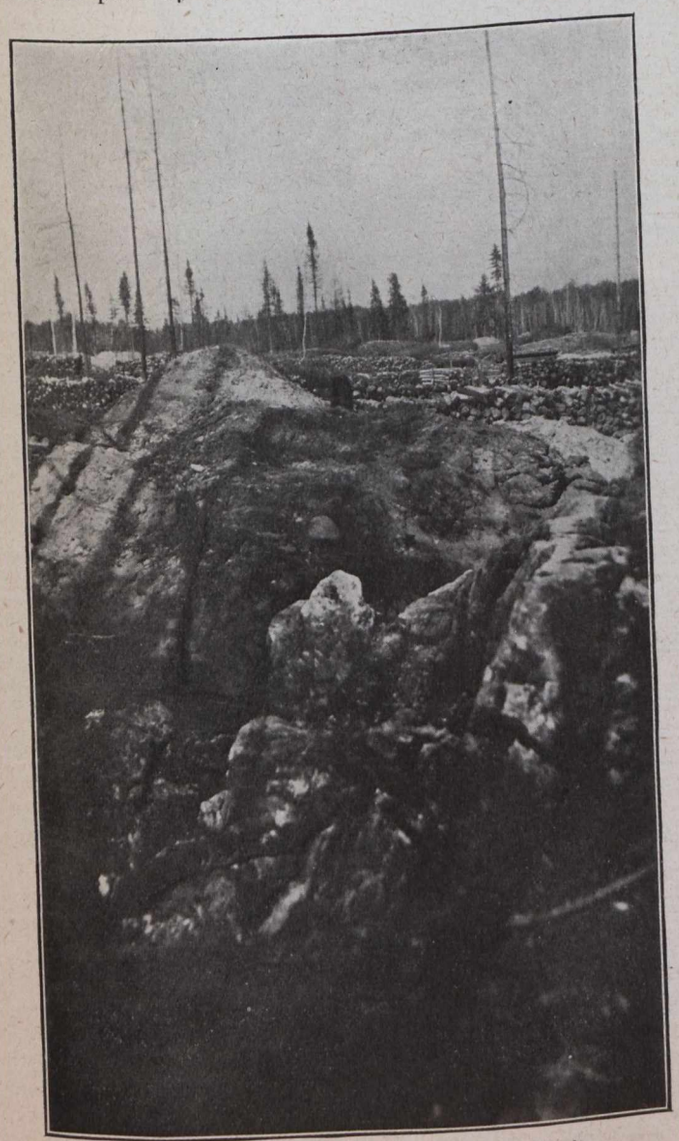
(Written for the CANADIAN MINING JOURNAL by V. H. Emery).*

The general location of the above property may be seen in the accompanying map, fig. 1, which is a reproduction on a small scale of a survey made of the district surrounding Pearl Lake. The map shows the location of the quartz outcrops, and the direction of the general strike of the veins in the district.

Geologically the McIntyre is situated in the much desired quartz-porphyry zone, which, as is shown in fig. 1, passes from the Hollinger through to the east end of Pearl Lake, the strike of which corresponds almost exactly to that of the veins. This quartz-porphyry intrusion has been greatly metamorphosed by pressure, giving it a schistose appearance, and in some places becoming quite talcy. At the south of this intrusion the rock is an amygdaloidal basalt, while in the north it is chiefly composed of basalt commonly called green-stone.

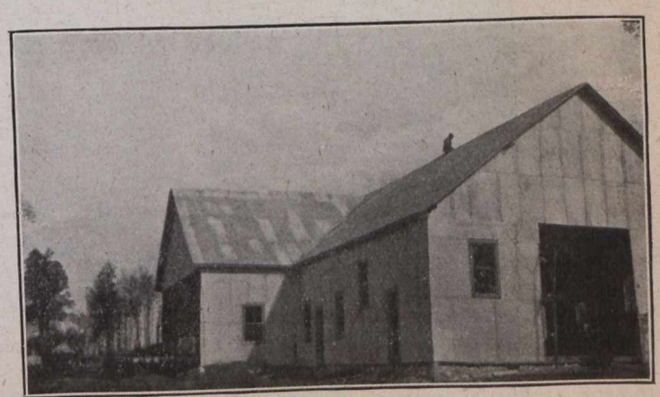
The surface development of the McIntyre may be seen in part by the accompanying photographs. A 12-drill compressor will be in operation by the first of September. The contract for a forty-stamp mill has been let, a portion of which it is proposed will be used for customs work for some time. The general process

General View McIntyre Camp, Porcupine.



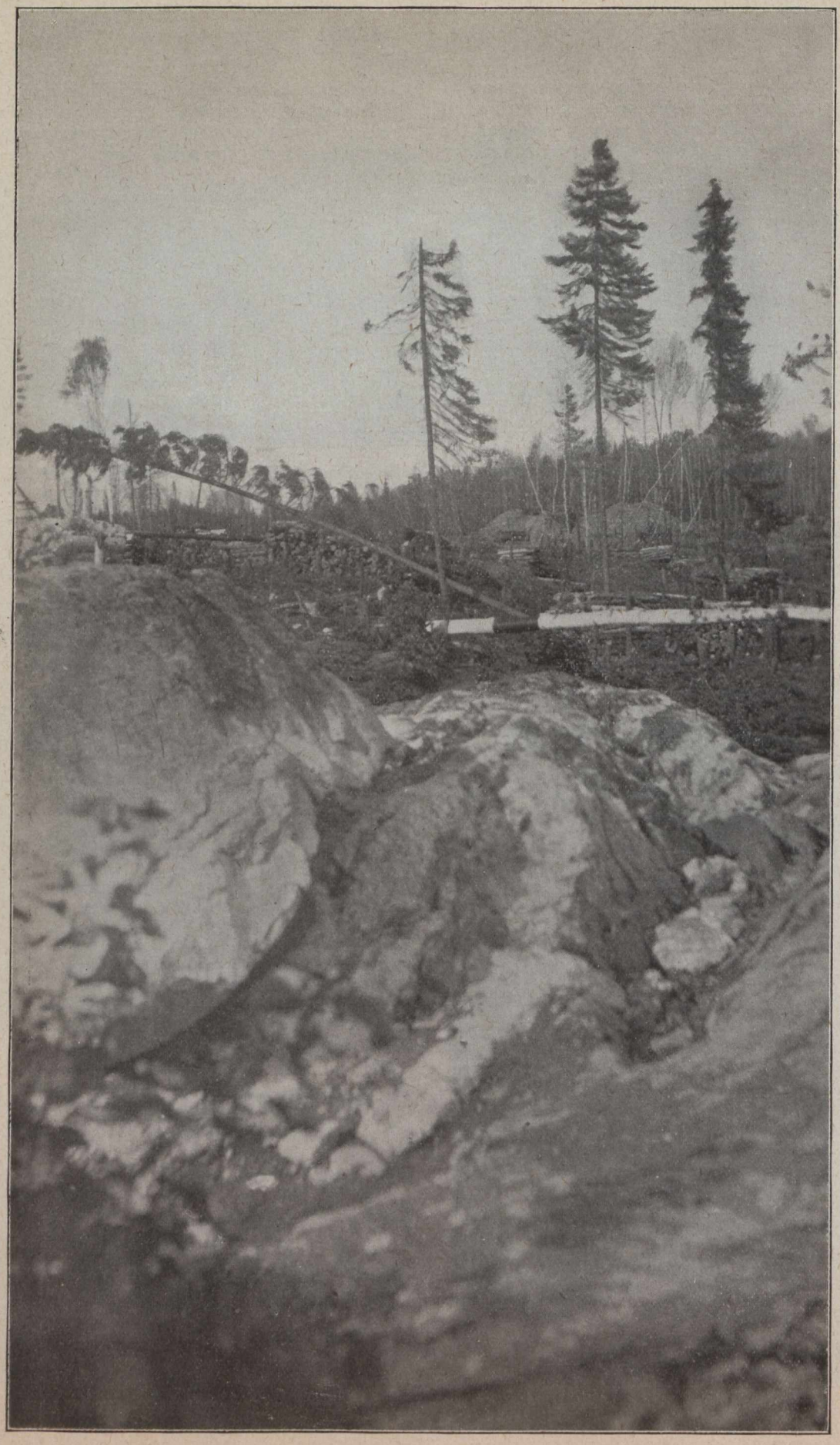
McIntyre No. 2 Vein, 200 Feet West of Shaft.

McIntyre No. 1 Vein.

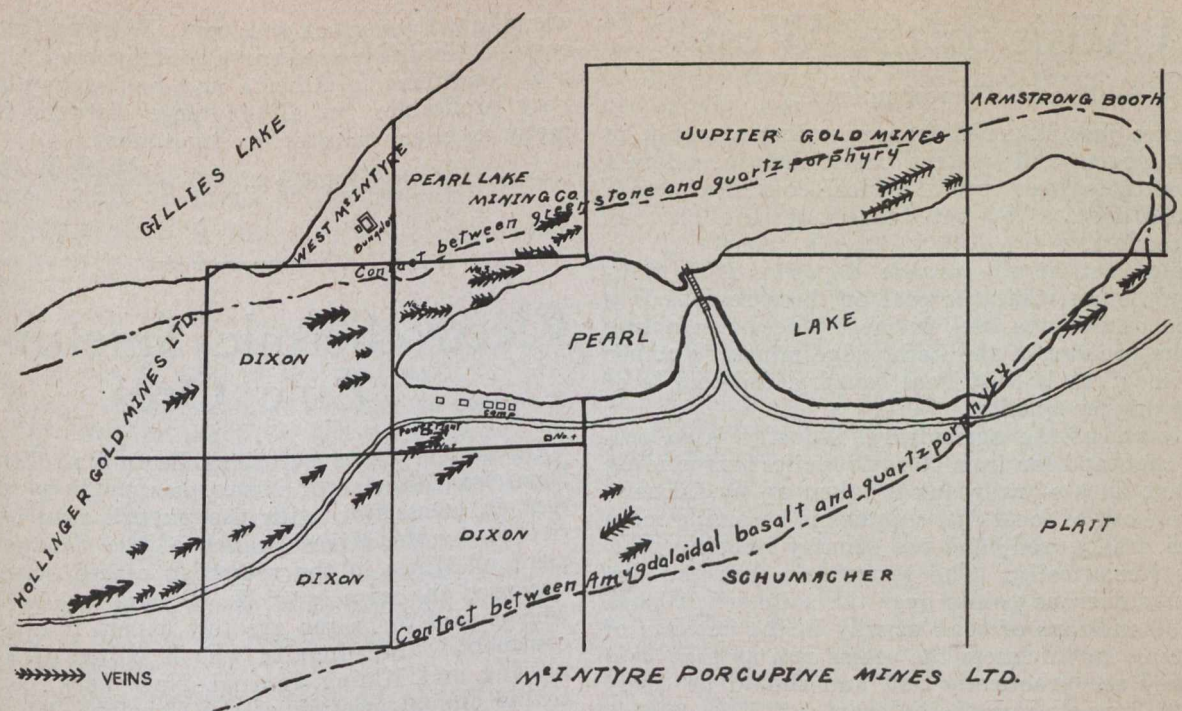


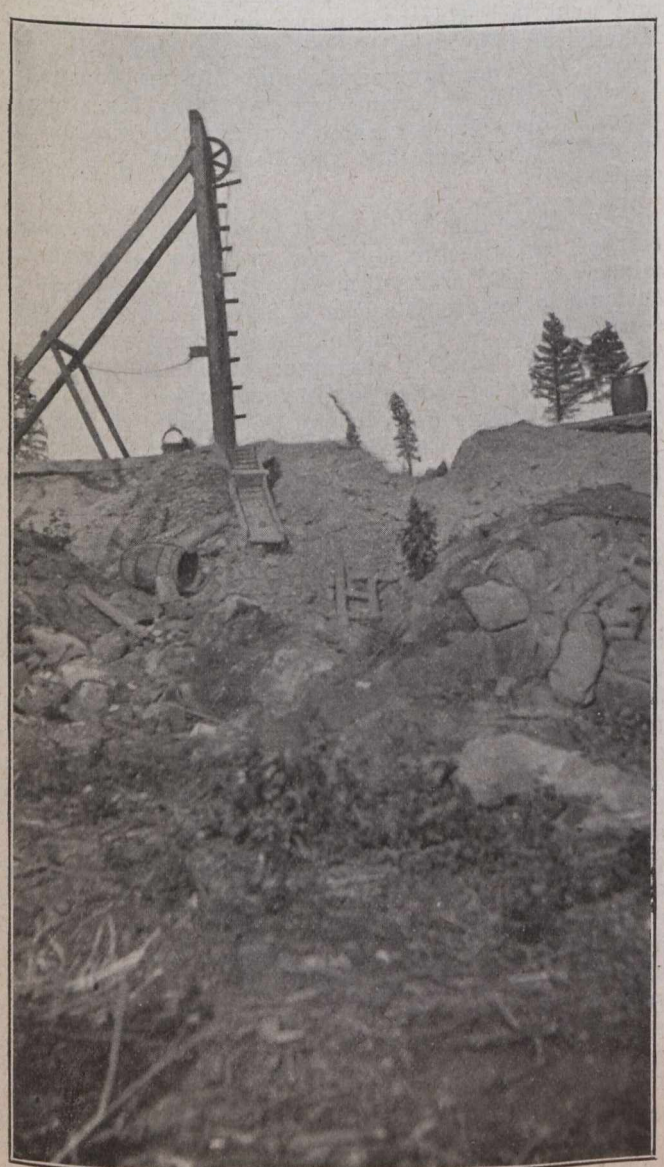
McIntyre Power Plant.

*Mining Engineer, Porcupine, Ontario.



Large Vein Uncovered on Dixon Line Running Into McIntyre.





McIntyre No. 2 Vein, Showing Dump.

of treatment of the ore will be amalgamation followed by cyaniding.

Considerable underground work has been done. Four shafts have been sunk on veins to depths from 75 to 100 feet, all of which have developed high grade ore. About 1,000 feet of drifting and cross-cutting have also been completed, which has in some instances opened up extremely rich ore shoots.

Two shot drills have been working continually since operations commenced, and a diamond drill for the past two months. In all nine holes have been drilled, some to considerable depths the result of which has been very encouraging. Large high grade ore bodies have been located at depths both under the lake and on the land property.

When the compressor commences operating, development work will be carried on at a very rapid rate, accompanied with systematic sampling, a thing that is essential in this district for determining the extent of pay rock in the schist, which in some instances extends from one quartz vein to another.

It is expected that by the time the mill is ready to receive ore that sufficient of the ore now located will be in readiness to keep it running at its fullest capacity.

THE SEARCH FOR PROMISING MINES.

Mr. Sidney J. Jennings, the vice-president of the United States Smelting, Refining and Mining Company, has stated that in the year 1910 an examination of the reports submitted resulted in the rejection of no fewer than 514 mining properties. A preliminary examination was made on 124 properties, with the 46 properties only was further work done, but only two of these were found sufficiently attractive to warrant purchase. These figures show the trouble involved in finding a suitable mine, and the large expenditure necessary to do so.

A Visit to the West

(Special Correspondence.)

As I have just returned from spending a month in southern Alberta and western Saskatchewan, where I had occasion to look into the local coal situation, I have jotted down a few notes that may be of interest to your readers.

Glancing first at the prairie deposits, it is well-known, of course, that the coal of these regions is a low-grade bituminous fuel, in most places resembling closely the product of the Lethbridge mines. Further west, in the Crow's Nest Pass country, the coal is of distinctly higher quality.

The growth of the agricultural industry is so pronounced that land for from 50 to 100 miles surrounding the present lines of railroads is taken up by farmers. Hence the need of local fuel supplies is becoming more and more pronounced; and the country is being prospected systematically. The result has been the discovery at numerous points over the southern Alberta prairies of outcrops of coal, usually in the bottoms of the coulees. In thickness the seams run as high as 9 feet. They are practically flat, and should be easily worked by tunnel from the outcrop.

These discoveries give some idea of the extent to which the prairie is underlain by coal measures. No doubt, deposits could be located at many points by shaft, if local conditions warranted the expense.

The point of my remarks is, however, that farming on a large scale, implying the use of steam-driven machinery, is creating a large demand for cheap fuel. Steam and gasoline engines are being used extensively already to break the land. The farmer pays as much as $15 per ton for coal laid down at the farm. Seldom does he pay less than $10 per ton for coal distributed by rail from the Lethbridge and Taber districts, and then hauled by team to the farm. Coal from Fernie and Cranbrook costs correspondingly more.

In some cases the farmer or rancher owns the mineral rights as well as the surface. In all cases a lease on the coal rights can be secured. Thus many farmers are producing coal on a scale sufficient to meet the requirements of themselves and of their immediate neighbours. Local sources of supply mean a saving of from 50 to 75 per cent. in the cost of fuel. Incidentally, the steam traction engine is more popular than the gasoline traction, because it is decidedly more fool-proof. It will be used exclusively wherever cheap coal can be obtained, and will replace the horse to a very large extent. The gasoline traction engine, on the other hand, is a constant source of trouble. The expense bill is so high that it is doubtful if the most competent mechanic can operate them to commercial advantage. Supplies and repair parts are exceedingly difficult to obtain, and the engine is apt to be put out of commission at any time.

It is probable within a few years many small coal workings will be opened all over the western prairies. Coal thus produced is always cheaper than that brought in by rail from the larger mines.

* * * * *

On my way east I stopped for a few days near the Manitoba-Ontario boundary to examine and report upon a gold mining property that has been quietly developing during the past two years. I would like to point out that in the excitement of eastern booms we are all apt to overlook the west. Western Ontario and eastern Manitoba are worth looking over. Study of coal conditions in Alberta and Saskatchewan is also very profitable. In all of these districts there are many excellent chances for investment.

W. E. H. Carter.*

*Mining Engineer, 85 Front St. East, Toronto.

Electrothermic Smelting of Zinc Ores.

On two or three occasions Hon. Wm. Templeman, Dominion Minister of Mines, has publicly mentioned that in connection with the experiments being carried on by the Mines Branch of the Canada Department of Mines in the reduction of zinc ores he had "secured the services of W. R. Ingalls, of New York, who is said to be the greatest expert in zinc on this continent." Mr. Ingalls, who is editor of The Engineering and Mining Journal, New York, contributed to the annual meeting of the Canadian Mining Institute held last March a paper on "The Problem of Mixed Sulphide Ores." The text of this paper was printed in The Engineering and Mining Journal of July 29. The following excerpt from Mr. Ingalls' paper is here given. After dealing with various methods of treatment that had been tried, Mr. Ingalls continued:

"For those places where it is desired to develop a market for miscellaneous ores, a place to which any miner can send and sell small outputs, or even an occasional lot of ore, it seems to be necessary to develop some system of pyrometallurgical concentration, or what may be roughly characterized as smelting. This idea is under consideration in some experimental work that is now being done by the Department of Mines of the Dominion of Canada. Along with that work, attention is also being directed to the subject of electrothermic smelting.

"The possible treatment of zinc ores in the electric furnace is not a new idea. Attempts to smelt zinc ore in such a furnace have been made from time to time during the last 25 years. In fact, the Cowles brothers, who achieved distinction in connection with the aluminum industry, were engaged in an attempt to smelt zinc electrically before they directed their attention to aluminum. The list of proposals for the electrothermic smelting of zinc is almost as long as those for the blast-furnace smelting of this metal, and those in the field of hydrometallurgy. At least two ambitious attempts at electric smelting on a commercial scale have been made. Both were failures, not only commercially, but also metallurgically. I am disposed to think that such metallurgical difficulties as have been experienced in the electric smelting of zinc ores can be surmounted, but even with this assumption I am by no means prepared to say, at the present time, that electric smelting would have any advantage over smelting in the standard way. My present view of electric smelting isofar as zinc is concerned, is simply that it is an unexplored field of metallurgy. In ploughing this field we may find something of value, but as to whether we shall or shall not, we cannot at present say."

Tentative Program and Rules

First National Safety Demonstration.

Under auspices of U. S. Bureau of Mines, American Red Cross Society, and Pittsburg Coal Operators' Association.

1. Non-competitive exhibition of skill in first aid to the injured in mines, to be held in Forbes Field, Pittsburg, Pa., October 27, 1911, 9 a.m. to 1 p.m.

2. Not more than one team of five men to represent any one coal mine, or the U. S. Bureau of Mines, or state mine departments, provided that coal mining companies operating more than one mine may enter additional teams representative of groups of miners, helpers, trapper boys, or other mine workers.

3. All persons entering to submit certificates showing that they are, or have been, bona fide mine workers.

4. All entries to close one month prior to date finally selected for the meet.

5. Coal companies entering teams to be invited to present, not later than one month in advance of meet, a list of five events as their choice, these to be submitted to the managers, who will select five for adoption from the various events suggested, each entering team to exhibit in those events suggested by them and such others of the five as they may elect. All teams to exhibit in unison.

6. Should any unusual or valuable events be suggested, the managers may increase the program by one or two such special stunts.

7. In addition to the five first aid events there will be a representation of a coal dust explosion, with rescue by helmetmen and first air treatment.

8. Exhibition of skill in adjusting and use of rescue apparatus by teams of four with a captain; entries to be as above for first aid teams.

9. Exhibition in use of fire extinguishers upon a fire by members of the rescut crews.

10. Souvenir badges of the American Red Cross, souvenir buttons of the U. S. Bureau of Mines, and souvenir programs to be presented to individual entrants; a souvenir first aid box to be presented to each team entering; a souvenir pennant with the name of the company sending entrant, and to be used on the field as a marker, to be presented to the company represented.

11. There will be introductory remarks by the Director of the Bureau of Mines and a member of the Executive Committee of the American Red Cross.

12. Presentation of souvenirs will be made at the close of the exercises in brief addresses by speakers of national repute.

Le Roi Mining Co. in Liquidation.

A meeting of shareholders in the Le Roi Mining Co., Limited (in liquidation), was held in London, England, on July 14 "to consider an offer which the liquidator has received for the purchase of the Canadian assets of the company." The Financial News' report of the proceedings follows:

Mr. A. J. McMillan (the liquidator), who presided, said that since the company went into liquidation last September he had been in negotiation with various parties in England and in Canada, but the offer made by the Consolidated Mining and Smelting Company of Canada, Limited, whose headquarters are in Toronto, Ontario, to purchase the Le Roi Company's Canadian assets for $250,000, was the best he had received, and he recommended that it be accepted. The offer provided for the payment by the Consolidated Company to the liquidator of the Le Roi Company of $250,000 for the Le Roi mine and the mineral claims adjacent thereto owned by the Le Roi Company, together with the machinery, plant, ore dumps, water rights, and real estate also owned by the company. That purchase price did not include cash on hand at the close of business on May 31, 1911, nor accounts receivable as on that date, both of which would be retained by the Le Roi Company, while the mining stores and supplies on hand at the mine were to be taken over by the purchasing company upon a valuation.

The purchase money would be paid as follows: Within 48 hours after the receipt of a cable advice of the ratification of the sale — which cable he proposed to transmit that day if the meeting confirmed the sale —the purchasing company would, for the purposes of that agreement, pay into the Dominion Bank, in Toronto, the sum of $25,000, and upon acceptance of a title a further sum of $100,000 would be paid into the same bank for transmission to the credit of the Le Roi Mining Company at par of exchange. At the expiration of one year from the date of ratification the balance of $125,000 would be payable, together with interest thereon from the date of ratification at the rate of 5 per cent. per annum, the purchasers having the option of making the final payment at any time after acceptance of title, with interest from the date of ratification to the date of such payment. These were the essential features of the agreement.

They would notice that the company's smeltery at Northport, Washington, and assets connected therewith, were not included in the terms of sale. Efforts were being made to dispose of that property, but up to the present time no definite offer had been received for it. It was impossible, therefore, to at present say what might be derived from the sale of the remaining assets of the company; but he was doing his best to dispose of them to advantage.

There was not very much to say in regard to the subject under consideration, and he did not think it really admitted of much discussion. While the price was not a large one, when compared with the original purchase price paid by the late Mr. Whitaker Wright or under his auspices, it was the best offer he had received, and, in his opinion, it was the best the shareholders would ever receive, so he advised them to accept it.

Mr. Grinke-Drayton, the late chairman of the company, having first remarked that he was satisfied the shareholders would never get a higher offer for the property, moved that the same be accepted.

Report of U. M. W. of A. Executive

The Executive of District No. 18, United Mine Workers of America, in which district are all the local unions concerned in the strike of miners and other coal mine employees in southeastern British Columbia and Alberta, issued under date July 29, a report addressed to the officers and members of local unions in District 18. After dealing with other matters relating to the lack of agreement between the members of the U. M. W. of A. and the Western Coal Operators' Association, the report gives a table showing the differences between the rates paid by the operators to the miners under the agreement that expired on March 31, last, and those that would be paid according to scale recommended by Dr. C. W. Gordon, chairman of the Board of Conciliation and Investigation, and that by Mr. A. J. Carter, the member of the board who represented the employees and who presented a minority report. The following part of the report of the executive will be of more general public interest:

"Reviewing the report of Dr. Gordon generally, as affecting the wages of our members, the advantages granted on the low rates would be offset by the reductions made on contract rates on pillars, leaving the majority of our members in the same position as heretofore, notwithstanding the many changes that have occurred, adversely affecting our wages, that were forcibly drawn to the attention of the board.

"In replying to the communication of the Minister of Labour we stated that we were prepared to make an agreement on the basis of Secretary Carter's report, and have, up to this time, steadfastly refused to consider an agreement on the basis of the report of Dr. Gordon. Our specific reasons for taking this position are:

"1.—That the advance suggested on the day wage scale is not what we are entitled to, and is only offered as a compromise, and in conjunction with the reductions specified.

"2.—That we do not consider that we should at this time submit to any reductions.

"3.—That no advance is granted on contract rates generally.

"4.—That no recommendation is made regarding the General Provisions of Agreement.

"It would be well in considering the action to be taken to carefully review the position of the District as it is after the suspension of four months.

"Up to this time, no attempt has been made to operate the mines without recognizing the organization, but the members must be prepared for such a contingency, as this will undoubtedly be done, if the operators can force a guarantee of protection from the government.

"The action of the Boards of Trade delegates in meeting at Macleod points in this direction, and gives, in addition, an example of what might be expected from the particular portion of the community they represent.

"We are still of opinion that with continued firmness on our part we will be able to arrive at a better agreement than has governed us during the past two years, and we would like you to give this matter your earnest consideration from all standpoints before rendering a decision."

In addition to circulating the report from which the foregoing extracts have been made, the Executive of District 18 sent representatives to address the miners in some of the larger centres. A press despatch dated Fernie, August 11, published in the Nelson Daily News, gave figures showing the result of the voting for and against acceptance of the recommendations of the chairman of the Board of Conciliation. The ballots of 17 local unions resulted in an aggregate vote of 393 in favour and 2,240 against acceptance. Returns had not been received from Coleman and Canmore, but these cannot materially affect the position. As more than half the votes were recorded at British Columbia collieries, figures from those follow in detail, while those from Alberta are given in totals only:

Places.	For	Against
Fernie	105	583
Michel	60	433
Hosmer	50	130
Corbin	3	46
In British Columbia	218	1,192
Alberta (13 locals)	175	1,048
Aggregate of votes	393	2,240

A Suggestion about the Treatment of Porcupine Ores

(Written for the CANADIAN MINING JOURNAL by Phil H. Moore.)*

Although at the present stage of the mining excitement in the Porcupine gold fields, more attention has been given to the finding of gold-bearing rock than has been given to the process of recovering the gold from the rock, it is inevitable that within a comparatively short time the milling of Porcupine ores will be the chief problem that the mining engineers will have to solve. In the case of the Dome and Hollinger mines the engineers in charge have evidently had it in their minds that considerable experimenting will have to be done on Porcupine ores before they could take the final steps in designing larger and more permanent milling plants. Hence the comparatively small installations that are now going into these extensive and valuable mines.

In many cases it is neither convenient nor expedient for the smaller mines to wait until the larger companies have demonstrated what really will be the best treatment of Porcupine ores. With an idea of helping out the engineer that is in charge of a comparatively small proposition but who sees sufficient values in sight to warrant the building of a small plant, where it is even more important to save all the values possible in

*Mining Engineer, King Edward Hotel, Toronto.

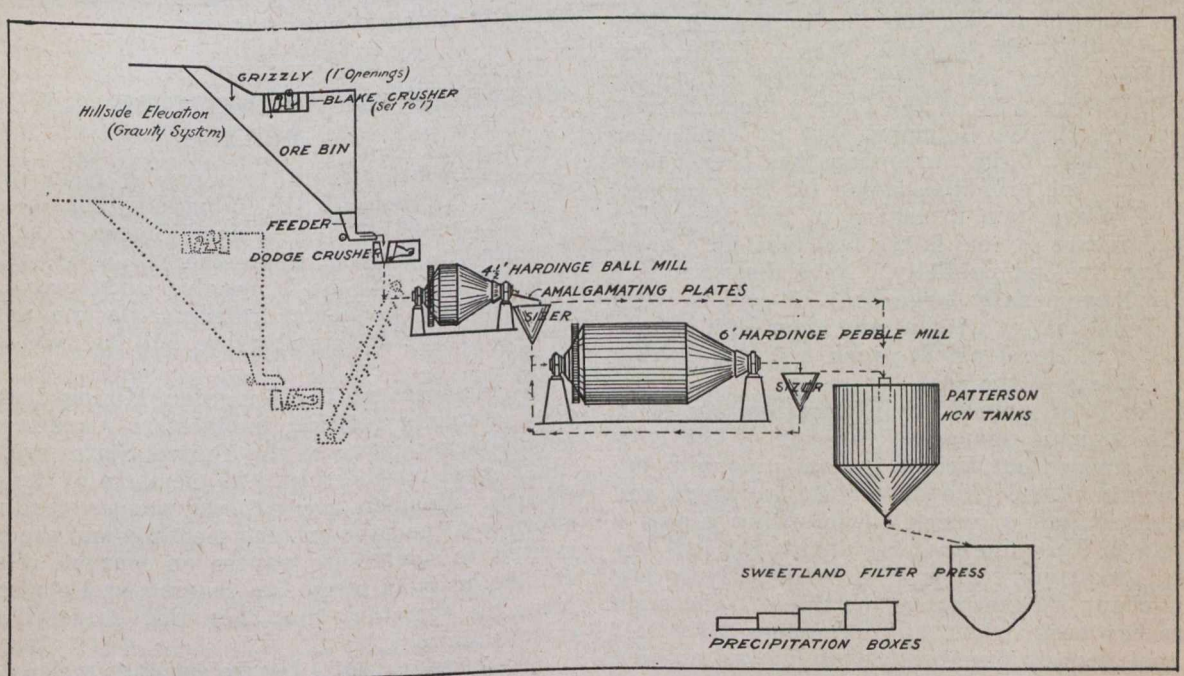
the ore, than it is in a large, I have prepared the flow sheet accompanying this article.

This flow sheet has been prepared after making careful tests of Porcupine ores, and after investigating very carefully the performance of the machines and apparatus included, and deciding that they are the most efficient machines on the market that have come within my notice.

As will be seen by the flow sheet, the ore to be milled is dropped through a one inch grizzly, and the over-size goes to a Blake crusher set to one inch. The product from the 1-inch grizzly and from the Blake crusher goes to an automatic feeder and into a Dodge crusher that reduces the product so that it will pass a three-quarter-inch ring. This in turn is fed into a 4½-foot Hardinge ball mill, which reduces the rock so that it would pass a 20-mesh screen. Owing to the conical shape of this machine, however, a screen is not used, and by the elevating or lowering of the discharge end, the product from this mill can be regulated to any size desired. The product from the Hardinge ball mill passes over an amalgamated copper plate. From the experience of J. M. Elmer, of Tuolumne, California, and many others, it is believed that quicksilver may be introduced into both ball and pebble mills of the Hardinge type without flouring, in some cases sodium amalgam being used. In the writer's opinion it will be unnecessary to introduce mercury into the ball mill, as with a well amalgamated copper plate all of the coarse gold that leaves the Hardinge mill will be caught before the pulp leaves the plate and the finer values carried by this pulp will be caught in the cyanide process following. The material passing over the copper plate will go into a sizer the over-size passing into the Hardinge pebble mill for sliming, and the undersize passing direct to the Paterson agitation tanks. The writer is not allowed space to go into the merits of the Hardinge type of ball and pebble mills. But it suffices to say that on account of the conical shape of these mills they are in the writer's opinion the most efficient machine, considering first cost, power consumed, and maintenance expense. One 4½-foot Hardinge ball mill will do the work of 15 stamps, but costs one-third less and requires no heavy foundation and less power to operate. The same applies to the Hardinge pebble mill when compared to the old fashioned square ended tube mill. The fact that these mills require no screen, is in itself no small item in operating expense.

The Patterson agitation tank is an improvement on the old style Pachuca agitation tank. In a fifty to seventy-five ton plant such as the flow sheet calls for, it will probably be necessary to use three of these tanks. The product passing from these tanks into a thickening tank would then pass direct to the Sweetland filter press, which is a pressure and not a vacuum machine. This press is the nearest thing to an automatic filter press that the writer has been able to find on the market, and sufficient demonstrations have been given, and sufficient testimonials are available so that the writer has adopted the press as being the best thing on the market at any price. And hence it is suggested in the flow sheet. When it comes to the precipitation of the gold carried in the solution taken out of the slimes, undoubtedly the zinc dust process is more up to date than precipitation on zinc shavings. I suggest that the cyanide solution should be introduced into the Hardinge pebble mill and carried through the entire process. A preliminary agitation would thus be given to the pulp while in the process of being slimed in the pebble mill.

In a few words, it is the intention of the writer to convey the suggestion that the treatment of Porcupine ores may best be simplified by treating the ore from the start with the intention of sliming the entire product, paying but little attention to the recovery of the gold in the earlier stages of the process. As it is necessary to treat the tailings from a stamp mill or other crushing agent by the cyanide process, it seems entirely unnecessary to divide these tailings into "sharps" and "fines," as this would require two separate treatments. Also it seems unnecessary to at-



Flow Sheet of 50-75 ton Amalgamating & Cyanide Plant, furnished by P. H. Moore, King Edward Hotel, Toronto, Ont.
Note : Dotted lines indicate Flat Elevation (Elevator System)

tempt to make a high recovery by amalgamation. The writer would suggest that in case of certain ores heavy with concentrates, an additional concentrating plant could be added without much cost, and these concentrates might be treated with bromo-cyanide at slight cost per ton.

The cost of the entire plant as shown in the flow sheet should not exceed $25,000, erected in the Porcupine district, providing the haul was not too great from the railroad. The above sum includes the necessary steam boilers, engines, and pumps. Or, in case of electric power being available, the necessary motors to run the plant. A 60 h.p. will be all the power required. 90 per cent. of the total gold contents of the ore should be saved by this process, at a cost not exceeding $1.50 per ton.

An Enormous Deposit of Coal

Occasional reference has been made to the great size of the deposit of coal the Corbin Coal & Coke Company, Limited, of Spokane, Wash., U.S.A., has during the last three years been engaged in opening in the southeastern part of the Crow's Nest district, East Kootenay, British Columbia, but no conception of its astonishingly large proportions has been generally obtained. One principal reason for the comparative lack of information in regard to this altogether unusual occurrence of coal is the fact that the Corbin Company has avoided publicity. Nevertheless it is a fact that a phenomenally large body of coal is being explored, though as yet without any clear idea of how big it really is, development work not yet having reached the limits of the coal.

In response to an appeal for information, Mr. E. J. Roberts, of Spokane, managing director of the company, lately showed our British Columbia correspondent blue prints of the plan of surface workings and gave him particulars, of which the following is only a brief summary: The mine that has during the last two years been producing coal is at a comparatively low elevation—about 500 feet above the tipple. The main entry here has been driven approximately 2,000 feet and the coal deposit found to be at its widest part fully 300 feet in width. Farther in it has narrowed considerably, what appears to be a large point of rock having come into the coal. Development work is not being continued here, however, for there is so much coal available that the driving of additional length of entry would only involve maintenance costs that are quite unnecessary so long as the further opening of the coal body in that part of the property is not required.

At an elevation of about 1,200 feet above the main entry, on Coal Mountain, there occurs what is known locally as "the upper big showing." About 400 feet lower down the mountain, or 800 feet above the main tunnel, there is another big outcrop of coal, known as "the lower big showing." During the last six months these "big showings" have been partially prospected. An underground cross-cut shows the coal of the upper showing to be 96 feet in width where prospected by this working. Analyses of every 10 feet of coal give the following average percentages for 12 tests: Moisture, 0.87; volatile combustible, 18.47; fixed carbon, 67.86; ash, 12.80. The highest results were from the sample taken from the last 9 feet of coal cut in this tunnel, namely: Moisture, 0.45; volatile combustible, 15.70; fixed carbon, 77.40; ash, 6.45.

The lower big showing has been cross-cut by an adit which at 370 feet from its portal entered slate rock. Analyses, 37 in number, gave the following general average percentages: Moisture, 0.73; volatile combustible, 20.03; fixed carbon, 64.25; ash, 15.00. The highest results were from coal cut between 20 and 30 feet in from the portal of the adit. They were as follows: Moisture, 0.60; volatile combustible, 22.49; fixed carbon, 68.31; ash, 8.60. This lower showing has been cut in pits sunk through the surface wash depths varying down to 15 feet, and the vertical depth of the underground working where it reached the slate was approximately 200 feet below the coal cropping cut in the pit immediately above it.

This enormous deposit of coal continues to be a problem to those engaged in exploring it, and much more development work will be necessary ere it will be understood. The fact remains, however, that there is a great quantity of bituminous coal of excellent quality, occurring under conditions that will admit of its being mined at very low cost.

CANADIAN MINING INSTITUTE — WESTERN BRANCH.

The eleventh general meeting of members of the Western Branch of the Canadian Mining Institute will be opened at New Denver, Slocan Lake, B.C., on Wednesday evening, September 13, 1911, when routine business will be transacted and several papers, some having particular reference to the mining industry of the Slocan district, will be read and discussed.

All members of the Canadian Mining Institute in good standing resiring in Western Canada and the neighbouring parts of the United States are, by virtue of such membership, also members of the Western Branch. Members are earnestly requested to make an effort to attend the ensuing meeting, and are cordially invited to contribute papers on matters relating to mining or metallurgy for reading at it; also, to inform the secretary that they will do so, if such be their intention.

Non-members will also be heartily welcome to attend, and to take part in the discussion of the papers that shall be submitted to the meeting.

The town of New Denver is situated on the eastern shore of Slocan Lake, which is one of the most beautiful lakes in the Kootenay district. For a pleasurable early autumn vacation the lake possesses the advantages of fine scenery, good boating, and fishing. Excellent hotel accommodation is obtainable. Local residents have offered to cordially co-operate to make a visit to their town and district thoroughly interesting and enjoyable. There are beautiful drives along the lake shore, and numerous launches are available for outings on the lake. Facilities will be afforded for visiting several important silver-lead mines and concentrating mills situated six to nine miles from New Denver. A short railway trip will take visitors into the heart of the Slocan Mountains and mining country.

It is requested that those who purpose attending the meeting — especially if to be accompanied by ladies —will please notify the undersigned, so that accommodation may be arranged for in good time.

E. JACOBS,
Secretary of Western Branch of C.M.I.
Victoria, B. C., August 12, 1911.

Coal Lands of the Hastings (B.C.) Exploration Syndicate, Ltd.

The Head Syndicate, Limited, a British organization of which Mr. James Head, of London, is chairman, and Mr. Leslie Hill, of Nelson, B.C., is general manager and mining engineer, has for some time been continuously developing the southern portion of the coal lands of the Hastings (British Columbia) Exploration Syndicate, Limited.

These lands, which join on to the south end of the property of the International Coal & Coke Company, Limited, of Coleman, Alberta, comprise 6,520 acres, giving a total length of ten miles on the coal seams, with an average width of one mile on their dip. The area was originally located and purchased from the Government of Canada by the Hastings Syndicate and the Kootenay Supply Company, jointly. In 1909 the Head Syndicate was formed to purchase the interest of the Kootenay Supply Company and to develop the property. An option of purchase of the interest of the Hastings Syndicate is now held by the Head syndicate.

The conglomerate overlying the coal seams forms a continuous ridge from the International Coal & Coke Company's property to Lynx Creek, a tributary of the North Fork of Old Man River. The ridge rises abruptly from Lynx Creek and reaches a vertical height of 910 feet in a horizontal distance of 2,500 feet. The average vertical height above Lynx Creek for 8½ miles is not less than 900 feet, so that it is estimated there are at least 45,000,000 tons of workable coal above adit level. There are three seams of coal, averaging, respectively, 10 feet, 12 feet, and 15 feet in thickness. The coal is of similar excellent quality for coking and steam purposes as that for six or seven years mined by the International Company, and still being produced by it. The extent and continuity of the coal seams and the excellent quality of the soil, together with the large tonnage above adit level, combine to make this property one of the most important and valuable yet opened in Alberta east of the Rocky Mountains.

The Head Syndicate has established a substantial and comfortable camp near where Lynx Creek crosses the coal seams. Previous to 1909 the Hastings Syndicate and the Kootenay Supply Company developed the northern half of the property by means of opencuts and cross-cut tunnels, and proved the continuity and regularity of the coal seams. The additional work since done by the Head Syndicate has shown that the seams of coal extend without a break for the whole distance—8½ miles—over which development has been done. Work now in progress includes driving a tunnel about 1,000 feet on the highest seam, and from this the other seams will be cross-cut.

A route for a railway line has been surveyed up the North Fork of Old Man River, this passing within four miles of the present mine workings. This railway, when constructed, will connect with the Canadian Pacific in Canada, and with the Great Northern Railway system in Montana, U.S.A. The construction of a branch line four miles, from the North Fork up Lynx Creek, will provide railway transportation facilities for the Head Syndicate's coal mine. The problem of transportation of coal from the mine to markets on both sides of the International Boundary line, is, consequently, a simple one, which is another distinct advantage to the property, the opening of which to a producing stage on a comparatively large scale is not likely to be much longer delayed.

Non-Working of Coal Mines Involves Heavy Loss

In the course of an interview with a representative of the Vancouver Daily Province, Mr. A. C. Flumerfelt, of Victoria, B.C., formerly actively associated with the management of the Granby Consolidated M. S. and P. Co., and afterwards president of the International Coal and Coke Co., operating in Alberta, in the eastern part of the Crow's Nest district, is reported to have said:

"I regret there have not been any recent developments which indicate a settlement of the unfortunate labour difficulties in Alberta and eastern British Columbia. The position is a serious one and can not be fully appreciated by those not directly interested.

"The actual loss to the miners and other employees by reason of their stopping work is about $20,000 a day. The suspension of work occurred on April 1, and has now lasted 85 days, which figures up a loss in wages of about $1,700,000. Apart from the loss sustained by labour, which also includes that caused by the reduction of train crews, there is an economic loss running into many millions, which can never be regained. Then, too, this has a very serious aspect when one contemplates the possibility of its continuance later on in the year, with the prairie provinces unsupplied with fuel. Surely this is a matter requiring the attention of the Dominion Government, as well as the Provincial Governments."

Terms of Settlement Recom'ded by Conciliation Board.

The Fernie "District Ledger," which is the official newspaper of District 18, United Mine Workers of America, in the course of its comments on the recommendation made by the Board of Conciliation before submitting its report to the Minister of Labour, says, in part:

"The proposed basis of agreement as summarized by the chairman is as follows:

"1.—Advance in day wages of 10 per cent. on wages below $3, 8 per cent. from $3 to $3.50, and 5 per cent. for rates above $3.50.

"2.—Differential in pillars of 5 cents to 7 cents, according to conditions. Application left to arbitration.

"3.—Contract rates to remain unchanged generally.

"4.—Advance in contract rate of 3 per cent. at Lethbridge.

"5.—Readjustment at Lille by making rate proportionate to seam.

"All other matters in agreement to be disposed of as the board shall direct."

The recommendations of the board were not accepted by either the operators or the representatives of the employees.

OBITUARY.

A familiar figure in the mining circles of eastern Ontario was removed by death on Tuesday, August 15th. Early on the morning of that day, William Arthur Hungerford passed away at his home in Madoc.

Mr. Hungerford was born in County Cork, Ireland, in 1847. When but 17 years of age he came to Canada. For some years he worked in London, Ont. The rush caused by the discovery of gold near Madoc attracted young Hungerford in 1868. This was his first taste of mining. For 27 years, with Belleville as his headquarters, Mr. Hungerford devoted a large part of his time to developing mining properties in Hastings county. His name is associated with the history of many gold mines in that region.

For the last five years of his life Mr. Hungerford lived in Madoc, where he took an active part in public life. His last venture was the organization of the Canadian Talc and Silica Company.

Upon the mining history of eastern Ontario Mr. Hungerford left a permanent mark. He was one of those rare persons who, although living in a district that attracts little public attention, yet manage by persistent effort to rouse the interest of financial men.

N. Ramsay Pennypacker, mining engineer, who died at Saranac Lake, N.Y., August 20th, in his 30th year, received his degree of Engineer of Minnes from Lehigh University. He was born at "Mt. Pleasant," Harford County, Maryland, and was named for his mother's forefather, Col, Nathaniel Ramsay, of the Maryland Line in the Revolutionary War. He had charge for a year or more of the mines of the Pennsylvania Feldspar Co., in Ontario. In 1907 he went to Nevada for Philadelphia capitalists and reported in favour of silver prospects at the place which became widely known as Rawhide. At that time Rawhide consisted of two or three tents. In a year 5,000 people were made homeless there by a fire. Afterwards he went to Cobalt for Philadelphians, and after investigation obtained an option on a prospect. The plants to complete the contract fell through by reason of his falling ill in 1909 with the disease from which he died two years later. This property soon showed rich native silver and was capitalized at a million and a half dollars. In 1909 he planned an expedition to the then new Porcupine district. One of his exploring party was Hollinger, who a short time later located the famous Hollinger gold mine. He was a son of Isaac Pennypacker, of Pennsylvania. He was a member of the Delta Phi fraternity.

Consolidated Mining and Smelting Co's Metal Production.

The tonnage of ore received and smelted at the Consolidated Mining and Smelting Company of Canada's smeltery at Trail, British Columbia, during the fiscal year ended June 30, and the gross value of the metals recovered therefrom are as follows:

Tons of ore (including concentrates) received during year, 392,751; tons smelted, 388,774; gross value of metals—gold, silver, lead, and copper—recovered therefrom, approximately $4,438,000. Of this gross value, 55 per cent. was represented by gold. The corresponding figures for the fiscal year ended June 30, 1910, were: Tons of ore smelted, 487,125; gross value of metals recovered, $5,911,767; proportion of gold to gross value, about 48 per cent.

The average prices of metals for the last fiscal year show little variation from those of the previous year. The company's last annual report gave the average quotations during the year ended June 30, 1910, as having been: For London lead, £12.921 per long ton; New York silver, 51.948 cents per oz.; and electrolytic copper, 12.981 cents per lb. Average prices for year ended June 30, 1911, as Engineering and Mining Journal quotations, were: London lead, £12,949 per long ton; New York silver, 53.696 cents per oz.; electrolytic copper, 12.337 cents per lb.

The tonnage of ore smelted at the Trail smeltery and the gross value of metals recovered during all years from the beginning of 1894 to June 30, last, were: Tons smelted, 2,847,458; gross value of metals, $47,084,318. The respective quantities of metals recovered last year are not yet available, but the next following figures show them for all years to June 30, 1910: Gold, 952,056 oz.; silver, 16,999,873 oz.; lead, 220,872,555 lbs.; copper, 43,453,814 lbs. Approximate figures of aggregate metal recoveries to June 30 last are: Gold, 1,100,000 oz.; silver, 18,700,000 oz.; lead, 255,000,000 lbs.; copper, 48,000,000 lbs.

The ore receipts during the year under notice from the various mines operated by the company will probably be found to have been about as follows:—

Mine.	Tons.
Centre Star group, Rossland	195,811
St. Eugene, East Kootenay (concentrate)	9,408
Richmond-Eureka group, Slocan	3,140
Phoenix Amalgamated, Boundary	2,272
Queen Victoria, Nelson div.	1,984
No. 7, Boundary	1,745
Molly Gibson, Nelson div.	330
Snowshoe, Boundary (leased)	86,402
Sullivan, East Kootenay (leased)	33,852
Total from company's own mines	334,944

The foregoing figures have been compiled, as concerns the last three months of the period under review, from newspaper reports, so necessarily are subject to revision. For nine months, to March 31, figures were obtained at Trail some time since. Allowing that the total from the company's own mines, as shown above, is approximately correct, it would appear that the total of custom ore and concentrates received during last year was nearly 58,000 tons.

With regard to the decrease in tonnage of ore smelted last year, as compared with that to June 30, 1910, namely, 388,774, as against 487,125 tons—while no information has yet been made public by the company, it may be pointed out that the larger part of the shortage is attributable to the much lower tonnage of ore received from the Snowshoe mine, in Boundary district—86,402 tons, as compared with 182,383 tons in the previous year. The quantity of lead-silver concentrate received from the St. Eugene mine was about 8,000 tons less than in the preceding year, but, on the other hand, the Sullivan mine shipped last year 33,852 tons of lead ore, as against 6,704 tons to June 30, 1910. Then there was less custom ore obtainable from several Slocan mines, which were deprived of milling and railway transportation facilities, some of them as a result of the destructive forest fires of last summer. Apart, though, from the matter of smaller ore receipts, it may be expected that one subject will be dealt with in the company's report for last year, namely, that the position at the Centre Star group of mines at Rossland is better now than in several years past, particularly in regard to there being now available, in the War Eagle mine of this group, much ore containing a comparatively high value in gold.

The Canadian headquarters of Mr. A. A. Hassan will in future be Cobalt.

Industrial Section

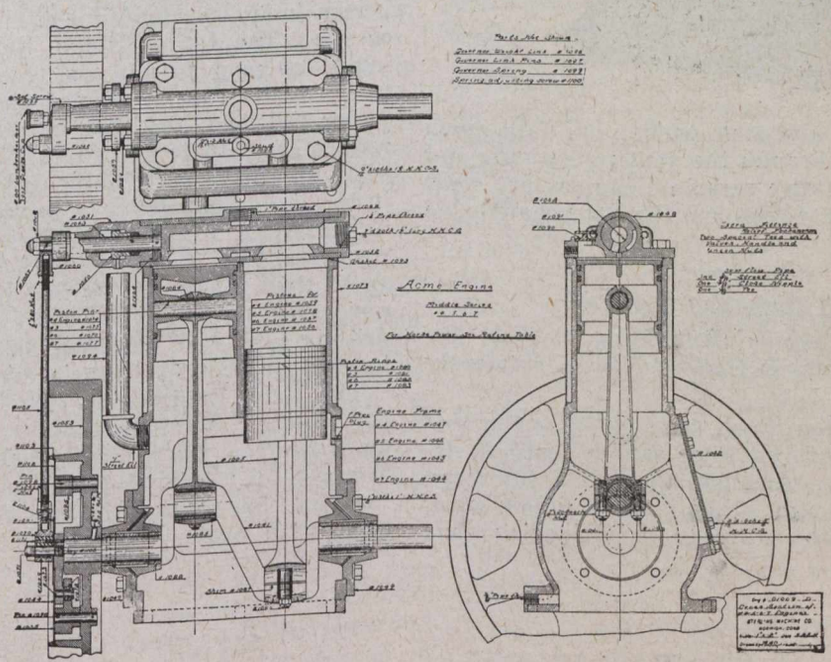
THE ACME STEAM ENGINE.

With the rapid growth and popularity of the gas engine, the impression has become quite general that the small steam engine is no longer an important factor in engineering fields.

This impression is entirely erroneous, so far at least as the experience of one of the largest manufacturers of small steam engines in this country goes. The mechanical stoker and similar advances in steam engineering have made the small steam engine indispensable. This is particularly true in plants where steam is a source of power, for in such plants the small steam engine proves an auxiliary which is very hard to equal both from the standpoint of economy and efficiency.

The Acme Engine, formerly manufactured by the Rochester Machine Tool Works, of Rochester, N.Y., and now by the Sterling Machine Company, of Norplicity of construction, the type of valve which adjusts itself to wear, the large bearing surfaces which are thoroughly lubricated at all times by a splash of oil, they are especially suited to drive mechanical stokers, for direct conection to small gear driven pumps, for driving rock drills and small friction hoists, and any variety of belt or direct driven pumping machinery for contractors or irrigation purposes.

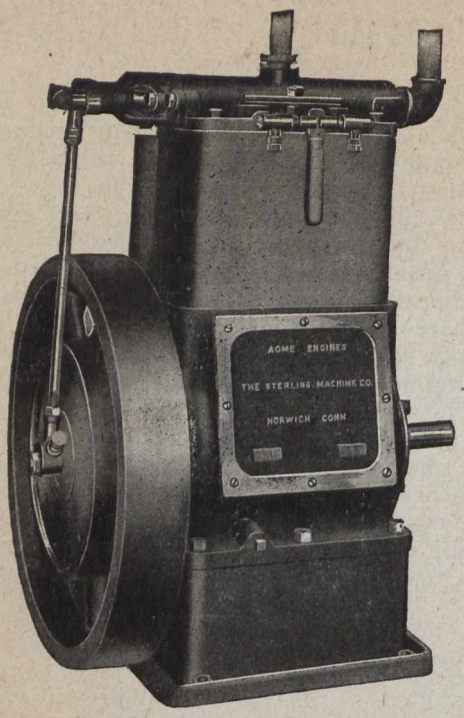
The character of internal construction is especially interesting, showing as it does the influence of automobile engine practice in many of the details. For example, the crank shafts are drop forged and ground to very accurate size, the connecting rods are of the popular I-beam section, bushed with bronze at both ends, the bearing cap on the crank end being held in place by castle nuts and cotter pins as is common in automobile work, the piston rings are of the diagonal cut type, two being placed above the wrist pin and



wich, Conn., is one of the best known small steam engines on the market. It has been manufactured for the past twenty years and improved from time to time to meet the demands of the day for a strong, simple, and economical unit.

The manufacturers have recently added several interesting features to this engine and a general description is given herewith which it is hoped will prove interesting to the readers of this paper.

These engines are of the vertical 2-cylinder single acting enclosed type with a balance rocking valve and are splash lubricated. They are built in three series of sizes, the small series being 2 1-8-in, 3-in., 3 5-16-in., 3 1-2-in. stroke. These small engines are identical in external appearance. The middle series is 3 5-16-in., 4-in., 4 9-16-in., 5-in. x 5-in. stroke. These four sizes being also identical in external appearance and practically of the same weight. The large series of three engines is 5-in., 6-in., and 7-in., being also of the same external size and general appearance. This range of sizes covers all the applications to which these engines are especially adapted. Because of the extreme simone below. These rings are re-turned after cutting and ground to accurate size. The valve is a simple one-piece casting which is ground on the outside to fit a very accurately bored chamber and is fastened to the extended valve stem with a cross key in just the same way that the ordinary Corliss valve is fastened. A further point of considerable interest is the matter of automatic cylinder relief valves which are built into the cylinder heads to relieve any water that might otherwise cause damage. The governor is of a very simple type, consisting of four main pieces. The action of the weights being modified by means of a hardened roller which travels in a milled arc. The entire governing mechanism is contained in an oil pocket, only the pin to which the lower end of the valve rod is connected being extended through, and further, inasmuch as this mechanism is on the outside of the fly wheel, it is very readily gotten at. There are but two grease cups requiring attention, all other surfaces being amply lubricated by the internal splash. Provision is also made in the base of the engine for the elimination of the condensation which may collect and



the leakage from the valve stem stuffing box falls down into the engine base through the vent pipe at the end of the engine. The entire series of engines are built with new and accurate jigs on the interchangeable plan.

Exhibit of Jones and Glassco.

At the Canadian National Exhibition, held in Toronto, the firm of Jones & Glassco has an extremely creditable exhibit.

It would take up too much space to describe this exhibit in its entirety. But some salient features deserve special mention. Amongst these is a rotoscope fitted with a Renold chain, 1-inch pitch, 2½-inch wide, driving from a pinion to a wheel in which provision has been made for easy examination of the chain. A variable speed motor is used, making it possible for the chain speed to be varied from 700 F.P.M. to 200 F. P. M.

There will also be installed in action a chain-drive operating a fan. Moreover, in an elaborate machinery show case about 8 feet square, and 12 feet high, practically all the types of chains manufactured by Messrs. Hans Renold, Ltd., will be exhibited, along with specimens of special spring sockets, etc.

In addition, there will be in operation a centrifugal machine manufactured by Watson, Laidlaw & Co., Glasgow, and a complete exhibit of the cotton driving rope turned out by Messrs. Kenyon & Sons.

INDUSTRIAL NOTES.

From the Jeffrey Manufacturing Company, Columbus, Ohio, we have just received a Bulletin (No. 41) describing their Single Roll Coal Crusher. The growing demand for screenings is so large that in many places lump or runofmine has to be reduced to a smaller size. The Jeffrey Single Roll is capable of reducing lump coal to any size required. The manufacturers claim that it cannot choke, that it will start under full load, and that, in a single operation, it can reduce lump to stoker size. The crusher can be supplied on trucks with motor drive attached. In design it is simple, and easily repaired.

The Apex Mining Co., Porcupine, has purchased from Mr. Phil. H. Moore a Class A McKiernan-Terry shot drill. Also the Miller Lake-O'Brien mine has purchased a similar drill. A Class B drill, capable of drilling 1,500 feet, has been acquired by Mr. Alex Miller for the Scottish Ontario mine at Porcupine.

The Robb Engineering Co., Amherst, Nova Scotia, and South Framingham, Mass., has recently received an order from the Sturgeon Lake Development Co., of Toronto, for two Robb-Mumford boilers, 54-inch by 18-foot, and one stack 48 inches in diameter and 80 feet high, with smoke connection.

SPECIAL CORRESPONDENCE

NOVA SCOTIA.

South Cape Breton Mining Society.

For many years the need of a mining society in Cape Breton has been apparent. The meetings of the Canadian Mining Institute, which are necessarily held in Quebec or Ontario, are inaccessible to the mining profession in Cape Breton. Owing also to circumstances which are unavoidable, there are very few members of the Canadian Mining Institute connected with coal-mining, and even of these the majority belong to the Western Branch. So far as distance is concerned, the meetings of the Nova Scotia Mining Society are almost as ungettable in Halifax, as the meetings of the C. M. I. in Montreal and Toronto. When it is considered that over a third of the entire Canadian coal output is produced in Cape Breton, it is evident that the lack of a mining society must have meant the loss of many valuable contributions to mining literature. For several months past a movement has been shaping itself among the officials of the two large Cape Breton coal companies to form a mining society, and this has at length taken definite shape. A society has been formed which will be known as the South Cape Breton Mining Society. The first president is Norman McKenzie, the superintendent of No. 2 District of the Dominion Coal Company, and the vice-president is J. C. Mitchell, manager of Dominion No. 6 colliery. The secretary is M. A. McInnis, superintendent of District No. 3. The assistant general manager of the Dominion Coal Company, D. H. MacDougall, is the honorary president. The first general meeting of the Society was held in Glace Bay on the 19th of August, and took the form of a "smoker." With a few exceptions, all the managers and underground managers of the Dominion Coal Company were present, together with representatives from the Sydney mines collieries, the deputy mine inspectors, and local notabilities. Although this meeting was only inaugural there was complete unanimity of opinion that the Society was very necessary, and the nucleus of a large membership is already assured. It is understood that four meetings will be held annually, and the next meeting will be for the purpose of reading and discussing papers.

It is to be hoped that eventually both the new society and the Nova Scotia Mining Society will become affiliated with

the Canadian Mining Institute in such a manner that, while retaining their own individuality and management, and holding their meetings at home, each mining society will subscribe to federated transactions, and get the benefit of all the mining papers read in Canada at a cost which would not be larger, and may be considerably less, than the cost of issuing separate transactions of meetings.

In addition to the benefits which will be derived from the preparation and reading of papers, the new society will provide a much needed medium through which the members of the coal mining profession in Cape Breton can voice their views on matters affecting the mining profession, such as, for example, the necessity for more generous expenditure on technical education.

United States Coal in Competition with Canadian Coal.

The recent action of the Dominion Government in temporarily remitting the import duty of United States coal passing into the western provinces, although doubtless dictated by necessity, and, from the viewpoint of the Government, quite defensible, cannot be viewed with equanimity by any person interested in the Canadian coal industry. The following extract, taken from the "Coal Trade Journal," of New York, issue of 16th August, merits the careful consideration of coal operators and miners both in the West and in the East. Commenting generally on United States coal exports, the writer in the "Coal Trade Journal" states:

"Larger shipments will be made to Canada in future years as that country is growing, not alone in population, but commercially and industrially, and the greater the growth, the larger the shipments of American coal will be, as there are places in the Dominion in which the home product cannot be laid down as cheaply as coal from the United States. Canada imports almost as much coal from this country as is produced by all Canadian operators combined during a year, and when there is trouble between miners and operators in the Dominion the American producers gain. This is indicated by the orders placed for coal in the United States as a result of the shortage in western Canada caused by the strike of miners in that territory, and it must be remembered how the Nova Scotian strike helped the American producers to some extent, while that was in force."

The operators in Nova Scotia have a very distinct recollection of how the strike there helped the American producer, and it is more than probable that the Alberta operators will have a similar recollection when they look back some few years hence.

Canada takes 72 per cent. of the entire bituminous coal export of the United States. For the year ending 30th June, 1911, Canada imported from the United States 8,627,963 tons of soft coal, an increase of 1,359,205 tons, or 18.7 per cent. more than in the 12 months ending 30th June, 1910. Conversely, the United States imported from Canada 1,452,146 tons, compared with 1,356,840 tons in the previous year, showing an increase of 95,306 tons, which is a very insignificant quantity compared with the enormous increase of exports from the United States to the Dominion. Averaged over the past decade, the yearly increase of Canadian coal production has not exceeded half a million tons, whereas the coal output of the United States has gone up five million tons per annum.

The net result of the United Mine Workers strikes in Alberta and in Nova Scotia has been to displace millions of tons of Canadian coal by United States product, and coming events will prove to both the Canadian operator and the Canadian miner how much easier it is to invite the invader than to recover the trade he has taken from us. It is a grim commentary on this situation that the Government should have considered it necessary to remove the import duties, and that the proper territory of Canadian coal mines should now be supplied by United States coal which is yielding no income to the Canadian revenues. In the St. Lawrence market the effect of the 1909 strike is still being felt by the Nova Scotian mines, and it is not probable that all the ground which has been lost will ever be recovered. Very recently a United States coal company took a large contract from the city of Montreal at a price which the Nova Scotian mines could not touch, and this is only a typical instance of what is occurring every day. Surely the folly of allowing Canadian labour relations to be endangered by strike mandates issued from Indianapolis could scarcely be more strikingly demonstrated.

Nova Scotia: Glace Bay.

The outputs for the first half of August were lessened by a general holiday on the occasion of the Provincial Workmen's Association's annual excursion, but there is a possibility that the record figure obtained in July may be slightly exceeded in August.

Extensive diamond drilling operations are being undertaken by the Dominion Coal Company at the Springhill mines, with a view to finding a suitable field for new winnings. The output is still steadily increasing.

With the accretion of the Springhill men, the membership of fthe Dominion Coal Company Employees' Benefit Society now amounts to 9,150 members, and the gross accumulated funds of the Society are now over $100,000.

The Dominion Iron & Steel Company have acquired extensive limestone deposits at Port au Port, Newfoundland, which they are at once commencing to develop. Work is now in progress on the loading arrangements and plant. The additional blast furnaces which the Steel Company are intending to install will require larger supplies of fluxing material than the present quarries will supply in the shipping season, and in addition to the Port au Port development the Steel Company have this year commenced another quarry at Ball's Creek, in the George's River limestone near Sydney.

NOVA SCOTIA.

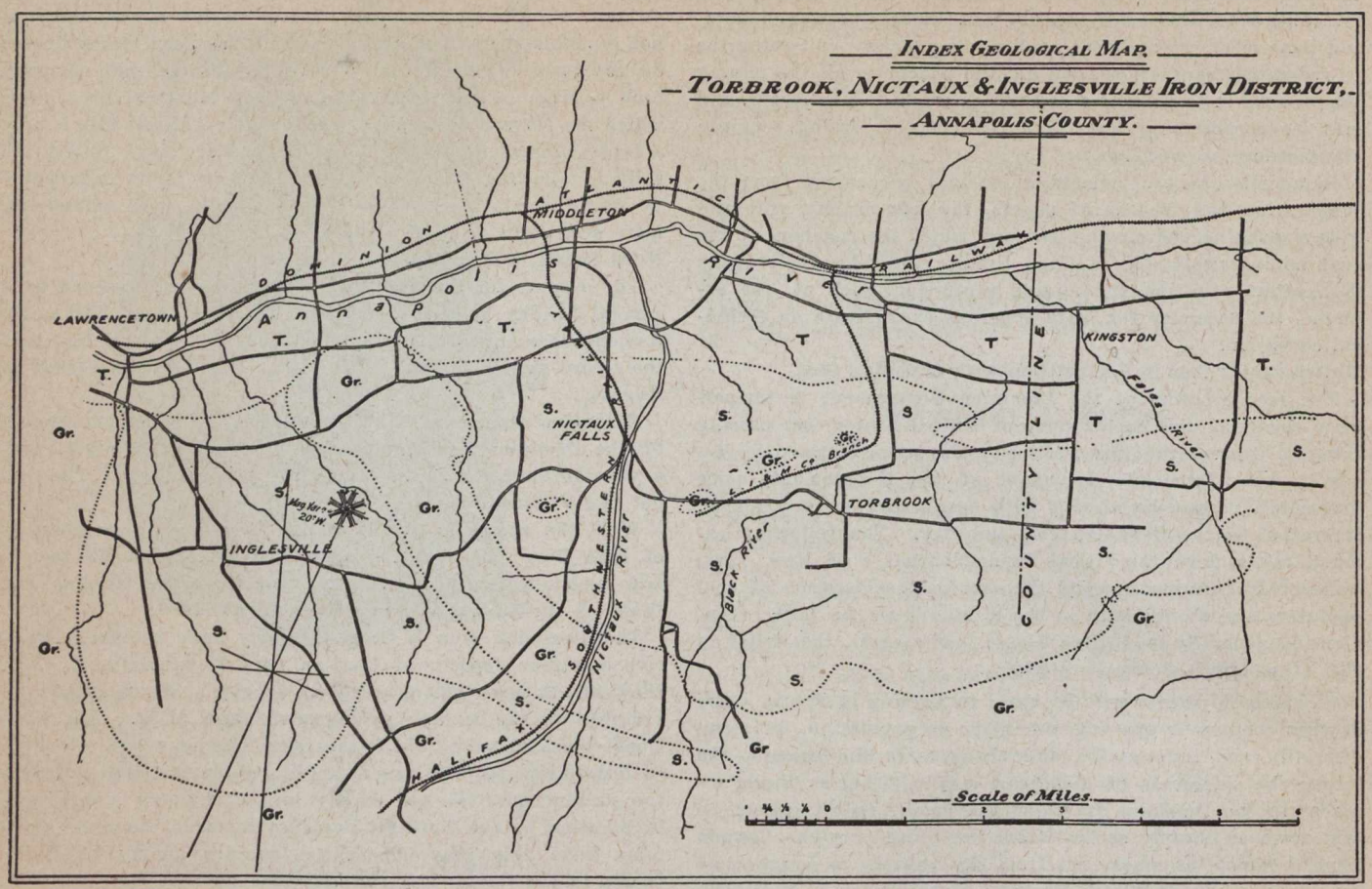
Halifax.—The news of the shutting down of the Torbrook iron mines, owned and operated by the Canada Iron Corporation, Limited, reached Halifax some days ago. The closing of these important mines, it is hoped, is temporary. The Torbrook and Nictaux iron ore deposits are situated in the eastern part of Annapolis country. The workings are connected by a spur with the Dominion Atlantic Railway. When the Londonderry blast furnace was working, a considerable tonnage of ore was shipped there. Latterly some thousands of tons have been mined and shipped abroad.

The ores include hard red hematite, slightly high in phosphorus, and dark grey, low grade magnetites that carry varying percentages of lime. The latter are ideal ores for magnetic treatment.

As early as 1825, a small Catalan forge was operated in the Nictaux region for a short time. A charcoal furnace was also run for a short time. Many unsuccessfufl attempts were made to establish an iron industry. It was not until 1891, however, that serious mining was undertaken. In that year, Major R. G. Leckie, who was at that time general manager of the Londonderry Iron Company, acquired a large extent of territory and opened what is still known as the Leckie mine. The Leckie mine, which produced a high grade red hematite, was active until 1906. In 1903, it was again opened by the Londonderry Iron and Mining Company, an organization controlled by the Drummonds, of Montreal, and later merged in the Canada Iron Corporation.

Since 1906 the Leckie and the other mines have been worked irregularly. The otal output has been about 500,000 tons.

The failure of the Nova Scotian Government to send an exhibit of minerals to the Toronto Exhibition is much to be regretted. Nova Scotia can make a display that brings water to the mouth of the investor. As reports from Toronto state that many foreign mining men are passing through Toronto, it is a great pity that Nova Scotia's mines are not to be ad-



GENERAL INDEX OF SYMBOLS.

T.	TRIASSIC SEDIMENTS	Or.	CAMBRO-SILURIAN (OR DOVICIAN)	Gr	GRANITE
C2.	MILLSTONE GRIT	€.	CAMBRIAN.	□	LIMESTONE (PLATE I.)
L C2.	LOWER CARBONIFEROUS LIMESTONE.	M.	MEGUMA (GOLD BEARING SERIES)	△	DOLOMITE (PLATE I.)
L C1.	CARBONIFEROUS CONGLOMERATE.	PC1.	GEORGE RIVER SERIES	○	IRON (PLATE I.)
D.	DEVONIAN.	PC.	UNCLASSIFIED PRE-CAMBRIAN	■	PITS AND SHAFTS.
S.	SILURIAN.	Tr.	FINE TEXTURED INTRUSIVES		IRON OCCURRENCES.

vertised. Your correspondent is of the opinion that both the Mining Society and the Government are to blame. Nova Scotia will certainly have to do more advertising, or else be left out in the cold.

The coal mines of the province are doing better than ever. This season's St. Lawrance trade promises to exceed last season's.

Progress is being made at Dr. Cain's manganese property, north of New Ross, Luuenburg County. It is reported that shipments will be made very soon.

Prospecting for tungsten ores is very active. Several old gold properties are being re-opened. It is rumoured that the old Dufferin is soon to spring a surprise on the public by showing signs of life. The Dufferin mine had a square deal. It should prove attractive.

ONTARIO.

Porcupine.—Every day brings its quota of new population. The whole camp is flourishing. The talk of the day is the auctioning off of lots at the Timmins townsite. High prices are expected. What effect this movement will have upon South Porcupine and Goldenville remains to be seen.

Nearly 500 men are at work at the Dome and more will be employed as soon as they can be obtained. The branch railway across the Dome Extension to the Dome is practically completed. The Dome siding will accommodate scores of cars.

Re-building is proceeding with remarkable vigour. Before the end of the current year the plants on the Foley-O'Brien, Dobie, Dome Extension, West Dome, Apex, Dome (major), and on many other properties will have been restored completely.

Two hundred carloads of lumber are on their way to Porcupine. This implies a large amount of building. It must be remembered that many of the new buildings are to be of fire-proof construction. Hence the railway traffic will be very large from now on.

Southeast Shaw is looking up well. There is room for the belief that this will make good.

At the Preston East Dome Manager Thorne is employing about 60 men. When the Dome siding has been completed necessary machinery will be rushed in.

The Hollinger office building is almost completed. Here, also, progress depends largely upon railroad construction.

A 10-stamp mill has been ordered for the Vipond. Mr. Pourrier has returned, and the mine is bustling.

Mr. Cleveland, a Nevada man, is to assume the management of the West Dome. Concrete buildings will be erected. Everything is now ready to commence reconstruction.

BRITISH COLUMBIA.

Hot weather experienced in July in the Cariboo district shortened the hydraulicking season for placer gold mines in the vilcinity of Barkerville. Water in insufficient for continuing operations, so the season is practically over, unless copious rains shall come to give a fresh supply for gravel-washing. Very little news will be obtainable concerning operations on creeks in Atlin camp until after the close of the year's work and operators shall come south for the winter. Placer gold mining is being carried on in Fort Steele mining division, East Kootenay; there is activity on Perry Creek, and Wild Horse Creek is still receiving some attention as well. Placer mining returns for last year showed that gold to the value of $15,000 was recovered in the Omineca country, while Lillooet was credited with a production of only $7,000—the smallest output for that district on official record. It is probable the total value of the placer gold production in 1911 will be higher than that of 1910. Totals in recent years were: In 1898, $647,000; 1899, $477,000! in 1910, $540,000.

Coal mining has been at a standstill five months. As the combined output of Crow's Nest Pass coal mines last year was 1,365,000 long tons of coal, or an average of nearly 114,000 tons per month, the loss of production this year is already a serious one. After deduction of the proportion of coal made into coke, calculating with last year's average figures as a basis, the loss this year is already approximately 430,000 tons, net, of coal and 90,000 tons of coke, which represents a decrease in value of average production this year as compared with last of nearly $2,000,000. Further, even should there not be longer suspension of production than the five months abovementioned (and there probably will be) it will take several weeks to get the mines into full working condition again, so that a considerable margin will have to be allowed as an additional decrease in value of coal and coke produced this year. Then there is the contingency of a probable loss of market to also take into account, so the year's statistics of production may be expected to compare unfavourably with those of 1910.

Slocan.

Prospects for this district continue to improve, that is for the district as a whole. In the eastern part of Slocan, the construction of a spur from Three Forks, on the Canadian Pacific Railway from Slocan Lake to Sandon, to near Bear Lake, is in progress. This new line will give excellent transportation facilities to the Lucky Jim and Rambler-Cariboo mines, both of which have been at much disadvantage, in regard to shipment of ore, ever since the destruction in July, 1910, of bridges and trestles along several miles of the Kaslo & Slocan railway. As development work has been continued in both mines, and much ore has thereby been rendered available for shipment, production will be comparatively large whenever arrangements for freighting shall be favourable. The intended immediate resumption of work at the Deep mine of the Whitewater group, has been announced. Of these three mines, Mr. O. E. LeRoy wrote in his official report for 1910 (see "Summary Report" of Geological Survey, 1910): Whitewater.—The Whitewater includes the Deep property, as both are on the same vein, and are operated under one management. The destruction of the mill and village by fire in July caused a temporary cessation of mining operations. During 1909 a crosscut tunnel was driven to the vein from the valley of Kaslo Creek, which gives a vertical depth of about 1,400 feet below the apex of the vein, and about 400 feet below the Deep or lowest drift tunnel. The raise to connect with the present workings will be completed this winter, and at the same time intermediate levels and cross-cuts will be driven to prospect the vein between the main cross-cut and Deep tunnels. This is the most important development work recently undertaken in the Slocan district, and the results obtained will have a marked influence on further developments of similar character elsewhere in the district. Lucky Jim. This mine is the only one in the district worked almost exclusively for zinc. During the year 1909 about 4,700 tons were shipped, with zinc content ranging from 39 to 54 per cent. In 1910 No. 5 tunnel has been driven 200 feet vertically below the old workings, and has encountered two orebodies, the size and character of which has not yet been definitely ascertained. No. 6 crosscut is now being driven some 400 feet vertically below No. 5. The work this season was greatly hampered by the fire which destroyed all the buildings. Rambler-Cariboo.—Mining was seriously interrupted by the fire which destroyed the mine buildings in July, and the mine was only put on a working basis again in the early part of November. The orebody discovered in 1909 has been partially developed to the 8th and 9th levels, with very encouraging results. The shoot pitches to the south, and all the lower levels will be driven in that direction during the winter and the ground thoroughly explored. The development work is sufficiently advanced to permit immediate

and extensive stoping. The clean lead ore contains up to 64 per cent. lead and 175 oz. silver per ton.'' Quite recent advices are to the effect that shoots of ore of shipping grade have been opened on both the 1050 and 1250-foot levels of the Rambler-Cariboo mine, and that the 1400-foot level is being advanced with the object of cutting the oreshoots at the lowest level in the mine.

About Sandon, an amalgamation of the Slocan Star group with the Star M. and M. Company's claims, over which there had been litigation during eight or nine years up to the close of 1909, has been carried out, so that hereafter there should not exist any bar to the more ecenomical and thorough mining of fore-bodies occurring in both properties. Both the Richmond-Eureka and Ruth-Hope mines continue productive. Up Cody Creek, progress is being made towards again obtaining an appreciably large production of silver-lead ore from the Noble Five, Reco, Surprise, and Sunset mines.

Mines tributary to Slocan Lake give promise of making a larger total output this year than during any year for a long time. The more important producers are the Standard, Van-Roi, and Hewitt-Lorna Doone, each with much ore available and its own concentrating mill to make it marketable. Lower down the lake, the Ellis Silver Mining Company's Eastmont mine, and the Enterprise, both in Ten-mile Creek camp, are the more prominent properties. There are others, in Slocan City division as well as in other parts of the extensive Slocan district, that will also add to this year's total output of ore.

Nelson.

Gold is now produced to a greater value than any other metal in this mining division, and most of that comes from mines in Sheep Creek camp, where the Queen (in largest proportion) and the Nugget are steadily maintaining an output. The Granite-Poorman, situated within a few miles of the city of Nelson, is also a regular producer, having a valueble group of gold-baaring claims and a 20-stamp mill. Silver, lead, and copper ores also occur in this division, and in past years these metals have been produced to a comparatively large aggregate value, but at the present time they do not add much to the district's total value of mineral production. It is stated that several mines near Nelson, which have been asquired by a syndicate, are to be worked again, but so far little actual mining is being done on them. As some of them have been large producers in past years, it is hiped they will ere long be again on a profit-earning basis. Meanwhile, though, the best results are expected from Sheep Creek properties, where the Mother Lode, Kootenay Belle, Summit, and others have been proved to possess orebodies that it is believed will yield gold in payable quantity.

Rossland.

There is little information concerning this camp other than the customary report of continued production from the Consolidated Company's Centre Star group, the mines of the Le Roi No. 2, Ltd., and, in smaller degree, the Le Roi. Now that the last-mentioned mine has been acquired by the Consolidated Company, it is likely more ore will be mined in it and sent to Trail, since under the altered conditions it will probably be found profitable to utilize ore that previously could not be mined and smelted at a profit. There is not much to tell of the South Belt properties, of which the Blue Bird is now the most important, for it is almost alone in its continued activity.

Boundary.

The closing of the Granby Company's mines and dsmeltery, owing to the practical impossibility of securing a suitable supply of coke at moderate cost, has given part of this district a set-back for the time being. The cessation of work at the Snowshoe mine, by the Consolidated Company, has added to difficulties of the situation in Phoenix camp. Ae the time of writing the British Columbia Copper Company is operating its mines and smeltery, though under conditions that are not ordinarily profitable, the greater cost of Pennsylvania coke being a serious matter where, as in the case of Boundary district copper ores, the margin of profit is small when the price of copper is low, as at present. This company is developing the McKinley mine, in Franklin camp, north fork of Kettle River, under an option of purchase. The Greenwood-Phoenix Tramway Company is still driving its big tunnel, which is now well on towards 3,000 feet. Railway construction up the west fork of Kettle River is encouraging owners of mining properties about Beaverdell and other parts of the district to consider the practicability of turning to profitable account some of the ores known to occur there.

Similkameen.

Coal mining is reported to be active around Princeton. The erection of works for the manufacture of cement in the vicinity of that town is in progress. The completion of the railway from Princeton to Coalmont, and the opening of a coal property in the neighbourhood of the latter place, are in hand. Both placer and lode properties in Tulameen district are being examined by prospective purchasers, while work is being arranged for to further test the river gravels of the Tulameen and some of its tributary creeks for both gold and platinum, of which latter metal an estimate of production in all years to date gives a total of about 20,000 oz.

Nicola Valley.

The Nicola Valley Coal and Coke Company is adding largely to the coal-handling plant at its Middlesboro colliery and has also made provision for much new exploration and development work underground. Two or three other properties are being got into shape for producing coal, of which there is estimated to be about 30,000,000 tons in 12 square miles of coal-bearing country in the valley.

Coast.

Coal mining is by far the most important branch of the mining industry of the Coast district. Last year Vancouver Island coal mines produced 1,616,030 long tons of coal; this year, so far as known to the writer, all the mines are continuing production, so that there is no good reason to suppose the current year's total output will be smaller. The several producers are: The Canadian Collieries (Dunsmuir) ,Limited, with mines in both Extension and Cumberland districts; the Western Fuel Company, with several mines near Nanaimo; the Pacific Coast Coal Mines, Ltd., with mines near Nanaimo and at Suquash; and the Vancouver-Nanaimo Coal Mining Company, operating in the vicinity of Nanaimo. Prospecting for coal is being done in various other parts of Vancouver Island, and in some of the smaller islands lying east of it.

The Tyee Copper Company is receiving ores for reduction at its smeltery at Ladysmith, Vancouver Island, from a number of mines in the Coast district, and others in southern Yukon and Alaska. Two mines in Portland Canal district are among the shippers to its works, these being the Portland Canal Mining Company's gold-silver-lead mine and the Red Cliff copper mine. Much development work has been done in both mines, and both now have railway connection with Stewart, at the head of Portland canal. Prospecting on other Portland Canal district claims is reported to be, in several instances, satisfactory. At the Hidden Creek mine, Observeatory Inlet, which is an arm of Portland Canal, the Granby Company is doing much work, both underground and in surface improvements. The directors have appropriated $200,000 for this work, which is being carried out energetically and, so far as underground development is concerned, it is generally understood, with excellent results, much ore of good grade having been found. In various parts of the Skeena district the development of both coal and metal bearing claims is being pushed on, while Queen Charlotte Islands are also receiving attentiol both on coal and metalliferous properties.

GENERAL MINING NEWS.

NOVA SCOTIA.

Halifax.—Reports from Scheelite, Moose River, Halifax Co., show that the incline shaft at the tungsten mine has now reached an extension of 400 feet. A considerable amount of crosscutting and drifting has been accomplished. The 50-ton mill will soon be completed. The mill will consist principally og two sets of rolls, trommels, and Deister and Wilfley tables. Mr. Victor Hills, late of Denver, is in charge of the technical management, whilst Mr. H. C. Borden, of Halifax, directs financial affairs. No ore will be shipped until the mill is running.

ONTARIO.

Elk Lake, Ont., August 25.—Men going in from Gowganda to the Hudson Bay mine at Hanging Stone Lake, yesterday, were set upon by strikers. They turned back to Gowganda and asked aid of the provincial police.

The provincial constable at Gowganda refused to assist them, and application was made to District Chief Calbeck at Cobalt for adequate police protection. Failing this, a force of militia will be asked for.

There is a Socialist speaker at Elk Lake and Gowganda, inflaming the members of the Union with incendiary speeches.

Porcupine, Ontario, Aug. 14.—The McAulay-Brydge claims in Bristol township have been sold to Mr. B. E. Cartwright, of the Temiskaming mine at Cobalt, and the Pearl Lake mine at Porcupine, and associates for $5,000,000. The deal was completed when the decision of Mining Commissioner Price was given in favor of the owners respecting the recent law suit that was filed against the claims.

Cobalt, Aug. 16.—Mr. Sam Cohen, who has just returned from a visit to the McEaneny property at Porcupine, reports developments on this holding of the Crown Reserve. Recent trenching has opened up a 12-foot vein of quartz and schist carrying free gold and paning well. The McEaneny property adjoins the Hollinger, and from the strike of this vein and that of the main lead on the Hollinger, it is believed that further development will reveal that it is an extension of the big vein. A shaft has been put down fifty feet and some drifting done on another lead with promising results. Fifty men are employed and a small plant is furnishing power.

Sudbury.—At Long Lake, the Canadian Exploration Company is pushing on development work with highly satisfactory results. The addition to the mill of ten stamps with enlarged cyaniding plant, ensures an increased output of the precious metal.

Cobalt.—Eleven bars of bullion were sent out by the Crown Reserve mine August 24, to Montreal, and will be shipped to Mocatta & Goldsmith, London, Eng., who have purchased the greater portion of bullion shipped from Cobalt. The consignment contained 14,773 ounces of silver and was valued at $8,000. This is the first bullion from the Crown Reserve during August.

BRITISH COLUMBIA.

Fernie, Aug. 14.—The ending of the balloting and the announcement of the results throughout the mining district last Saturday marked the end of the excitement over that affair and the town of Fernie has settled down to a quietness which is noticeable to all. Not a ripple of excitement of any kind disturbs the surface of current events; there is no current.

The Corbin mine is still working and has turned out 45 cars of coal in the two weeks operations have been carried on. This coal all goes to the American side, and is cleared through United States Consul Denison's office here.

Absolutely nothing is known of any new move being made by either side to the dispute and it looks as though the Dominion election made matters too delicate for harsh measures to be adopted.

Kaslo.—The Deep Mine, Ltd., will resume operations at once with a crew of 30 men, who will continue at work all winter. The narrow gauge road will be put in order and several cars of lumber will be hauled up for the purpose of rebuilding the structures destroyed by fire last year. This will also enable the Utica mine to ship several hundred sacks of ore, the result of last winter's mining, and will also be a great assistance to those who wish to develop properties in this promising district.

Nelson.—The mill at the Molly Gibson mine is now in steady operation, and about 300 tons of ore are being run through every week. Development of the property is being continued in addition to the getting out of ore for the mill.

Victoria.—The next general meeting of the western branch of the Canadian Mining Institute will be held at New Denver, Slocan Lake. The date has not been definitely determined, but it will be during either the second or third week in September. It is intended to give especial attention to the reading and discussion of papers on subjects connected with mining in Slocan district.

Vancouver, August 19.—Forty-eight thousand acres of bituminous coal lands on Copper River, a tributary of the Skeena in northern British Columbia, have been acquired by a syndicate of London financiers from the Vancouver owners. It is proposed to organize a company and proceed with development work on an extensive scale. The programme already adopted provides for the expenditure of at least $600,000 in development work and equipment during the next twelve months. The deal was negotiated by Mr. R. H. Frisby, who returned to Vancouver a few days ago, after a ten months' stay in London and Paris. Mr. Frisby, accompanied by two engineering experts, has left for Prince Rupert en route to the property, where a small force of men have been engaged at development work since early last spring.

MINING NEWS OF THE WORLD.

OUR EUROPEAN LETTER.

British mining markets still dull—International Miners' Convention passes many resolutions—Colliery results good—His Majesty's Chief Inspector of Mines writes on mining ventilation—New machinery in Cornwall—Rand outputs and profits—Scottish and German oil developments.

(Exclusive Correspondence of the "Canadian Mining Journal."

London, August 18th, 1911.

The condition of the mining markets here is still not good and general dulness and apathy rule. Of course, the abnormally good sumer weather has a great deal to do with this. With the coming of such a rare heat wave as we have just been experiencing in this country brokers, dealers, and investors all flock away from town into the country or down to the shore, and markets become silent wastes. Apart from this, however, there have been many other distinctly adverse factors and curiously enough these factors are equally unconnected with the intrinsic values on the market itself. For example, political, financial, and labour troubles have been very strong. At the time of writing the country is in the throes of the great-

est labour upheaval it has ever known and people's thoughts are more likely to be fixed on questions of transport and food supplies than upon stocks or shares—anyhow for the time being. Considering the many irritating factors at work it is surprising that the mining and oil share values are not lower than they are and that they can so well resist such malign influences is some proof of their general level of sound value.

In the last week of July the International Miners' Congress was held in Lindon, miner labour delegates attending from Germany, Austria, France, Belgium, Holland Sweden, and Bulgaria, as well as, of course, from Great Britain. Resolutions were carried advocating the nationalization of all mines and their evploitation by the State for the national benefit. Under French law all minerals are the property of the State, and resolutions demanded that no further mining concessions should ever be granted to private individuals. This was an echo of the resolutions passed at mining labour conventions in France, Germany, and Austria recently.

Another resolution demanded that inspectors of mines in Europe should be men of practical experience who should be elected by the miners from among their own ranks and paid by the State. A minimum wage for coal miners was also demanded. This, it was said, is supposed to prevail in Great Britain, and in connection with this discussion it transpired that there had been an enormous increase in the number of men employed in the British mining industry. In 1868 the number employed was 346,820, whilst now it well exceeds one million, an increase of about 300 per cent. The thing that interferes apparently with the mininmum wage in this country is the ever-present question of payment for abnormal working places. German and Belgian delegates demanded that the employment of children under 14 years of age in mines should be entirely prohibited, and that no one under 16 should be permitted to work underground. Belgian delegates were in favour of the limitation of the production of coal. This question is one which has been before the Miners' International Congress for many years, but the difficulties in the way of a working agreement covering all the countries of Europe have so far proved insurmountable.

The reports of a number of British collieries which make up their accounts to the end of the calendar year have come to hand recently, and as the group, though not large, is a representative one, the returns given a good idea as to how the industry fared in 1910, as compared with 1909. As might be expected, the record on the whole is a good one, for it has to be remembered that the comparison is with a particularly difficult period when not only were the average prices of coal low, but the cost of production was increased, owing to the friction between masters and men over the readjustment of hours and wages consequent upon the coming into force of the Miners' Eight Hours Act. The latter factor was still operative last year to the extent of the increase in wages per ton of coal raised, which resulted from the readjustments referred to, but, with the exception of the unfortunate dispute at the Cambrian Collieries, there were few serious stoppages. Prices during the first half of the year, moreover, steadily improved, and though there was some reaction in the autumn, the average figures realized were decidedly better. The Welsh companies have, undoubtedly, suffered more from the Eight Hours Act than the collieries in the north of England, and in Scotland, the restriction in output under the new arrangements being greater, while interruptions of work were more frequent, but the good demand for bunker coal, consequent upon the revival in the shipping trade, has helped the companies, even in this section, to make a very good showing. In other districts the results were still more satisfactory. In the aggregate, the advance in profits is equal to about 50 per cent., which more than wipes out the decline of 36 per cent. which occurred in 1909, and while the individual returns vary considerably, in only one instance is there any falling off in profits.

A most interesting series of mining publications under the title of "Modern Practice in Mining," is being issued in this country. Volume IV., which is just issued, deals with the ventilation of mines and is from the pen of R. A. S. Redmayne, who is His Majesty's Chief Inspector of Mines. Mr. Redmayne's position adds considerably to the importance of this work, although the natural importance of the subject is considerable at any time. Just at present even more than usual attention is being given to it, as a result of recent serious colliery explosions and the keen interest now veing evinced in the problems of coal dust and firedamp explosions, which are in some degree related to the problem of ventilation. The risk of explosion is, however, not the only thing to be kept in mind, and Mr. Redmayne wisely devotes a good deal of space to a consideration of the chemical and physiological properties of mine gases.

In this country particularly the increasing depth and area of mine workings is adding greatly to the difficulties of ventilation, for not only is the mechanical problem of supplying air greater than formerly, but the difficulties of supplying a satisfactory quality of air are increasing even more rapidly. Temperatures up to 94 degrees Fahrenheit have been recorded at the working face of the Pendleton Colliery, and as high as 104 degrees at some of the Belgian collieries. Unfortunately the air below ground is usually, although not always, exceedingly humid, so that the physical labour of mining at great depths is very exhausting. Mr. Redmayne hints at the urgency of the new ventilation problem in his introduction, but it is greatly to be regretted that he does not attempt any critical study of this aspect of the question. He suggests auxiliary fans and refrigerated air, and the indications are that ultimately a careful control of temperature, humidity, and composition will be necessary in the deeper and more extensive mines.

Mr. Redmayne does not specifically refer to colliery warnings issued at times of low barometer, but he discusses the effect of a fall in the barometer generally, and points out that the fouling of the mine air which accompanies such a change usually results from the expansion of the foul gases in the wastes of the mine or goaf, and not from an eruption of fresh firedamp, since the discharge pressure of this last is usually far too high to be effected by a small change in the atmospheric pressure. Mr. Redmayne also refers to the curious fact, several times noted by different people, that the fouling of the mine gases frequently precedes the fall in the barometer by a brief interval.

The author is at his best when describing mining practice or experimental facts. When he comes to discuss scientific principles, or theory, he is much less satisfactory. Mining engineers seldom approach their engineering problems in a very sound and logical way, but prefer empiricism and an avoidance of scientific argument. The chapter in this book devoted to fans and the calculation of air currents are in some parts quite crude, and as a whole are defective in logical treatment. One other complaint must be entered. Less than eleven pages are devoted to colliery explosions and "gob fires." It is arguable, of course, that a discussion of colliery explosions is outside the scope of a book on ventilation, but if it is tackled at all its importance demands a more complete and a more up-to-date discussion than Mr. Redmayne has accorded it.

An interesting roasting plant is being supplied to a prominent tin mine in Cornwall. The plant consists chiefly of two Humboldt mechanical roasting furnaces, patented of the largest type. These patented furnaces are in this case used for roasting down pyritical concentrates carrying tin oxide. They represent the latest development in the multiple hearth type of roasters, both as to capacity and adaptability to various degrees of calcining, and are an innovation for Cornwall, where they will not doubt perform the same satisfactory service as they are doing at other mines recently furnished with same, in the Pyrenees and elsewhere.

The tops of the furnaces serve for a preliminary drying of the ore, which is then fed mechanically on to the uppermost hearth of the furnace, travelling down gradually to the lower hearths, and meeting on its way the fire gases which are moving in the opposite direction on the counter current principle. A vertical ring shaft extends through the centre of the furnaces, carrying easily exchangeable arms with stirring rabblers, to move the material along on each of the five hearths. The roasting can easily be changed through all stages from a "sweet" to a "dead" roast. The normal capacity exceeds 10 tons per day when roasting down the ore from 30 to about 3 per cent. of sulphur. The furnaces are entirely self contained, and require very little foundation. All wearing parts eas easily renewable. There is every reason to believe that their use will prove of material benefit to the mine. Their introduction in a larger sense appears to mark another decided advance above certain obsolete mining practice, by modern ore dressing science such as is consistent with safety and reliability.

The creation of a new record in the Witwatersrand gold output has not been accompanied by a corresponding expansion in profits. The net earnings of the controlled mines in July amounted to $4,900,000, as compared with $4,880,000 in June, a total which has not been exceeded during the past two years. But seeing that the yield from these mines was advanced by over $400,000, and moreover, that a newcomer — the Brakpan —is responsible for nearly $65,000 of profit, the expansion of $20,000 in the total is not altogether satisfactory. Broadly speaking, the failure of profits to keep pace with the increase in output arises from efforts to combat a "temporary falling off" in the grade of the stopes in some mines by increasing the tonnage, and as this was not always accompanied by any appreciable saving in costs, the expansion in profits obviously could not be large. In some cases, indeed, growth in quantity failed to compensate for reduction in value. For example, the Geldenhuis Deep endeavored to offset a drop in grade in the Geldenhuis Estate and Jumpers Deep sections by increasing the tonnage from 67,300 to nearly 69,000. But costs were above the normal — possibly in consequence of extra expense due to the caving in of the No. 1 shaft — and the profit came out $10,000 lower at $110,000. A somewhat similar instance is supplied by the Crown mine. This company treated 143,000 tons, as against 141,000 tons, yet the mining profit of $549,750 is only $2,250 in excess of the June total.

Believers in oil and its future, and they are many, are disregarding the apathetic position of the public towards oil shares at the present time. They are looking more towards the increasing evidence of the expanding use of oil. This country's oil deposits are found in Scotland, and it is rumoured, on what appears to be good authority, that an offer has been made on behalf of certain powerful interests to acquire the properties owned by the four oil-producing companies operating in Scotland. The price mentioned is $15,000,000, and this figure, if correct, appears to be sufficiently tempting to cause the directors to think very carefully before rejecting the proposal. There is a good deal of unrest just now oming the shareholders of these Scottish oil companies, owing to the severe competition with which they are faced, and a meeting was held recently at which representatives of the various undertakings attended in the hope of agreeing upon some definite line of action which would be acceptable to all concerned. A committee was formed, and there the matter rests for the present. As regards the source of the reported offer to buy up the principal oil-producing properties in Scotland, America, would, of course, "be the most likely "port of origin" for such a proposal.

It is persistently rumoured that the German Government is contemplating far-reaching measures for the protection of the petroleum industry. The National Liberals have been urging the necessity of counterecting the policy of the Standard Oil Company and its offshoots. A resolution calling for inquiry was adopted by the Reichstag, although the Government did not define its attitude. It was stated here recently that the Government is actually preparing a Petroleum Monopoly Bill for presentation to the Reichstag next year. The accuracy of this statement has been semi-officially denied, but in a form which suggests rather that no definite decision has been reached than that the reports are without foundation.

COMPANY NOTES

INTERCOLONIAL COAL.

Intercolonial Coal preferred declared a dividend of 3½ per cent., payable September 1 to shareholders of record 18th inst. Books will close from August 18 to September 1, inclusive.

KERR LAKE DIVIDEND.

Kerr Lake directors have declared the regular quarterly dividend of 25c. per share and 15 cents per share extra, payable September 15, to holders of record September 15.

CROWN RESERVE DIVIDEND.

Crown Reserve declared a dividend of 2 per cent., with a bonus of 3 per cent., payable on 15th September of record 31st August. Books will not be closed.

GRANBY FOR YEAR.

The net income for Granby Consolidated for the fiscal year ended June 30th was approximately $282,000, assuming a copper cost of 10¾ per pound and selling price of 12.33. Production was 17,795,215 pounds of copper, the smallest since 1906, when slightly over 16,000,000 pounds were produced.

NIPISSING HALF-YEAR.

The financial statement of the Nipissing Mines Company for the half year to July 1, was recently published and in itself gave no clue to the causes for the decline in the stock, the mine being stronger in cash assets at the end of June than it was at the same time last year. The output, however, showed a considerable falling off, and the figures of output for the first half of the year show that production fell below dividend requirements a little, owing to the power shortage early in the year. The output for June, however, was the biggest of the yeaf, so the company is picking up again.

The shipments by months, with the estimated value, were:

	Shipments Ounces.	Net value at at the mine.
January	331,038	$158,046
February	194,185	95,121
March	332,352	168,338
April	406,933	207,679
May	444,053	219,324
June	535,148	262,945
	2,243,709	$1,111,453

Last year, according to the annual report, the cost of producing silver was 14.72 cents per ounce. Taking the same cost this year, and assuming the average price of silver to be 53 cents per ounce, a net profit of 38,28 cents per ounce is shown. On a production of 2,243,709 ounces for six months this shows a net profit of $858,891. Dividend requirements in this period call for $90,000.

THE McKINLEY DIVIDEND.

The McKinley-Darragh-Savage mines have declared the regular quarterly dividend of 3 per cent. and also a bonus dividend of 7 per cent. on the capital stock.

LE ROI No. 2.

The following cable has been sent to London: "Josie mine report for July: Shipped 2,350 tons of ore and 136 tons of concentrates. The receipts from smelter are $25,87 (£5,334)), being payment for 2,226 tons shipped, and $3,126 (£654), being payment for 136 tons concentrates shipped. In all, $28,999 (£5,979). Estimater cost for corresponding period: Development, $3,000; ore production, $10,000; milling, $1,300—$19,300 (£3,979). Hamilton west drift, 300 ft. level—Advance 76 ft. Holywell drift, 300 ft. level—Advance 120 ft. Poorman drift, 500 ft. level—Advance 104 feet. The first 30 feet crosscut east of fault; vein intersected. The first 20 feet along ore averaged 1 oz. 11 dwts. gold and 1¼ per cent. copper over 11 inches."

COPPER EXPORTS SMALLER.

New York exports of copper for the week ended August 18 were 7,372 tons; since August 1st, 15,908 tons; same time last year, 17,748 tons.

STATISTICS AND RETURNS

COBALT ORE SHIPMENTS.

Following are the shipments from the Cobalt camp for the week ending August 25, and those from Jan. 1 1911, to date:

	Aug. 25. Ore in lbs.	Since Jan. 1. Ore in lbs.
Badger	.....	55,200
Bailey	.....	40,000
Barber	.....	6,000
Beaver	125,495	1,278,473
Buffalo	.....	1,800,254
Chambers-Ferland	.....	895,000
City of Cobalt	.....	557,980
Cobalt Lake	127,570	2,698,170
Cobalt Townsite	64,520	719,380
Colonial	.....	135,410
Coniagas	64,250	2,660,354
Crown Reserve	145,940	1,733,529
Drummond	110,000	290,000
Hargreaves	.....	161,100
Hudson Bay	60,000	941,990
Kerr Lake	60,795	1,805,585
King Edward	.....	40,000
La Rose	159,550	4,677,278
McKinley-Darragh	189,700	4,027,864
Nipissing	177,540	4,208,378
O'Brien	.....	938,358
O'Brien, M. J.,	.....	47,000
Peterson Lake, Little Nip	.....	58,430
Provincial	.....	101,670
Right of Way	60,570	830,115
Silver Cliff	.....	106,680
Standard	.....	102,813
Temiskaming	140,520	1,181,892
Trethewey	.....	834,420
Wettlaufer	.....	117,232

The shipments for the week were 1,486,450 pounds, or 743 tons.

The shipments from Jan. 1 to Aug. 25 were 32,539,191 pounds, or 16,269 tons.

In 1910 the shipments amounted to 34,420 tons.

COBALT ORE SHIPMENTS.

Folowing are the shipments from the Cobalt camp for the week ending Aug. 4, and those from Jan. 1, 1911, to date:

	Aug. 11. Ore in lbs.	Since Jan. 1. Ore in lbs.
Badger	.....	55,200
Bailey	.....	40,000
Barber	.....	6,000
Beaver	62,000	1,029,678
Buffalo	65,120	1,734,104
Chambers-Ferland	64,000	895,000
City of Cobalt	.....	557,980
Cobalt Lake	60,000	2,507,600
Cobalt Townsite	76,760	654,760
Colonial	47,410	135,410
Coniagas	120,390	2,533,344
Crown Reserve	47,750	1,587,589
Drummond	60,000	60,000
Hargraves	.....	161,100
Hudson Bay	65,710	816,700
Kerr Lake	61,020	1,684,050
King Edward	.....	40,000
La Rose	127,800	4,114,168
McKin.-Dar.-Sav.	53,290	3,718,574
Nipissing	00,000	3,966,838
O'Brien	.....	864,318
O'Brien, M. J.,	.....	47,000
Peterson Lake, Little Nip.	.....	58,430
Provincial	.....	101,670
Right of Way	.....	708,995
Silver Cliff	.....	106,680
Standard	.....	102,813
Temiskaming	.....	1,041,372
Trethewey	.....	785,520
Wettlaufer	.....	117,232

The shipments for the week were 975,210 pounds, or 487 tons.

Teh shipments from Jan. 1 to Aug. 11 were 30,332,261 lbs.

The Boyd-Gordon also shipped 2,590 pounds last week.

COBALT ORE SHIPMENTS.

Following are the shipments from the Cobalt camp for the week ending Aug. 19, and those from Jan. 1, 1911, to date:

	Aug. 19. Ore in lbs.	Since Jan. 1. Ore in lbs.
Badger	.....	55,200
Bailey	.....	40,000
Barber	.....	6,000
Beaver	123,300	1,152,978
Buffalo	66,150	1800,254
City of Cobalt	.....	557,980
Chambers-Ferland	.....	895,000
Hargraves	.....	161,100
Cobalt Lake	61,000	2,568,600
Cobalt Townsite	.....	654,760
Colonial	.....	135,410
Coniagas	62,760	2,596,104
Crown Reserve	.....	1,587,589
Drummond	120,000	180,000
Hargreaves	.....	161,101
Shipments 7 months, 1911	.....	146,086
Hudson Bay	65,290	881,990
Kerr Lake	60,740	1,744,790
King Edward	.....	40,000

La Rose	403,560	4,517,728
McKinley	119,590	3,838,164
Nipissing	64,000	938,358
O'Brien	64,040	938,358
O'Brien, M. J.,	.....	47,000
Peterson Lake, Little Nip.	.....	58,430
Provincial	.....	101,670
Right of Way	60,550	769,545
Silver Cliff	.....	106,680
Standard	.....	102,813
Temiskaming	.....	1,041,372
Trethewey	48,900	834,420
Wettlaufer	.....	117,232

The shipments for the week were 1,320,480 pounds, or 660 tons.

The shipments from Jan. 1 to Aug. 19 were 31,652,741 lbs., or 15,826 tons.

B. C. ORE SHIPMENTS.

The ore shipments from the Slocan-Kootenay Boundary and Rossland districts for the week ending August 12th totalled 32,899 tons, and for the year to date 1,219,923 tons. The smelter receipts for the week and year to date were respectively 30,961 tons and 1,054,640 tons. The figures in detail were:

I. X. L.	9	70
Centre Star	5,481	123,786
Le Roi No. 2	712	17,318
Le Roi No. 2, milled	300	9,600
Le Roi	423	8,767
Other mines	.....	388
Total	6,925	159,929

Boundary Shipments.

Granby	13,165	590,413
Mother Lode	4,494	194,215
Rawhide	4,010	126,998
Athelstan	100	4,587
Napoleon	1,000	5,560
Unnamed	214	1,836
Other mines	.....	51,749
Total	22,983	977,358

Slocan-Kootenay Shipments.

Sullivan	561	10,838
St. Eugene, milled	420	18,096
Richmond-Eureka	50	1,550
Ferguson	28	321
Rambler-Cariboo	64	1,050
Queen, milled	420	13,230
Granite-Poorman, milled	250	8,000
Nugget, milled	110	3,520
Emerald	86	1,212
Society Girl	23	354
Eastmont	32	185
Knob Hill	77	2,495
Molly Gibson	70	636
Van Roi, milled	800	16,249
Other mines	.....	4,900
Totals	2,991	82,636

Granby Smelter Receipts.

Grand Forks, B.C.

Granby	13,165	590,413

B. C. Copper Co.'s Receipts.

Greenwood, B.C.

Mother Lode	4,494	194,215
Rawhide	4,010	126,998
Athelstan	100	4,587
Napoleon	1,000	5,560
Unnamed	214	1,836
Other mines	.....	21,982
Total	9,818	355,178

Consolidated Co.'s Receipts.

Trail, B. C.

I. X. L.	9	70
Centre Star	5,481	123,786
Ferguson	28	321
Sullivan	561	10,838
Le Roi No. 2	712	17,318
St. Eugene	160	4,137
Le Roi	423	8,767
Molly Gibson	70	636
Granite-Poorman	32	273
Queen	42	270
Knob Hill	77	2,495
Richmond-Eureka	50	1,550
Van Roi	128	708
Emerald	86	1,212
Eastmont	32	185
Society Girl	23	354
Rambler-Cariboo	64	1,050
Other mines	.....	35,079
Total	7,978	109,049

NOVA SCOTIA COAL SHIPMENTS FOR JULY, 1911.

Dominion Coal Company, Ltd.

Output and Shipments for July, 1911.	
Shipments, July, 1911	375,147
Shipments, July, 1910	322,186
Increase, 1911	52,961
Shipments 7 months, 1911	1,929,360
Shipments 7 months, 1910	1,618,311
Increase	311,049

Nova Scotia Steel & Coal Co., Ltd.

Shipments, July, 1911	71,750
Shipments, July, 1910	83,549
Decrease, 1911	11,799
Shipments, 7 months, 1911	340,451
Shipments 7 months, 1910	414,051
Decrease, 1911	73,600

Acadia Coal Co.

Shipments, July, 1911	30,425
Shipments, July, 1910	20,390
Increase, 1911	10,025
Shipments 7 months, 1911	220,617
Shipments 7 months, 1910	143,185
Increase, 1911	77,432

Intercolonial Coal Co.

Shipments, July, 1911	21,886
Shipments, July, 1910	19,304
Increase, 1911	2,582
Shipments 7 months, 1910	142,658
Increase, 1911	3,428

Inverness Ry. & Coal Co.

Shipments, July, 1911	21,130
Shipments, July, 1910	24,212
Decrease, 1911	3,082
Shipments 7 months, 1911	152,122
Shipments 7 months, 1910	145,905
Increase, 1911	6,217

SILVER PRICES.

	New York cents.	London. pence.
Aug. 8	52⅛	24 1/16
" 9	52⅛	24 1/16
" 10	52⅛	24 1/16
" 11	52⅛	24 1/16
" 12	52	24
" 14	52	24
" 15	52	24
" 16	52⅛	24 1/16
" 17	52	24
" 18	52	24
" 19	52⅛	24 1/16
" 21	52¼	24⅛
" 22	52¼	24⅛
" 23	52¼	24⅛
" 24	52¼	24⅛
" 25	52⅛	24 1/16

NEW YORK METAL MARKETS.

August 23—

Tin, Straits, 44 cents.
Copper, Prime Lake, 12.70 cents.
Electrolytic copper, 12.50 to 12.60 cents.
Copper wire, 13.75 cents.
Lead, 4.60 cents.
Spelter, 6.15 cents.
Sheet zinc (f.o.b. smelter), 8.00 cents.
Antimony, Cookson's, 8.37½ cents.
Aluminium, 19.75 to 20.25 cents.
Nickel, 40 to 45 cents.
Platinum, ordinary, $43 per ounce.
Platinum, hard 1, $45.50 per ounce.
Bismuth, $1.80 to $2 per pound.
Quicksilver, $48 per 75 pound flask.

COBALT STOCKS.

Amalgamated	...	...
Bailey	.03½	.03⅞
Beaver Consolidated	.45½	.46
Buffalo	1.75	1.90
Chambers-Ferland	.10½	.11
City of Cobalt	.09	.11
Cobalt Lake	.24¾	.24⅞
Coniagas	6.60 bid	
Crown Reserve	307.	309.
Foster	.03 bid	
Gifford	.01½	.02
Great Northern	.10	.10¼
Hargraves	.09 bid	
Kerr Lake	4.60	4.75
La Rose	33.70 sellers	
Little Nipissing	.03¾	.03⅞
McKinley	1.52	1.54
Nancy Helen	.01 bid	
Nipissing	8.10	8.15
Nova Scotia	.10½	.12
Ophir	.06 bid	
Otisse	.01	.01¼
Peterson Lake	.06½	.08
Right of Way	.06½	.07
Rochester	.03¼	.03⅜
Silver Leaf	.02¾	.03¼
Temiskaming	.40	.40½
Trethewey	.70	.75
Wettlaufer	.85	.86

NEW YORK CURB.

Braden Copper	.04⅝	.04⅞
B. C. Copper	.03¾	.04
Butte Coal	.15¾	.17
Ely Central	.01	.03
Ely Cons.	7/16	½
First National Cop.	.01	.01⅛
Giroux	.05	.05⅛
Green-Can.	.06⅜	.06⅝
Inspiration	.06¾	.06⅞
Nevada Hills	.03 7/16	.03 9/16
Ohio Copper	.01⅜	.01½
Ray Central	.01⅜	.01½
Union Mines	¼	⅜
Yukon Gold	.03⅝	.03¾
Goldfields Con.	.05½	.05¾
Nevada Con.	.17	.17⅜
Miami	.19½	.19¾
Granby	.60 off	
Con. Min. & Smelt.	.42	.44
Davis-Daly	¾	5/16
Con. Arizona	11/16	¾
Rawhide Coal.	...	...
Ray Con.	.15	.15⅛
Chino	.19	.19½

PORCUPINE STOCKS.

Crown Chartered	.31	.32½
Amer. Gold	1.50	1.80
Apex	.13	.16
Com.	.18¾	.20
North. Exploration	3.75 bid	
Dobie	.95 bid	
Dome Exten.	.54½	.55
Eldorado	.11	.15
Foley	1.02 bid	
Gold Reef	.14	.20
Hollinger	9.85	9.95
Pearl Lake	.40 bid	
Pore. Can.	.90	.95
Pore. Central	.73	.74
Pore. Imperial	.09½ sellers	
Pore. Northern	.58½	.59
Pore. Tisdale	.05½ sellers	
Preston	.29	.29½
Rea	3.03	3.05
Standard	.04	.07
Swastika	.43	.43¾
Pore. Gold	.44½	.44¾
West Dome	1.75	2.00