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CONTENTS

THE ROGNON FLOTATION

The gold mining industry of Ontario has during the past few years made rapid strides. Several very profitable mines have been developed and the known gold bearing area has been greatly extended. Many promising discoveries have been made, and it is reasonable to expect that the number of profitable mines will greatly increase in the near future. The results obtained from operations in the Porcupine and neighboring districts have been so satisfactory that we may confidently expect that Ontario is to become a very large producer of gold for years to come. It is well for Canadians to recognize this fact.

Canadian investors should be encouraged to take the leading part in the development of what promises to be a great and profitable industry. Some of the new discoveries warrant the expenditure of more money than the owners can provide. It is natural that they should form stock companies and appeal to the public to contribute funds and share in the risks. In exchange for stock subscriptions the company promoters should give the public a fair deal. Those who are asked to contribute money for the development of prospects should be told all the facts. Those who propose to contribute should investigate carefully. There are risks in mining ventures which should be recognized, and which the investor must take. There are also risks of another character which no sensible investor should take and which unfortunately are the cause of most of the losses in connection with mining company promotions.

During the past few years the number of wildcat mining promotions in Canada, as compared with those of the early days of Cobalt, has been small; there has been more money spent in mining operations and less absorbed by parasites; and as a result the mining industry is now in a flourishing condition. Thousands of shareholders of stock in Canadian mining companies are receiving good dividends and fewer worthless certificates are being printed.

Recently the public has been taking more notice of the excellent results being obtained by companies operating gold mines in Ontario. It is to be expected therefore that many investors would be willing to take part in the financing of promising properties. It will be unfortunate and to the discredit of those who take part in flotations if these prospective investors are deluded into taking foolish and unnecessary chances.

There has come to our attention since the publication of our last issue the prospectus of the Rognon Gold

Mines, Ltd., a company formed ostentatiously for the development of a gold deposit near Dryden, Ontario.

What the actual value of the property is no one can say. Many who have examined it regard it as well worthy of development. Mr. Frank C. Loring of Toronto, Mr. R. T. Cornell of Ricketts & Co., New York, and Mr. James Bartlett, of the Ontario Bureau of Mines staff, have examined the property and they report favorably on the surface showings. There is some high-grade ore, and there may be a lot of it. Under the circumstances a good price might reasonably be demanded, provided the prospective buyer were given an opportunity of thoroughly testing the property before exercising his option. Without being permitted to first do some development work, few experienced mining men would consider paying $50,000 for a very promising undeveloped gold property. Assuming some such price as the present market value of the Rognon prospect let us turn to the Rognon prospectus.

The prospectus shows that the directors of the Rognon Gold Mines, Limited, are J. E. Murphy, A. D. Clark, A. G. Kirby and Samuel J. Maddin, of Toronto, and Ernest J. Rognon, of Dryden, Ontario. The consulting engineer is Mr. P. Kirkegaard, of Toronto. Mr. Rognon is the discoverer of the property, and president of the Dryden Board of Trade. The Toronto gentlemen are well and favorably known. The list of directors is such as to inspire confidence.

The literature inviting subscriptions is being sent out by the Ontario Bond Corporation, Ltd., a company incorporated in Toronto on May 20, 1916, with a capital of $40,000, "to carry on a financial and mining business and to buy, sell and deal in shares, bonds, debentures and securities of all kinds." The moving spirit is Mr. A. G. Penman, of Toronto, who has had some previous experience in the financing of mining companies, being associated with the flotation of the Otisse and Cobalt Silver Mountain companies some years ago. He is credited with being a salesman of great ability, and has, since his Cobalt ventures, been successfully selling real estate.

The capitalization of Rognon Gold Mines, Limited, is $2,500,000. The par value of the shares is $1. There has been issued to each of the four vendors of the property, Ernest G. Rognon, Melvina B. Rognon, Peter Kirkegaard and Samuel Maddin, 500,000 shares, making a total of 2,000,000 shares paid for the property. Of the remaining 500,000 shares, called treasury shares, 100,000 is now offered to the public at par.

From this it might be deduced that the promoters consider that $100,000 is the sum required to develop the property. They appeal to the public for the necessary funds. In exchange for the money, which is to be the entire working capital, they offer 100,000 shares, while the vendors get 2,000,000 shares. Any earnings from the $100,000 subscribed by the public would be divided between holders of vendors' and treasury shares in the ratio of twenty to one.. If the operation of the mine proved very profitable and yielded a net profit of say $1,050,000 during the life of the mine, the buyers of the 100,000 shares of treasury stock would be entitled to $50,000, while the holders of the 2,000,000 vendors' shares would get the $1,000,000.

Now such a share of profits can scarcely be expected to induce even the most careless investor. Such an offer might be expected to be unsuccessful and scarcely worthy of notice. The Rognon promoters have, however, provided another feature. Not content with offering the public such a handsome share of the possible profits, the Rognon promoters announce that they have entered into an agreement with the Imperial Trusts Co. whereby the money subscribed by the public will be returned at the end of fifteen years, without interest, if the mining company does not make a profit of several million dollars in that time. This arrangement is called a guarantee and much attention is directed to it by the promoters. This guarantee feature is not new. It is frequently used successfully in selling property that would be unsaleable without the addition of some special features.

To the promoters of the Rognon the guarantee feature doubtless appealed as one which would give investors more confidence. To utilize it without cost to themselves they propose to sell to the public more shares than would otherwise be necessary so that part of the money can be deposited with the Trust Company so that a guarantee can be given that an amount equal to that subscribed will be returned at the end of fifteen years. As $100,000 is wanted for the treasury and a similar sum will be needed for deposit with the Trust Company it will be necessary to sell about 200,000 shares. To pay the expenses of organizing and selling, more shares must be sold. The public will, under this plan, provide the money necessary for the treasury and to pay the Trust Company for its guarantee. The vendors will contribute no money but will part with about 100,000 shares of their 2,000,000 shares to obtain the necessary funds for the guarantee. What agreement exists between the vendors, the mining company, the Trust company and the promoters, the public is not supposed to enquire. The Provincial Secretary would do well to investigate.

The prospectus states that an option on 100,000 shares of treasury stock granted to the Ontario Bond Corporation and a contract of employment of an engineer are the "only material contracts." If that is so we would be very much surprised. It would indicate a scarcely credible laxity on the part of the Imperial Trust Company.

Money must be paid the Imperial Trust Company for its guarantee. Money must be paid the Ontario Bond Corporation for its services. The money is to be supplied by the public, and yet we are told that the contracts between the Trust company, the salesmen and the vendors are not material contracts.

The Ontario Bond Corporation in calling attention to its guarantee feature points out that even if the mine proves unprofitable and even if the $100,000 is spent without any return the purchasers of shares will, at the end of fifteen years get their money back.

The salesmen thus put their case in a nutshell. They get their profit, the Imperial Trust Company gets the use of the money and the vendors have an opportunity of disposing of their shares at a big figure, whether the property is of any value or not.

If the property should happen to prove profitable those who furnish the $100,000 will share in the profits. They will be entitled to a ridiculously small fraction, however. For each dollar they get, the holders of vendors' shares will be entitled to twenty.

A SCIENTIST RECOGNIZED

Honors for scientific services in Canada are so seldom bestowed that the recognition of the services rendered by Frederick Stupart, Director of the Meteorological Service, is an event of no ordinary significance. We congratulate Sir Frederick. His work is well known to be of a high order and the services he has rendered the public are great. It is therefore fitting that this distinguished scientist should be honored. It is to be hoped that the recognition of the services of this scientist is to be taken as an indication that the amassing of wealth and the attaining of high political office are no longer to be regarded as the only forms of public service worthy of recognition. Few of those who have devoted their lives to scientific work in the service of the Government have received their just reward. Possibly the awakening of the public to the fact that scientific research should be encouraged may eventually result in scientists being not so scarce in the lists of those receiving honors.

GIBSON'S FORTNIGHTLY MINING REVIEW

About three months ago we received the first copy of "Gibson's Fortnightly Mining Review," published by Homer L. Gibson & Co., commission stock brokers, and sent free of charge to mining investors. It bore evidence of being carefully edited, contained much information that seemed likely to be useful to investors, and was free from the sensational statements which characterize the literature sent out by some brokers.

Subsequent issues of the Review indicate that the publishers intend to keep up the high standard set by the first issue. They may rightly claim that they are rendering a real service to mining investors.

The latest issue of the Review contains a general article on mining in Northern Ontario that should be read by Canadian investors.

LEAD AND ZINC

A timely report on the lead and zinc deposits of Ontario and Quebec has just been issued by the Ontario Bureau of Mines. The report was prepared by Mr. W. L. Uglow, who, during 1914 and 1915, was employed by private interests in making a study of the deposits.

Mr. Uglow has, through the Ontario Bureau of Mines, given to the public information that should help in the development of the lead and zinc mining industry. He has described, after carefully reading all the available literature, most of the important deposits and a number of prospects which he has visited. As a summary of what is known of the nature of the deposits the report will doubtless be much used.

CORRESPONDENCE

To the Editor Canadian Mining Journal:

Sir,—I wish to call your attention to a note in your last issue, which is apt to cause a little misunderstanding. You state that the charter for the Laurentian Consolidated mine has been changed to the Rognon Gold Mines Limited.

I wish to inform you that the Rognon gold mine has nothing whatever to do with the Laurentian gold mine. Some three years ago a charter was taken out with the name Hunton Gold Mine. This was never used, and the name was afterwards changed to Laurentian gold mine. It was never used in this instance also and, when the organizers of the Rognon Gold Mines Limited were preparing to incorporate, they heard that the charter was for sale, and, consequently, purchased it at a lesser cost than would have been necessary had they gone to the Government for a new charter.

Trusting you will explain this matter in your next issue, and assuring you that neither the Rognon Gold Mines Limited, nor any of the men associated with it have, or ever had, anything to do with the Laurentian property, I am, yours faithfully,

A. G. PENMAN.

Toronto, June 21, 1916.

INDIAN PLACE NAMES.

Many of the lakes, rivers, etc., of Northern Canada are known by names given them by the Indians, or by names derived from the Indian names. In a paper read before the Royal Canadian Institute, Toronto, Mr. J. B. Tyrrell gives a collection of Algonquian Indian names in Northern Canada, their meaning, the location of the places to which they apply, and the name by which these places are now known.

The Pas, a place which has recently become of importance to mining men, was known to the Indians as Opa: a narrow place, or Opaskweow: narrows between two high places. Athapapuskow lake, in The Pas Mining district, was known as Athapapuskow Sakahigan: rock-on-both-sides-lake. The Saskatchewan river was Kisiskatchewana Sipi: swift current river. Manitoba lake was Manitoba Sakahigan: Manito (or spirit) narnows lake. Lake Winnipeg was called by the Indians Winnipeg Sakahigan or Nasty-water lake.

CANADIAN MINERALS AT THE PANAMA-CALIFORNIA INTERNATIONAL EXPOSITION

By F. H. Mason.

The Canadian mineral exhibit that caused so much favorable comment at the Panama-Pacific International Exposition is causing almost as much eclat at the Panama-California International Exposition at San Diego. Of course, the latter is a much smaller exposition than, and not nearly as well attended as, the San Francisco Fair, but among the winter visitors to the southern city are people who have money and leisure enough to get away from the rigors of the northern and eastern winters. Capitalists and mining men of Arizona, Colorado, and New Mexico, rich mineral states, are wont to rendezvous in the cool southern coast city during the summer months to get away from the torrid heat of the interior. Just now, it is the silly season, and things are a bit slack, but the members of the mineral department are looking forward to a particularly good summer, and expect to interest many mining men and capitalists in the vast mineral resources of the Dominion of Canada.

With the advent of a metallurgist on the exhibition commission, a number of metallurgical features have been, and are being, added to the mineral exhibit, thus, besides the excellent display shown at San Francisco, the present exhibit contains a number of automobile and bicycle parts plated with cobalt, together with cobalt anodes and the cobalt salts used in electro-plating; a new collection of anodes, cathodes, starting sheets, pig lead, and lead pipe, from the Consolidated Mining and Smelting Co. of Canada, illustrating the very latest practice in electrolytic lead refining at Trail, B.C.; some ore, concentrate, part of a cathode with deposited zinc, and a pig of zinc produced by the Watts electrolytic process, from the Electro-Zinc Company's works at Welland, Ont.; and a splendid collection of that typically Canadian alloy, monel metal, in the form of wire, sheet, and bar, from the International Nickel Co. These exhibits, particularly the cobalted articles, have occasioned a large number of inquiries, many of which will undoubtedly produce good results.

Beside the metallurgical features, a number of new minerals, representing recent discoveries, have been added since the San Francisco Fair. Most noticeable among these are an excellent collection from Kowkash and Boston Creek, obtained through the kindness of Mr. Thomas W. Gibson, Deputy Minister of Mines for Ontario.

REFINING METALS AT TRAIL, B.C.

The Trail News, published at Trail, British Columbia, on June 9 printed the following:

A few days ago Professor Francis A. Thomson, head of the school of mines at the Washington State College at Pullman, Wash., was a visitor in Trail, with some of the mining students of the college, inspecting the Consolidated smelter here. Unlike most college professors, Prof. Thomson is not verbose, but has the happy faculty of putting much in little and thus getting at the meat of the matter. His comments on the Trail smelter is, therefore, of more than usual interest. Here is what he said:

Trail to-day is one of the metallurgical meccas of America. The other is Anaconda, Montana. But Trail, as soon as the electrolytic copper refinery is built, will be doing what no one plant with which I am acquainted has ever done—that is, producing refined gold, refined silver, refined copper, refined lead and refined zinc.

War times have brought another addition to the Trail smelter in the form of a tall fence with a barb wire guard on top and a Canadian soldier with a fixed bayonet at each gate—a necessary precaution against Teutonic tampering.

Briefly, the Trail smelter consists of three plants. The first is the copper smelter, the successor of the little matting plant built by Heinze in 1895. It treats mainly the gold copper ores of Rossland, as did its predecessor. This plant has a capacity of 1,000 to 1,200 tons of ore daily and makes a low-grade copper matte, which is either resmelted to higher grade or more recently enriched in the newly added converters. Before long all matte will be converted to blister copper, and refined electrolytically at Trail.

The second section of the plant is the lead smelter. Here lead ores, mainly from East Kootenay and the Slocan, are smelted in blast furnaces to lead bullion, also containing gold and silver.

This smelting is preceded in nearly all ores by roasting in Wedge & Godfrey furnaces, in Huntingdon-Heberlein pots and in Dwight-Lloyd sintering machines. The fumes from both blast furnaces contain a considerable quantity of lead and silver. This is recovered by means of the Cottrell electrostatic precipitation plant, which effectually extracts practically all the solid matter in the smoke.

The lead bullion yielded by the blast furnaces is cast into anodes and transported to the electrolytic refinery, where pure lead is precipitated on the cathode and the gold, silver, and other metals sink to the bottom of the long tanks in which the operation is carried on.

The third and newest section of this great plant is the zinc mill. Here zinc-lead ores are crushed and roasted under conditions of careful temperature control, and then leached with sulphuric acid in a plant which bears a striking resemblance to a modern cyanide plant. The tailing contains the lead, iron, and other insoluble ingredients in the ore. The solution rich in zinc goes to precipitation tanks, where the zinc is thrown out of solution with the aid of the electric current.

GREENHILL COAL MINE.

Blairmore, Alta., June 3.—The output at the Greenhill mine of the West Canadian Collieries, Ltd., is increasing daily and soon will be one of the largest producing mines of high-grade coal in Southern Alberta.

The mine was put into operation soon after the closing down of the old Blairmore mine and although it is only in its infancy it is already producing about an average of 800 tons per day. A new incline is in course of construction in No. 2 seam and when this is completed it is expected the mine will be producing something like 1,000 tons daily. The new steel tipple which is being constructed to the railway siding is almost completed.

Several hundred men are already employed at the mine. W. G. Pearson is the pit boss.

MINING ENGINEERS FOR MILITARY SERVICE.

According to news despatches from Ottawa, the War Office asked last month for fifty mining engineers for special service. It is now stated that only a few were required and we are authoritatively advised that the numbers have now been made up.

THE IRON MINES OF WABANA, NEWFOUNDLAND

By J. W. McGrath.

On a tiny little island, off the coast of Newfoundland, once called Bell Island but now familiarly known as Wabana, are two of the largest iron ore mines in the world. The island measures twelve miles by two, and extends for about two miles out under the ocean. It is situated at the mouth of Conception Bay, on the eastern coast, and is thus wholly exposed to the Atlantic gales that strike in with much frequency along that weather-beaten shore. In a direct line it is 12 miles distant from St. John's, the capital, while the nearest point on the mainland is six miles away. With regard to the ore markets of the world it is conveniently situated, being practically at an equal distance from both American and European ports. To Sydney, Nova Scotia, the distance is 412 miles, to Liverpool 1,996 miles, to Philadelphia 1,240 miles.

During the summer of 1895, when the mines on Bell Island were being opened, Mr. Thos. Cantley gave the locality the Indian name "Wabana," which means "the place where daylight first appears," an appropriate name for this eastern portion of the continent.

The Wabana iron ore deposits are owned and mined by two Canadian firms, the Nova Scotia Steel and Coal Company, and the Dominion Iron and Steel Company, operating steel plants at Sydney Mines and Sydney in Cape Breton. According to the report of the Department of Mines, Newfoundland, these two companies have taken annually over a million tons of ore from their mines at Wabana, and during the year previous to the outbreak of the war the total quantity of ore shipped from these mines was 1,605,920 tons, of which 1,048,432 tons was shipped to Sydney and 557,488 tons to the United States and Europe. The Wabana mines have accordingly been furnishing during the last few years from 47 to 50 per cent. of the total amount of iron smelted in Canada. Of the ore shipped from these mines to Europe during 1913, 200,000 tons went to Krupps, Germany, to make the big guns which have since been used with deadly effect both on ourselves and our allies.

The ore is a non-Bessemer, red, oolitic hematite, with an appearance hard and blocky. Average analyses of the cargoes being shipped from the mines show the bulk of the ore to run from 53 to 55 per cent. iron, one per cent. moisture, 0.9 per cent. phosphorus, and from 7 to 14 per cent. silica. Among the purchasers of the ore Bethlehem Steel Co. and the Krupps have been the largest buyers.

The ore forms part of a series of Ordovician sediments which are here exposed. The ore beds outcrop for about three miles along the northern shore of the island, and then dip in a north-easterly direction. An extraordinary concentration of ferruginous minerals occurs in the five principal zones in the upper 1,000 feet of strata, which comprise with the accompanying sandstone and shale, a fossiliferous series of shallow water deposits.

From the island the ore dips out under the sea from seven to fourteen degrees. Of the six seams only the three uppermost are being worked; these are those which outcrop for about three miles along the northern shore of the island. Certain names have been given to the various ore beds, and among others "Dominion bed" and "Scotia bed" to the principal workable beds.

These names were applied before submarine mining commenced when the Dominion bed was operated by the "Dominion" Company, and the Scotia bed by the "Scotia" Company on the land claims on the island. In the case of the submarine holdings, which are now being worked more than two miles out under the sea, each company owns all the beds within its respective areas, the boundaries of which are vertical. At the present time the Scotia Company is mining largely from the Dominion bed, as well as the Scotia bed, while the Dominion Company owns a part of the Scotia bed as well as part of the Dominion, and other beds in their submarine property. Hence the names of the ore beds do not indicate the names of the owners. In the land areas the lower or "Dominion bed" is about twelve feet thick. The "Scotia bed" is 7 feet thick. At depth the ore beds get thicker and somewhat richer than at the outcrops.

Earliest Geological Reference.

During the year 1843 the first Geological Survey of Newfoundland was made by J. B. Jukes, and in his report the following descriptions are found: "On the south-east coast of Kelly Island, a mass of gritstone, in many beds having a total thickness of thirty or forty feet, rises into the middle of the cliffs. . . . . in Little Bell Island as well as in Bell Island itself, several bands of similar stone exist. . . . In the upper beds of Bell Island, namely, those of the north-west side, there is but little stone, although one bed of bright red sandstone about 8 feet thick was observed."

This is the earliest reference to Wabana ore, as the only bright red strata of the island are beds of a ferruginous oolite whose color is due to hematite, and a bed of about the thickness noted forms a striking feature of the north-west coast.

In the Geological report for 1868 of Newfoundland the highest stratum on the western end of Bell Island is described as "a mass of greyish granular white weathering sandstones," which underlies the principal ore beds. Higher strata containing the iron ore are exposed farther east, but as these are not included it is probable they were not visited, and one of the most wonderful accumulations of iron ore in the world remained unknown until many years later.

The Discovery of the Ore.

Previous to the mining days Bell Island was sparsely settled by Irish settlers who lived by farming, and took their product to sell to St. John's in sailing vessels. The story runs that one of the vessels which used a quantity of heavy red stones which lay along the beach at Bell Island, after taking a load of provisions at St. John's, left the stones on one of the wharves there. An Englishman in a vessel at the same pier noticed the rocks, and took a portion across the Atlantic with him to England where he had it analyzed. The prospect was immediately leased to this party, who sold it in 1893 to the Nova Scotia Steel Company for $120,000. This company at once began operations for the development of the deposit, and once the initial difficulties were surmounted large annual yields of a high grade ore were obtained.

Scotia Co. Sells Part of Its Holdings.

In 1899 a portion of the areas leased to the "Scotia" Company was sold to the then recently formed Dominion Iron and Steel Company. The latter acquired the

lower bed while the Nova Scotia Company reserved for themselves the upper bed, the ore in which contains a higher percentage of iron tha nany of the other seams. This sale included a submarine area of three square miles adjoining the shore. As the work progressed, additional areas were secured by both companies and at the present time the total holdings of the Nova Scotia Company are 83½ miles. To reach the "Scotia" submarine areas it was necessary to pass through the Dominion areas which adjoining the land extend almost 4,000 feet to the deep. In selling the areas an agreement was made between the two companies by which the slopes could be driven through the intervening areas, and the Dominion Co. accordingly commenced work in 1905.

Amount of Ore in Deposits.

Altogether there are twelve bands of ore which range in thickness from one to ten feet. The largest are so accessible that almost all the ore they contain is minable, for the ore readily separates from the under and overlying strata. In a paper on "The Iron Ores of Newfoundland," J. P. Howley, head of the Geological Survey of Newfoundland, says: "By the aid of the dip and strike of the strata it is possible to form a fair idea of the extent of the trough. . . . and provided the bands retain their thickness and stratified character throughout the result arrived at reaches the enormous total of 3,635,343,360 tons."

In 1913 Mr. Elwin E. Ellis and Mr. Edwin C. Eckel, both eminent geologists, the former being of the United States Geological Survey, each having made an estimate of the amount of Wabana iron ore, gave the results of their findings as testimony in a legal case known as the "Steel Corporation Dissolution Suit." Mr. Ellis "estimated the reserve at 3,250,000,000 tons, allowing for workings five miles long," while claims have since been taken 12 miles from the shore and it is planned to operate workings for that length. Mr. Edwin C. Eckel testified " . . . that in Newfoundland there were 3,500,000,000 tons of economically available ore within a radius of five miles from Bell Island. Besides this there are billions of tons which are not economically available at this time. In one deposit alone . . . . the ore runs thirty feet thick and contains about 90,000,000 tons to the square mile."

The Nova Scotia Company's Mine.

The ore is first won by exploding small charges of dynamite. The room-and-pillar system for extraction of the ore is used. In the stopes and main drifts pit props are used. The slopes in submarine areas are carried on by back stoping, a portion of the ore being left to stand upon.

"Electric steam" shovels load the broken ore into the stopes. These shovels have loaded 350 tons in a shift.

Centrifugal pumps electrically driven by direct connected motors are used to keep the mine dry. Pumping is done in two lifts, storage dams being placed almost at the bottom of the mine and again at a point 4,200 feet below the surface.

The mine is ventilated by a motor driven fan of 80,000 cubic feet per minute capacity at 8-in water gauge, overlying the shaft.

The shafts are driven double, one shaft being for hoisting and the other for air; they are divided by a rock pillar.

The hoisting of the ore to the surface is done by engines which are of the largest type used anywhere in Canada. The largest of these hoists is first motion, duplex, Corliss valve, built by Fraser and Chalmers of England. It has cylinders 28 inches by 60 inches, equipped with an 11-foot drum, with steam operated post-brakes, Whitmore overwind device, and space for 10,000 feet of 1½-inch cable. There are two drums which lock together for hoisting in balance. The skips are of 4,500 pounds capacity; they operate in balance. The slope track has an average grade of 16 degrees, and is laid with 80-pound rails. A hoist takes 30 seconds.

After the ore has been picked on a rubber belt, 150 feet long, inclined at 17 degrees, it falls into a bin, from which the cars are loaded, and it is thence conveyed to shipping piers about a mile and a quarter distant. Enormous hoppers take the ore to the loading chute which feeds into the steamer's hold. There are two shipping piers, one of steel, the other of timber. With the excellent loading appliances used by the company, steamers carrying 12,500 tons are fully loaded and dispatched in less than four hours.

During the winter, from December till May, no ore is shipped, and the total quantity mined is stock-piled, at the cost of ¾ of a cent per ton by a device which can handle about 1,400 tons a day.

Cost of Mining the Ore.

The ore is very cheaply mined. Mr. A. J. Moxham, the American iron and steel expert, who built the smelters at Sydney, declared in a lecture at Toronto that "at Bell Island mines the actual price of mining and putting the ore on cars is less than the traditional contractor's price for removal of earth; in fact, the ore is capable of being mined as cheaply as dirt, and in making steel at Sydney, the cost of freight on the assemblage on the raw materials there being fifty-five cents in all; the cost of assemblage is the lowest in the world, and represents a saving of $2.45 a ton over the assemblage cost in Pittsburg, Pennsylvania.

Where the Ore Goes.

The great portion of the ore mined by the Dominion Company goes to its smelters at Sydney, while the bulk of the ore mined by the Scotia Company is sold in the open market. The pig iron and steel manufactured by the smelters at Sydney is sold all over Canada, a large section of the Grand Trunk railroad to the Pacific coast was built from the steel rails produced at Sydney, while large quantities of the rails have been used to build railways in India.

When the mines first opened a vigorous attempt was made to induce both companies to erect smelters in Newfoundland, but owing to the fact that the Dominion Government offers large bounties to such industries, which Newfoundland not being politically part of Canada, was too poor of herself to afford, it was found more profitable for smelters to be erected in Canada than in Newfoundland, and thus maintaining her foolish attitude of trying to "paddle her own canoe" Newfoundland sacrificed a most remunerative avenue of employment. In default of not erecting smelters in Newfoundland the Government has taxed the ore mined by both companies; this tax yields to the Department of Mines about $120,000 annually.

About 2,000 men are employed at the mines all the year round. The floating population is small. A large part of the employees are married men who have their own houses on the Island. The harmony existing between the companies and the men is expressed by the

fact that since the mines opened there has never been a strike, and last year both companies, without any expression on behalf of the employees, granted a substantial increase to the daily wage paid to all the miners.

The Island is systematically laid out, and the houses are lighted with electricity. The municipal government of the Island is now about to install a sanitary system that should make Wabana one of the healthiest towns in Newfoundland.

ADDITIONS TO HOLLINGER PLANT IN 1915

Hollinger's expenditure for plant and equipment in 1915 amounted to $314,705.87, distributed as follows:

Buildings.

Dwellings	$6,835.65	
Cyanide plant	32,393.52	
Stamp mill	7,608.19	
Transformer station	4,524.05	
Hoist house	840.66	
Railway platform	785.04	
Garage	466.25	
Change house	354.24	
Miscellaneous	58.35	
		$53,865.95
Fencing and guard houses		$10,645.85

Equipment.

Stamp mill	$109,802.97	
Cyanide plant	63,525.34	
Mine equipment	28,587.53	
New hoist	15,348.39	
Surface electric railway	12,108.66	
Sprinkler system	9,292.79	
Railway siding	4,658.10	
General plant	4,238.57	
Machine shop	3,102.05	
Transmission lines	1,612.02	
Lighting system	538.21	
Office furniture	580.40	
Pumping plant	450.91	
Water lines	241.39	
Assay office	203.88	
Air lines	152.99	
Refinery	115.47	
Camp equipment	450.00	
Miscellaneous	69.08	
		255,078.75
		$319,590.55
Less sales of scrap and live stock		4,884.68
Charged to plant		$314,705.87

In his report for the year 1915, President N. A. Timmins says of plant additions:

"Expenditures for plant amounting to $314,705.87 were again a heavy item, but there can be no doubt as to the wisdom of this policy of extending plant, when the rapidly increasing ore reserves are considered. As explained in the report of last year, the mill was then being increased to a capacity of 1,600 tons per day. This increased capacity was secured, but it soon became evident, in the light of underground developments that the tonnage could, with advantage, be increased still further, and we are now in the midst of alterations and additions which will raise the capacity of the mill to 1,900 tons per day. Contemporaneously with the increase in milling capacity, it has been necessary to increase the plant in other departments of our works. The handling of increased tonnages underground has necessitated the installation of a system of electric locomotives in the mine, an investment which paid for itself in the first six months of operation, owing to the saving made in the cost of tramming. The hoisting of the ore from the mine to the surface required the installation of hoists of much greater capacity, and the increased consumption of electric power has demanded the building of a new transformer station. It has been found necessary to add greatly to our workshop equipment, and underground equipment of drills, cars, etc. The handling of supplies, coal, timber and general work upon the surface has justified the installation of an electric trolley system which serves the different parts of the property. A spur has been built on to the property from the line of the T. & N. O. Railway, by means of which all supplies are landed in the midst of our works. All of these additions have been necessary to keep pace with the rapid growth of our mining and milling operations, and the money required has come from profits, without interfering with dividends or cash reserves. A complete justification of the expense is found in the great reduction made in the matter of working costs."

BEAVER CONSOLIDATED.

In a letter to the shareholders of Beaver Consolidated, President F. L. Culver says:

"The main shaft is down 1,630 ft. The lower contact between the Diabase and Keewatin formations was encountered at a depth of about 1,570 ft. We are cutting the station at the 1,600-ft. level, from which point lateral development will be commenced. Our intention is to drive a crosscut both east and west of the shaft, which, by reason of the dip of the Diabase intrusion, we anticipate will enable us to explore the ground both above and below the contact. Work on the upper levels of the property, a large portion of which is still unexplored, is progressing favorably, and on the 530-ft. level we recently encountered a shoot of high-grade ore about four inches in width, which has been proven for a distance of twenty feet. Three cars of concentrates and one of high-grade have been shipped this quarter.

Experiments with oil flotation for the purpose of making a recovery of silver from mill tailings which in the past had been thought practically valueless, are proving so successful that several companies in the camp are installing flotation plants, and it may be advisable for this company to make a similar installation.

May 31, 1916: Bullion in storage, 186,433.19 oz.; ore at smelters, 39,350.03 oz.; ore bagged at mine, 68,700.00 oz.; total, 294,483.22 oz.; cash on hand, $92,483.68.

On April 29, 1916, we paid a dividend of 3 per cent., distributing $60,000 among the shareholders.

Results to date of exploration at the Kirkland Lake property being operated by us are very encouraging. The shaft has reached a depth of 200 ft. and stations have been cut at the 100-ft. and 200-ft. levels. On the first level, we are continuously in ore for a distance of 115 ft., channel assays running as high as $112 to the ton, while assays from vein samples show values of nearly $400 to the ton. We are driving a crosscut on the 200-ft. level to prove the vein at this depth. Development shows 115 ft. of sinking, 278 ft. of crosscutting and 206 ft. of drifting.

FLOTATION OILS

By O. C. Ralston.*

Market Situation.

The sudden development of the art of flotation has brought about peculiar conditions in the oil market. A few years ago there was considerable expansion in the wood-distilling industry throughout the south on the hope of selling turpentine at not less than 50 cents per gallon. This hope was never realized and the industry became demoralized owing to excessive production and the efforts of some plants to keep going even at a loss. Pine oil, which previously has had little sale, is a by-product from this industry and has been found one of the best of oils for flotation purposes. At the time of the introduction of the flotation process into America a stock of pine oil that had accumulated was for sale at an attractive figure.

This supply of pine oil and its derivatives has been largely exhausted and we are having to depend upon current production for the present supply. Hence the price has soared, and some of the pine oil on the market has been adulterated. Pine oil is also proving to be a valuable antiseptic and it is doubtful whether it will ever again be sold cheaply. Furthermore, turpentine is now about 50 cents per gallon and the fractionation of the wood distillate is being made in favor of a high yield of turpentine.

During 1915 an investigation in connection with the flotation oils was conducted for the purpose of finding a substitute for pine oil. Most of the wood creosotes have proved acceptable and are now being sold at lower prices than the pine oils. How long this condition will continue is a matter of conjecture. The creosotes have proved to be good preservatives of wood, especially of railroad ties. However, coal creosotes excell wood creosotes for preserving timber, so that flotation will probably cause most of the wood creosote to be diverted from timber preservation. Further, the starting of many large flotation mills during the coming year, and the enlargement of many that have been operating in an experimental way, may create such a demand for wood creosote that the cost of this oil may equal that of pine oil.

In view of such a possibility, considerable work has been done to determine whether coal tar and coal tar creosote could not be successfully used as flotation oils. In many instances it was possible to do so only after adding a small amount of one of the true wood oils. There is some difficulty in getting the thick heavy coal tar to mix well with the pulp, so that it is not the most desirable medium, and for that reason the coal creosotes have met with more favor. Consequently, most of the gas plants throughout the United States have been able to contract for their output of creosote for some time to come. A similar condition prevails with regard to most of the wood oils. There has been somewhat of a rush in the mining industry for contracts for these products in order that proposed mills will be assured of being able to operate.

The petroleum men have not been slow to seek the flotation oil market, but their products have not as yet met with much success when used alone. It is possible to mix small amounts of pine oil or creosote with various petroleum products such as stove oil and to obtain flotation with some degree of success, but the general tendency of petroleum products is to float both gangue and mineral non-selectively. The petroleum products that have met with the most success are some of the crude oils, such as Texas crude, and especially certain high-sulphur crude petroleums, obtainable in Kansas and in California. "Stove oil" has met with some success in the copper concentrating mills, as copper minerals do not have to be concentrated to the same degree of purity as do the lead and zinc minerals. It is probable that, for the wood oils, the copper mills will be able to use cheaper substitutes, such as petroleum products, than will the mills treating baser metals.

One other product that has met success has been the "kerosene acid sludge" from certain of the petroleum refineries. This material is the resultant of the removal of certain impurities with sulphuric acid and often consists of as much as 50 per cent. sulphuric acid. Not all of the acid sludge products have proven suitable, only the California sludge being sold at present.

Just how far all this substitution will be successful is not known and there is no way to predict. The test work of the coming year should go far towards solving this problem.

Costs of Flotation Oils.

The costs of flotation oils have varied so much, owing to the unsettled market that it is almost impossible to give an idea of what they should cost. For a rough estimate it is possible to say that crude petroleum will cost the same as for other purposes. Many of the specialized products, such as coal tar, will cost about 5 cents or less per gallon. The coal creosotes and the wood creosotes cost 15 to 30 cents per gallon; the pine oils 45 to 60 cents per gallon, and eucalyptus oil will cost $1.50 or more per gallon. The effect of the ending of the war as regards coal tar and creosote in the American market is uncertain but, so far as known, wood products will not be affected, and petroleum products for flotation will almost certainly be little affected. Flotation men do not like to have their oil costs go over 5 cents per ton of slimes treated, and many costs are nearer to 2 cents, or possibly even less.

Oils Adapted to Certain Ores.

There can be no doubt that the higher grade pine oils and other wood oils are the best adapted to general flotation work, but the question of what is commercially feasible is entirely different. Thus, the wood creosotes are meeting much favor. Many of the special petroleum products, especially those high in sulphur, are adaptable for rough concentration of copper ores, but the most favored materials for such ores at present seem to be the coal-tar products in combination with topped crude petroleum, oils from which the lighter fractions have been removed by distillation. Coal tars and creosotes, with a small addition of pine oils, are being used a great deal in zinc work, and the wood creosotes find favor in the treatment of galena ores. Gold and silver ores seem to require much pine oil, although the pine oil can be diluted with some of the coal creosote oils.

It will be found that there is a considerable number of oils that will give good results on any given ore, if the mechanical treatment is adjusted to suit each given oil. The selection of the proper oil in any case is purely a matter of experiment. Local conditions, such as transportation, also influence considerably the choice of oils.

*U.S. Bureau of Mines.

GOODFISH LAKE.

A geological map of the Goodfish Lake area has just been published by the Ontario Bureau of Mines. It accompanies the Boston Creek map, prepared by Mr. Burrows.

La Belle Kirkland mine is in the area shown, being located on the south shore of Goodfish lake.

THE ANNEALING OF NICKEL-SILVER.

In a paper presented at the annual general meeting of the Institute of Metals, held in London on March 29th, 1916, Mr. F. C. Thompson gave an account of a study on the annealing of nickel-silver.

The results of Mr. Thompson's exhaustive experiments, which run to 31 pages of printed matter and diagrams, can be briefly summarized as follows:

1. Tensile tests on the alloys containing from 7 to 28 per cent. of nickel in the cast state, show a distinct increase of strength as the nickel content is increased, without, however, appreciable change in the elongation or reduction of area. The results of compression tests are remarkably constant throughout the whole series of alloys tested, changes of the nickel content exerting in the cast state very little effect indeed.

2. Deoxidation of the molten alloy with 0.25 per cent. of manganese results in a marked improvement of the behaviour of the material in the rolls.

3. As the nickel content of the alloy increases the specific volume is lessened, which is also the result of increasing the ratio of the copper to the zinc. The density is slightly greater in the work-hardened state than after annealing, and also in those alloys which have been deoxidized.

4. The electrical resistivities of the alloys after being reheated at increasing temperatures reveal a well-marked transition between 300 and 400 degrees C., which is shown also by thermo-electric curves, but not by inverse-rate heating or cooling curves. The specific resistance of the alloy is determined chiefly by the nickel present: = 12 + nickel per cent. microhms per cubic centimetre. With the exception of the alloys containing only 7 per cent. of nickel the resistance is practically the same in the hard-drawn and in the annealed states.

5. Torsion and hardness tests show well the temperature at which annealing starts, which increases, as the nickel content is raised, from 370 degrees C. with 7 per cent. to 600 degrees C. at 28.6 per cent. The hardness results show a sharply localized peak about 320 degrees C. The influence of time on the temperature at which annealing commences is negligible, though the temperature of the critical point is slightly lowered with "soaking."

6. Tests made on commercial samples of the Brinell hardness and the resistance to alternating stress (Arnold) indicate that the impurities usually present are practically without effect on the properties, at the temperature of annealing.

7. The results indicate that the tendency of such alloys to "burn" is increased (a) by increasing the nickel content, (b) as the ratio of the zinc to the copper is increased, and (c) with the amount of the impurities present.

For the purposes of the main branch of the work twelve alloys were prepared. The scheme adopted was: firstly, to determine the influence of the nickel contents in such alloys by preparing four casts, each containing 60 per cent. of copper, but with 7, 15, 20 and 28 per cent. of nickel respectively; secondly, to obtain some idea of the influence of the ratio of the copper to zinc, when the nickel content is unaltered, to which end a cast was made with 15 per cent. of nickel but with 55 per cent. only of copper; thirdly, to investigate the influence of the addition of 0.25 per cent. of manganese added as a deoxidant, as a result of which each of the five casts already referred to were duplicated and deoxidized; and fourthly, to add an excess of manganese —1.5 per cent.—to the alloys with 15 per cent. nickel and 55 per cent. copper, and that with 28 per cent. nickel and 60 per cent. of copper respectively, and to observe the influence on the physical and mechanical properties.

The number of variables already introduced is large, whence every effort was made to keep these alloys pure, and to eliminate the further effects of the impurities usually present in commercial samples. The materials used were electrolytic copper and zinc, and Mond nickel, all of the highest commercial degree of purity. From these a cupro-nickel and a cupro-zinc with 50 per cent. of each element were first prepared as basis alloys, from which the required compositions were obtained by the addition of fresh metal. No scrap was used in any of the casts. In the case of the deoxidized alloys "thermit" manganese was used to deoxidize first the basis cupro-nickel, and finally the remainder of the quantity to be added was put in the melted alloy a short time before casting. The melting was carried out in quantities of about 1 kilogram, in graphite crucibles heated in a coke crucible furnace.

The compositions of the alloys are recorded below:

Compositions of Nickel-silvers Tested.

Cu.	Ni.	Zn.	Manganese added.
60.6	7.62	31.7	....
60.2	7.80	31.8	0.25
61.8	16.4	21.7	....
61.2	15.5	23.2	0.25
61.6	22.4	15.85	....
61.6	19.8	18.45	0.25
55.7	17.4	26.7	....
54.3	15.75	29.7	0.25
56.2	16.3	27.6	1.5
61.2	28.6	9.81	....
60.4	27.9	11.42	0.25
60.9	26.7	13.15	1.5

WEST SHINING TREE.

According to Mr. A. M. Bilsky, who is in charge of the development of a gold property in the West Shining Tree area for a Montreal syndicate, good results are being obtained from systematic prospecting in MacMurchy Township. Mr. Bilsky's company, the Atlas, is employing at present about 40 men.

On the adjoining property, the Knox claims, a shaft is being sunk and rich ore has been taken out. The Knox property is being developed by a Buffalo syndicate.

West Shining Tree area, including the townships of Asquith, Churchill, MacMurchy, and Fawcett, is situated in the Sudbury Mining Division. MacMurchy is about 70 miles north of Sudbury, and 60 miles south of Porcupine. From a station 80 miles north-west of Sudbury, on the Canadian Northern, West Shining Tree is reached by a circuitous canoe route. A few years ago a wagon road was cut out and partially graded, and it is hoped that the completion of this wagon road will soon be undertaken.

Many good discoveries were made in the West Shining Tree district a few years ago, but comparatively little work has been done on them. Those who took options did not find enough encouragement to warwant the fancy prices asked by the owners of the claims. Consequently, after being the scene of a little activity on the part of those who took options, West Shining Tree ceased to attract capitalists. Now that more reasonable terms are available and some development work is being done, the area will probably receive more attention.

RAMBLER-CARIBOO MINES, LTD.

The Northwestern Mining News Service, of Spokane, Washington, in which city is the headquarters of the Rambler-Cariboo Mines, Ltd., one of the oldest mining companies now operating in the Slocan district of British Columbia, recently sent out particulars of the company's operations and results, as under:

The net earnings of the Rambler-Cariboo Mines, Ltd., with mines and a concentrating mill about four miles from Three Forks, B.C., were $123,500 for the fiscal year ended April 30, 1916, according to a preliminary report sent to stockholders by the directors. The annual meeting will be held June 13 at Three Forks, and these figures will be incorporated in the yearly statement of operations.

The directors announce that they have decided to distribute dividends for the current fiscal year every 60 days, instead of monthly, as heretofore, to curtail expense as much as possible and to obviate the work of sending out so many cheques, as the stockholders are scattered over a wide area. They state also that the property is in excellent physical condition, and that there is enough ore in sight to keep the mill operating at capacity for the next two years. Since May 1, 1915, development aggregating 1,360 ft., confined principally to the 700, 800, 900, 1,000, and 1,200-ft. levels, opened new orebodies on each of the levels except the 1,300, which will have to be driven farther north to get under the shoot exposed in the next upper workings.

During the greater part of the year under review the concentrator was operated 20 hours daily, but it soon will be in operation three eight-hour shifts. There was 21,000 tons of ore milled during the period, producing 1,800 tons of concentrates that contained 1,292,644 lb. of lead, and 142,066 oz. of silver, and 630 tons of concentrates that returned 472,871 lb. of zinc and 14,689 oz. of silver. This does not include 500 tons of zinc concentrates shipped in April, from which smeltery returns have not yet been received, nor 500 tons of zinc concentrates still stored at the mill.

The financial statement is as follows:—

Receipts.

Balance from previous year	$ 5,325
Ore in transit last year	33,801
Lead ore and concentrates	89,568
Zinc concentrates	18,189
Transfer fees	141
Sale of compressor	748
Sale of wagons	200
Total	$155,964

Disbursements.

Bills payable	$ 10,000
Dividends	52,500
Production and development	76,906
Equipment, machinery and stores	1,108
Total	$140,514
Less special discounts and profits on boarding house	1,059
Actual disursements	$139,455
Cash on hand	16,509
Total	$155,964

Beside having cash on hand, as shown in the foregoing statement of accounts, the company is reported to have ore and concentrates to the estimated value of $44,491, either in transit to smelteries or stored at the mill near Three Forks.

Since the preliminary statement, as above, was made public it has been announced that the directors have decided to pay a dividend of two cents a share on June 15, which payment will total $35,000. Earlier in the current calendar year there was a profit distribution of one cent a share, or $17,500.

About twelve years ago the company, on the recommendation of its then general manager, Mr. W. E. Zwicky, of Kaslo, undertook deep-level development of its mine, and commenced to drive a long adit at a depth of 650 ft. below its No. 8 level, which was at that time reached by shaft from the No. 3 level. After the adit had been driven nearly 4,500 ft. connection was made by a raise with the old workings above and the opening of what was practically a new mine, ore shoots having been discovered on the opposite side of the shaft to that previously worked, was steadily proceeded with. This was the first important deep-level mining done in Slocan district, and although it involved a financial drain that continued over about half a dozen years, it eventually was found to have been fully justified. Finally the old concentrating mill that had been erected on the mountain on a level with No. 3 adit was removed to the valley below, improved equipment was added, an aerial tramway built from the portal of the new adit down to the mill, and railway connection was established as well.

TYEE COPPER CO.'S SMELTERY AT LADYSMITH, B. C.

Among other recently suggested methods of "Aiding the Mining Industry" was that of a correspondent of a Victoria, B.C., newspaper who desired that steps be taken to secure a resumption of operations at the Tyee Copper Co.'s smelting works at Ladysmith, Vancouver Island. In this connection there has since been published the following statement by Mr. W. J. Watson, resident manager for the company: "For several years prior to the closing of the Tyee Copper Co.'s smeltery at Ladysmith, it was operated entirely on custom ores, the treatment rate of which was reduced by the company to the lowest possible figure, in order to encourage the small mine-owner to work his mine. The company was, though, in the latter part of 1911, finally forced to close the works on account of a shortage of ore. That shortage was not due entirely to a decreased output from Coast mines, but to the fact that the company operating the Tacoma smeltery was in a position to quote a slightly lower smelting rate than the Tyee Company. The Tyee Company has, however, kept its smelting plant in first-class condition, and will be prepared to resume smelting operations immediately it shall be guaranteed the supply of a sufficient quantity of ore to pay the running expenses of the plant, which quantity would be approximately 5,000 tons a month. That amount would keep only the company's smallest furnace in operation about 22 days a month."

Since the publication of Mr. Watson's letter, Commissioner Cuthbert of the Victoria and Vancouver Island Development Association, has brought the matter to the attention of a special committee on the iron and steel industry with the object of inducing those already working, and those about to work, mining properties, to ship ore to the Tyee Co.'s smelting works. Mr. Cuthbert states that during recent weeks many complaints have been made to him by owners of small mining properties who are unable under existing conditions to get any ore treated, for the reason that the Tacoma smeltery, which is the only one now being operated in the lower Coast district, will not accept

ore unless a minimum guarantee extending over three years is given. This condition makes it impossible for small mines along the British Columbia coast to be worked. An effort is being made to induce owners of small mining properties to co-operate in an endeavor to secure a certain minimum supply of ore so that the Tyee Copper Co. may be justified in resuming smelting at its works at Ladysmith.

LUCKY JIM ZINC MINES, LTD.

The following information is of more than ordinary interest to a number of shareholders in the company it relates to, for last year it was not thought practicable to prevent foreclosure by the mortgagee and the consequent total loss of all interest in the property by the shareholders, who have to thank the British Columbia Supreme Court judge mentioned below for his reluctance to order foreclosure when application was made to him to do so, and for having sanctioned arrangements for a final effort to redeem the mine.

The financial difficulties of the Lucky Jim Mines, Ltd., which owns and is operating the Lucky Jim mine at Zincton, B.C., seem in a fair way of adjustment, according to the first annual report of Mr. Andrew G. Larson, of Spokane, who several months ago was appointed trustee for the corporation by Mr. Justice Gregory of the Supreme Court of British Columbia.

Mr. Larson stated that, despite serious difficulties in carrying on productive operations at the mine, especially during the winter, due to lack of mill and railway transportation facilities much of the time, he had paid into court $15,000 on account of the mortgage on the property, and expected to be able to make a further payment of $5,000 before the end of May. If the mill at Rosebery, which is concentrating the Lucky Jim ore, were equipped with machinery for the treatment of middlings these sums, he says, could have been increased by $10,000.

An important matter he had been able to adjust, thereby effecting a saving to the company of practically $30,000, was the claim of the Canadian Pacific Railway Co. to the right to charge $2 a ton on Lucky Jim ore until $35,000 in all had been paid as refund on the cost of a spur used by the company as a part of its line from Three Forks to Kaslo. Better smelting contracts were also obtained by him, which on the April shipments alone increased earnings $900. In the settlement of the difficulty with the railway company a refund of $2,940 was secured.

As regards the future he said that weather conditions now being settled he expected better returns throughout the summer. In the event of the mill at Rosebery being provided with additional concentrating facilities, allowing of the re-treatment of the 1,000 tons of middlings now on hand and permitting a closer saving in the future, the net earnings should run between $10,000 and $15,000 a month. Failing to get adequate mill facilities at Rosebery he expected to obtain them soon either at Kaslo or the new Ivanhoe mill.

April shipments were as follows: Crude ore direct to smeltery, 40 tons; concentrating ore to mill, 1,290 tons; concentrates from mill to smeltery, 325 tons. The crude shipping ore averaged 42.2 per cent. zinc, and the estimated profit on the carload is $1,172. The concentrates ranged by carloads from 37.8 to 41.6 per cent. zinc, the estimated net value being about $26 a ton and the total net value, $8,519.

WOLVERINE MINING AND DEVELOPMENT CO., B. C.

From Spokane, in which city are situated the head offices of quite a number of mining companies operating in the West Kootenay district of British Columbia, there was recently sent out the following statement:

"The Wolverine Mining and Development Co., with holdings near Ainsworth, B.C., will shortly ship its first car of ore, and Mr. J. Cleveland Haas, managing director, has gone to the property to outline extensive development.

"Said Mr. Haas: 'We have been doing a little development for several months, but it was only recently that weather conditions permitted our getting things into shape for more active work. The ore we have ready for shipment averages about 60 per cent. lead and 20 oz. of silver to the ton, and the indications are that there is a considerable quantity of ore of that grade available for extraction. The company is controlled by Eastern people, with Mr. Jerry Madden, of Rapid River, Michigan, as president. Mr. J. F. Carey and myself are the only Spokane directors. Mr. Carey went East lately to arrange for financing the extensive development and equipment with machinery we have planned to carry out during the ensuing summer. The company's property consists of a group of mineral claims situated a little north of the town of Ainsworth, extending from the shore of Kootenay Lake west to the Consolidated Mining and Smelting Co.'s Highland silver-lead mine, and adjoining the Florence Mining Company's group on the south. The main working tunnel will be driven from low down near the lake shore.'"

When the Journal's British Columbia correspondent visited the Wolverine Co.'s group last October, exploratory work was in progress and log buildings for the accommodation of the men working on the property were well advanced toward completion. At that time the unincorporated organization operating on the claims then known as the Nicollet group was called the Kootenay Development Co., and the foreman in charge was Mr. W. A. Harvey. Much ore had at that time been opened on the adjoining Hope group of the Florence Mining Co., and the outlook for the several mines in that part of Ainsworth mining division was generally regarded in the neighborhood as very promising.

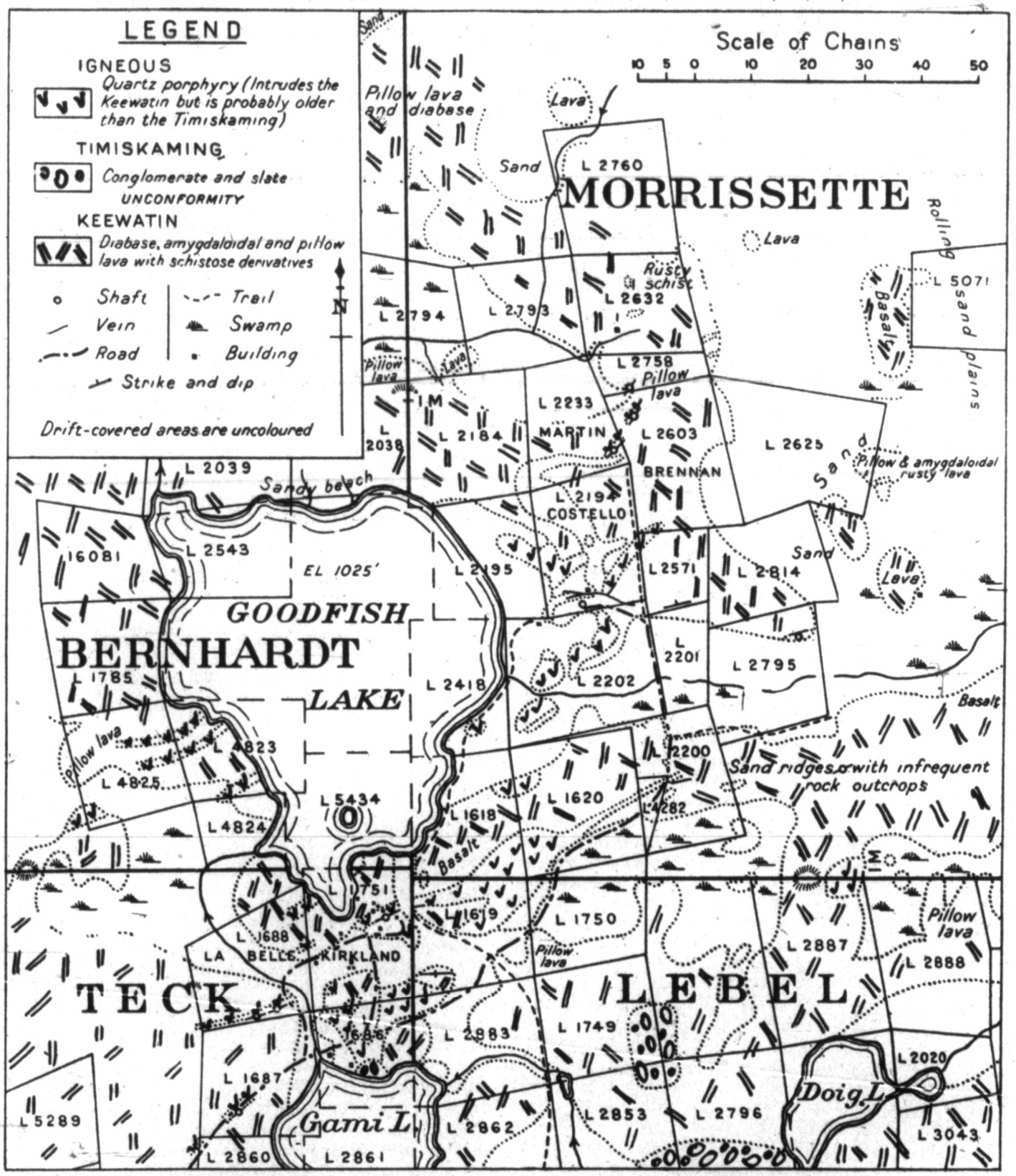
The nineteenth annual session of the American Mining Congress will be held at the La Salle Hotel, Chicago, Illinois, during the week of November 13, 1916. The purpose of the convention will be to inaugurate plans by which all branches of the mining industry may work together in the solution of common problems. A general meeting will be held each morning, and the convention will then divide itself into Precious Metals, Iron and Steel, Oil and Gas, Lead and Zinc, and Coal sections, each discussing subjects of special interest to its branch of the industry. The convention will occupy two whole floors of the La Salle Hotel, and such space as shall not be utilized for meeting places will be available for exhibits or reception rooms by those directly interested in the convention. A programme of varied interest is being arranged and it is expected that this convention will be the largest in the history of the American Mining Congress.

A NITROGEN PLANT FOR QUEBEC.

Boston, June 23.—du Pont Powder Co. has completed arrangements for a $10,000,000 subsidiary company which will operate exclusively in Canada. Company has secured water power and other properties on the Saguenay river in Quebec and will soon commence the erection of a plant. Product will be nitrogen, which in due time will be applied to manufacture of high explosives at company's plant in United States.

U. S. SILVER PRODUCTION.

The final figures for the production of silver in the United States show that four states produced over two-thirds of the total output of 74,961,075 oz. The four leaders are Nevada, 14,453,085; Montana, 14,423,173; Utah, 13,073,471, and Idaho, 13,042,461 oz.



Goodfish Lake area, from colored map just published by Ontarto Bureau of Mines.

The Tough-Oakes Gold Mine has declared a dividend of ten per cent., payable July the 15th. The Tough-Oakes is making regular shipments of from eighty to one hundred thousand dollars a month, and the 400-ft. level of the mine is in remarkable ore.

BRITANNIA MINING AND SMELTING COMPANY, LIMITED

At the annual meeting of the Howe Sound Co., held in New York City last month, the president of that company submitted a brief report and balance sheet; also the report of the Britannia Mining and Smelting Co., Ltd., operating at Howe Sound, British Columbia, and which is controlled by the Howe Sound Co.

Howe Sound Co.

In his report, President G. B. Schley said: "The dissolution of the Britannia Copper Syndicate and the Britannia Land Co., Ltd., was effected early in the year, so that now all operations are conducted by the Britannia Mining and Smelting Co., Ltd.

"The suspension of production during three months, due to the snow and land-slide of March 21st, 1915, reduced the Britannia Co.'s earnings and made it necessary to negotiate temporary loans with which to meet that company's commitments for material and equipment and carry to completion the extensive plan of new construction adopted early in the year."

(Here followed an account of the Howe Sound Co.'s purchase of the greater number of the shares of the El Potosi Mining Co., of Mexico, and of that company's property and prospects.)

"It is clear to your directors that their policy of the last two years in applying the net earnings of the Britannia Co. to the upbuilding of its property should be continued, and that ample appropriations be made for the conservation of all water power, general construction, and perfection of railroad facilities, thus bringing about the best results in efficiency and economy. It is also essential that the company establish a reasonable cash reserve for its protection. With the present price of copper prevailing and the conditions at the mine developing as now promised, the outlook is hopeful.

"Your directors commend Geenral Manager Moodie and the efficient organization established at Britannia for their intelligent, forceful and untiring efforts during periods of serious troubles, and regard the results as satisfactory.

"Balance Sheet, December 31st, 1915:

"Assets—		
Share investments		$1,402,800.10
Accounts receivable		1,186,966.13
Cash on hand		10,117.70
		$2,599,883.93
"Liabilities—		
Capital stock		$1,984,150.00
Bills payable		500,000.00
Profit and loss		115,733.93
		$2,599,883.93"

Britannia Mining and Smelting Co., Ltd. ..

Nearly all the information contained in the printed report of Mr. J. W. D. Moodie for the year ended December 31st, 1915, follows:

The year opened with prospects that the Britannia Co. would make its best showing in 1915, but the snow and land-slide in March, which wiped out the Mine Camp, upper terminal of the aerial tramway, crusher-building, machinery, etc., necessitated the suspension of production operations for three months until new producing and transportation facilities from the mine could be provided. Operations were resumed in the latter part of June, but were interrupted in September, October, November and December because of a shortage of water for power and milling purposes, due to an unusually protracted period of dry weather. This condition arose before the system of dams and intakes under construction had progressed so far toward completion as to be available for water storage, thus seriously curtailing the power service.

Statement of Operations.—In the following statement of gross value of metals contained in mill products shipped (30,123 tons), copper is calculated at 17.4468c a pound; silver at 50.08c an ounce, and gold at $20 an ounce.

Copper, 9,058,045 lb.		$1,580,336.64
Silver, 50,306 oz.		25,195.56
Gold, 397,862 oz.		7,957.24
Payment for iron excess		2,644.11
Gross value of products		$1,616,133.55
Less smelter charges		355,380.72
Net returns from smelter		$1,260,752.83
Less mine operating costs—		
Mining and crushing	$275,854.04	
Transportation	33,477.57	
Milling	139,440.32	
Administration, etc.	60,563.65	
		509,345.58
Profit on operation of mine		$751,407.25
Auxiliary profit		58,517.26
Total operating profit		$809,924.51
Other charges against operations—		
Depreciation, plant and buildings	$284,573.61	
Snowslide losses and expenses (including plant and buildings lost)	210,347.52	
Interest	69,431.02	
Reserve for contingencies	36,158.50	
Miscellaneous	15,175.69	
		615,686.34
Net profit for 1915		$194,238.17

Property.—Throughout the year the company continued its policy of acquiring by purchase and location such adjoining properties as were considered desirable for the future welfare of the whole operation in protecting the possible extension of known orebodies, as well as to conserve the many watersheds needful and to secure rights of way for pipe-lines, tunnels, etc. Such property purchases entailed an expenditure in 1915 of a little in excess of $100,000. Apart from mine development, the sum of $44,633.61 was expended for prospecting, exploration, surveying, etc., and the labor necessary for assessment work on un-Crown-granted claims. The company's property holdings, as at December 31st, 1915, were:

	Acres.
164 Crown granted mineral claims, 16 Beach lots	7,538.16
167 un-Crown granted mineral claims	7,500.00
	15,038.16
8 timber license areas	4,366.06

Mine.—Because the expenditures for construction and transportation were necessarily large, only a small amount of development and prospecting work was done in the mine during the year, as follows: Drifting, 1,353 feet; raising, 653 feet; crosscutting, 589 feet; total, 2,595 feet.

The total amount of ore handled from the mine to Britannia Beach by aerial tramway was 199,906 tons, at an average transportation cost of $0.1674 a ton.

The average mining cost per ton of ore inclusive of development (including all charges except tramming 97,045 tons of broken ore added to stopes during the year) and crushing charges was $1.7712. The total of ore broken in 1915 was 291,332 tons, of which there was drawn from the mine 194,287 tons, leaving 97,045 tons added to ore already broken in stopes, bringing the total quantity of broken ore remaining in stopes at the end of the year up to 578,206 tons which should average 3.5 per cent. copper.

Attention is invited to the following statement of Fairview mine ore tonnages:

	Tons.
Broken ore in stopes, Dec. 31st, 1915	578,206
Ore developed in place	2,855,947
Probable ore	2,544,000
Possible ore	4,275,250
Grand total	10,253,403

The general average of the whole of this ore should be 2 per cent. copper. No allowance has been made for ore occurrences below the 1,200-foot level, notwithstanding that the continuance of some of the veins is shown on the 1,600 and 2,200 ft. levels, with only small development.

No work, neither operation nor development, was done in 1915 in the Bluff, Jane and Empress mines, in which as reported recently by engineers and from knowledge of previous operation, there is ore, as follows: Positive ore, 1,482,800 tons; broken ore in reserve, 1,386 tons; probable ore, 4,661,200 tons; possible ore, 799,000 tons; total, 6,944,386 tons, with an average content of 1.53 per cent. copper.

Mill.—The total quantity of ore milled in 1915 was 212,158 tons. The resulting product, as shipped to smelter, was 30,123 tons, containing gold 397.87 oz., silver 50,306 oz., and copper 9,058,045 lb. Assay and analysis figures of this shipped product are: Gold 0.0132 oz. and silver 1.67 oz. to the ton, copper 15.04 per cent., iron 24.73 per cent., insoluble 26.11 per cent., zinc 3.10 per cent.

Construction.—(1) Utopia dam, at the head of Britannia creek, with a total length of 225 feet, was completed to a height of 50 feet, and a wing-dam 340 feet long, with an average height of 18 feet was constructed on the north side.

On the Park Lane claim, a concrete dam, approximately 240 feet in length, was constructed to a height of 25 feet. It is the intention during the year 1916 to continue this dam to a length of 485 feet and a height of 40 feet.

On Britannia creek, at an elevation of 1,950 feet, the construction of a concrete dam was commenced in September; this attained a height of 10 feet by 120 feet long before work was suspended. Construction will be resumed early in 1916 dimensions when completed will be, length 210 feet, height 30 feet.

To furnish adequate domestic water supply, as well as reserve power for generating energy at the Britannia Beach power-house, a concrete dam, total length 85 feet and height 50 feet, was constructed on Mineral creek.

(2) Pipe lines, consisting of 3,225 feet of wood-stave pipe in sizes 24, 22 and 20 inches, and 7,900 feet of steel pipe in sizes 20, 18 and 16 inches, were laid from the Park Lane dam to the tunnel power house, and from the dam at the 1,950-foot elevation to the Beach a line, 14,610 feet long, consisting of 7,700 feet of wood stave pipe in sizes 36, 30 and 28 inches, and a steel pipe in sizes 28 and 26 inches for a distance of 3,710 feet, connecting with two lines of steel pipe, each 3,200 feet long, in sizes 20 and 18 inches.

A 2,000-k.w. steam turbine was installed in the Beach steam plant with two Babcock & Wilcox boilers, making a total of 2,500-k.w. steam power available for use during periods of low water and consequent power shortage.

(3) The construction of a railroad line for ore haulage from the tunnel to head of incline, a distance of three miles, as well as the inclined railway forming the connecting link between the upper and lower railroads and mill bins was completed during the year. The length of the incline is 5,400 feet, and the average gradient 30 per cent.; it is standard gauge, double track and is laid with 56-lb. rails. Storage bins were erected at the head and foot (above the new mill) of the incline with a capacity of 1,000 and 2,000 tons respectively. As a means of providing further storage facilities, a concrete retaining wall was constructed on the hillside at back of the new mill and will permit of placing in reserve approximately 10,000 tons of ore.

On account of the demolition by snowslide of the upper section tramway terminal at the mine, and to harmonize with the new transportation system, whereby delivery of the ore is made from the raise on the 2,200 foot level (instead of from the 1,050 ft. level, as before), a new tramway terminal was constructed at a point 4,000 feet west of the tunnel portal. This structure is substantially built on concrete foundations with timber superstructure forming bins of 1,000 tons capacity, into which bins the ore is dumped from railway cars and directly fed by gravity to the aerial tramway. Adjoining the tramway machinery on the lower floor is a completely equipped blacksmith and repair shop. There is provision for storing under cover-freight and supplies brought from the Beach over the tramway; also a spur track from the main railroad line to lower level, providing transportation beyond the terminal. A steam heating plant has been installed in this terminal building, to prevent ore from freezing in the bins.

(4) At the mine, a large double-drum hoist with full motor equipment, cages, etc., was installed, which necessitated cutting a large station and rope raise on the 1,050-foot level. Further, a high voltage line with transformers was laid from the tunnel power house along the 2,200-foot level and up the shaft to the crusher room and on to the hoist station. On the 1,800-foot level a station 20 by 20 by 30 feet was cut, in which was installed a crusher having a capacity of 100 tons an hour. The enlarged operation at the mine necessi-

tated putting in an additional air line, which was provided by laying 12-inch casing from the tunnel power house along the tunnel and up the shaft to the 1,050-foot level. In addition, a railway motor generator set and a compressor having a capacity of 3,631 cubic feet of air, were installed in the tunnel power house.

(5) To accommodate these improvements, the enlargement of the power house at the tunnel was necessary, so the building was extended 30 feet and the required foundations for water wheels, generator set, and compressor were put in. A locomotive repair shop was constructed. A cement mortar powder house, 22 by 22 feet, was erected alongside the railway line at a distance of about 3,000 feet from the tramway terminal; this gives storage capacity for 1,800 cases of explosives. Rolling stock, consisting of two electric locomotives, each 15 tons, and ten 20-ton self-dumping ore-cars, and four of 7-ton capacity, were put in service during the latter part of the year. To control the skips on the incline a 25,000-lb. double-drum lowering and hoisting apparatus, with 75-h.p. motor, was installed in a station, dimensions 40 by 40 by 20 feet, cut in solid rock at the head of the incline.

(6). For the accommodation of employees, thirty-nine dwelling houses were built—nineteen at the Beach and twenty at the Tunnel camp. Of the former, one is a 5-room, sixteen are 4-room and two are 3-room dwellings; of the latter, two are 8-room, one 6-room, four 4-room, and thirteen 3-room dwellings. A 3-storey store building, 60 by 26 ft., was also erected.

(7). The first 1,000 ton unit of the new concentrating mill, together with slime and concentrating tanks, and a launder to the sea, were completed during the year. In addition, the second unit was enclosed, all machinery foundations completed, and a part of the machinery installed.

(8). A new wharf, 120 ft. long by 60 ft. wide, with freight house, 30 by 30 ft., was constructed at the Beach.

Note.—The following summary shows what the outlay was on the various works included in the foregoing brief account of construction, equipment, etc., during 1915::

Expenditure on—	
(1) Water supply, dams, etc.	$56,294.74
(2) Pipe lines and steam plant	184,565.04
(3) Railway, incline, ore storage bins, aerial tramway terminal	110,061.78
(4) Mine hoist, station, electrical equipment, air line	62,533.90
(5) Additions to power house, other buildings, railway rolling stock, equipment of incline, etc.	64,973.56
(6) Dwelling houses and store	50,724.58
(7) Completion of concentrating mill, machinery payments, etc.	222,162.47
(8) New wharf at Britannia Beach	7,919.60
	$759,235.67
Some other expenditures—	
On property purchases	100.000.00
Prospecting, exploration, surveying, etc.	44,633.61
	$903,869.28

These items have been grouped together in this way, though not thus shown in the general manager's report, to give an adequate idea of what the company's main expenditures were last year, apart from the ordinary outlay on mine development, ore production, etc., which is included in the Statement of Operations previously given.

Miscellaneous.—During the latter part of the year this company bought the Howe Sound Power Co., which owned important water rights on Furry creek, in South valley, the power possibilities of which it is intended to develop and conserve by a system of dams, intakes and pipe lines, thus materially increasing this company's hydro-electric development.

The establishment of a telegraph office at Britannia Beach has proved a great convenience in expediting the business of the company.

A favorable contract was negotiated with the American Smelting and Refining Co., for the treatment of the Britannia ore products, for a period of seven years from July 15, 1915.

Owing to the increased price of copper and the fact that other producers had advanced wages, a voluntary increase was made to the company's employees during the latter part of the year. The policy of the company in taking the best of care of its employees has enabled it to create an efficient and loyal organization, which is being continually built up to care for the larger tonnages that are expected to be realized shortly after the first of the new year.

General.—It is proposed to carry on in 1916 an extensive prospecting campaign. This includes driving a tunnel from a point near the head of the incline in an easterly direction, this to be known as the 2,700 ft. tunnel, and simultaneously another tunnel, to be known as the 4,100 ft. tunnel, is to be driven from a point at the back of the new concentrating mill. For the present, the latter will be driven only far enough to admit of connection being made by raise with the 2,700 ft. tunnel. These tunnels are to be driven 9 by 13 ft., thus making them large enough to serve as underground transportation routes from the mine direct to the mill. They will exploit new ground where there is a possibility of encountering commercial ore (of which surface showings give promise), and in the event of ore being found while driving them, their cost may be entirely offset by the value of the ore to be extracted.

The 1,600 ft. level will be extended westerly from the shaft to the Jane-Bluff ground, and a raise be made to the surface at a suitable place for ore extraction. There will also be other exploration and development of that part of the property which has been proven by diamond drilling to contain ore of commercial value.

It is also intended to do development to the east and south of the Fairview claim, this to include a vigorous prosecution of work in the Beta tunnel, which is being driven west to connect with a drift east from the shaft on the 1,600 ft. level, a distance of 3,000 ft.

The test runs in the 1,000 ton unit of the new mill gave favorable results. It is believed that, with the transportation arrangements completed, 2,500 tons of ore a day can readily be delivered to the combined milling plants. The company possesses a very large quantity of what might be termed low grade ore, but whether a further enlargement of the concentrating mill will be found advisable will depend upon the disclosures from the development work above outlined, and from other development work contemplated.

The further conservation of the Britannia watershed, the harnessing of the water power of South valley, the extensive plan of development work decided on, and the various items of new construction that will be entailed, will together involve expenditure of large

sums of money, but it is expected that more than enough for these purposes will be derived from production operations.

Balance Sheet.—As at December 31, 1915, the Liabilities and Assets were as follows:

Liabilities.—Capital, issued and fully paid, 91,966 shares of $25 each, $2,299,150; loans, from Howe Sound Co. $1,186,966.13, Tacoma Smelting Co. $53,000, total $1,239,966.13; accounts payable and December pay-rolls, $191,275.18; sundry reserves, $72,030.32; depreciation, $854,634.68; profit and loss, $821,589.37; total, $5,478,645.37.

Assets.—Properties, Crofton townsite $50,200, Britannia mines $2,070,744.31, total $2,120,944.31; plant, buildings and machinery, Crofton smelter (inoperative $260,030.12, Britannia Beach and mine $1,557,971.18, under construction $725,847.76, total $2,543,849.06; investments, Britannia Power Co., Britannia stores, etc., $405,738.19; supplies and construction material, $124,289.11; accounts and bills receivable, $226,844.59; cash in bank, $56,456.24; sundries, $524.18; total, $5,478,645.68.

MINING ON VANCOUVER ISLAND

Among other speakers at the annual meeting of the Victoria, B.C., Board of Trade, held on April 14th, was the Hon. Lorne A. Campbell, Minister of Mines for British Columbia, who delivered an address on matters in which the Province generally, and Vancouver island particularly, are directly interested. Concerning mining, Mr. Campbell observed:

"Mining, in British Columbia, in addition to being prosperous, is taking on new phases. Zinc, for instance, is assuming an importance not before understood. Copper is almost certain to have a place in the metal markets that it never had before and the prices to be maintained for some years to come. With Granby and other mines in the Boundary, Granby at Anyox and the Britannia mines in Howe Sound productive, and prospective developments, we are bound to make British Columbia a factor in the markets, which, of course, has not been the case in the past. You know that when you begin to compare British Columbia's output in copper or in any other metalliferous product with the rest of the America, not to speak of the rest of the world, our place in the sun is as yet very small. The production of copper in British Columbia, as compared with that of the United States, is only about as one to twenty; but, basing my estimates on known operations and mining undertakings, I am quite safe in saying that next year, if not this, the copper output will be more than double what it was last year, so that in a very few years, in copper, and in other metalliferous products as well, we shall have a place in the sun. You are more particularly interested in the mineral resources of Vancouver Island. The most recent professional estimate of coal reserves in British Columbia is 76,034,942,000 tons—a figure so vast as to be beyond our ability to conceive what it means. Of that reserve, of what is left after more than sixty years of continuous mining, there are 1,060,000,000 tons left on Vancouver Island. When we remember that the total output of those over sixty years is less than 30,000,000 tons, we have a good many years to go before the reserve is exhausted, even assuming that no new discoveries are made. Coal mining on Vancouver island has been handicapped recently, owing to the substitution of oil for fuel. Your market has always been limited to Coast consumption and probably always will be, and, therefore, one of the problems of practical men and the Mines Department is how coal may be utilized so as to restore it to its former status of production and possibly greatly increase it. We have to study it in connection with the development of the manufacture of iron, of which you have vast deposits. I use the word 'vast' deliberately. We have to study it as to the extent and value of its many by-products. We may reasonably hope, too, that, with the increase of population and industrial establishments, notwithstanding the competition of oil fuel, the market for Vancouver island coal will, on its present basis, very materially expand.

"While at the present time the output of metalliferous minerals on this island is relatively small, there is, I believe, good reason to expect a marked improvement in the near future. It should not be forgotten that when, from 10 to 15 years ago, the Tyee and Lenora mines on Mount Sicker were being operated, they were productive to quite an important extent. Production figures given by Mr. C. H. Clapp, of the Geological Survey of Canada, in his Memoir 13, Southern Vancouver island, show a total output of ore from three Mount Sicker mines—about two-thirds of it from the Tyee mine—of approximately 250,000 tons of ore, containing about 23,000,000 lb. of copper, 690,000 oz. of silver and 42,000 oz. of gold. Calculated at present prices of these metals, the total value of that production would be in excess of $7,000,000, all from a comparatively small area on Mount Sicker. Surely we are not justified in assuming that there are not other similar extensive and valuable deposits of ore on Vancouver island. On the contrary, there appears good reason to expect that when conditions shall be favorable—ample money for exploration and development and low-cost transportation facilities for machinery and supplies to, and for ore from, mining properties not now easily accessible, we shall see achieved the establishment of metalliferous mining on a profitable basis. At Sooke, where there are good copper prospects; in the country about Great Central lake, where ten years or more ago much interest was taken in the large ore showings of the Big Interior property; on Quatsino sound, where the big deposit of low-grade ore on the Yreka company's claims was found; on another group, also in Quatsino division, now having the attention of Spokane mining men, and in still other instances where, by reason of lack of capital and transportation facilities, little or no progress has been made—all these are decidedly encouraging indications of the occurrence of much mineral awaiting development and utilization. Now that modern methods make it possible to treat low-grade ores at a much lower cost than was the case ten to twenty years ago, there should be found on this island a promising field for enterprise in connection with metal mining."

Provincial newspapers have published the statement that the total value of the gold bullion received at the Dominion of Canada Assay Office at Vancouver, B.C., during the fiscal year ended March 31st last, was $2,798,000.

The Standard Underground Cable Co. of Canada, Ltd., announces that its Montreal branch office is now located in the McGill Building, instead of the New Birks Building as heretofore.

PERSONAL AND GENERAL

Mr. G. G. S. Lindsey is expected in Toronto this week.

Mr. A. A. Cole is to address the Canadian Club of North Bay on June 29, on "The Importance of the Mining Industry in the North."

Mr. G. C. Bateman, manager of La Rose mine, was in Toronto this week and is now in Colorado.

Mr. J. M. Callow, who recently visited Cobalt in connection with the installing of oil flotation plants, has returned to New York.

Mr. H. D. Symmes is to be manager of the Boston Creek Gold Mines, the company which will operate the R .A. P. mine at Boston Creek, Ont.

M. Beatty & Sons, Welland, have recently been awarded contract by the Dominion Bridge Company for two 9 x 12 link motion hoisting engines with cut steel gears, and two 60 in. x 156 in. vertical boilers built under Ontario inspection for use on the Intercolonial Railway car ferry terminals at Carleton Point, P.E.I., and Cape Tormentine, N.B.

Dr. Otto Sussman, of New York, who is a director of the company owning the well-known Interstate-Callahan zinc mine, situated near Wallace, in the Coeur d'Alene district of Idaho, was at the mine last month.

Mr. J. V. Richards, of Spokane, Washington, has been making an examination of the Florence Mining company's silver-lead-zinc mine, near Ainsworth, B.C., for that company, which has its headquarters in Spokane. Mr. F. R. Wolfle, the company's general manager, has also been at the mine from Spokane lately.

Mr. Howell John, for some time superintendent of a coal mine in Nicola Valley district of British Columbia, has returned to Nanaimo, Vancouver island, where he expects to again be connected with coal mining.

Mr. H. Y. Walker, of the Tacoma smelting works, Puget Sound, Washington, was a recent visitor to the British Columbia Bureau of Mines, Victoria.

Mr. Dudley Michell, instructor in first aid and mine rescue training work for the British Columbia Department of Mines, left Victoria on June 22, to attend, first the meeting of the Western Branch of the Canadian Mining Institute at Sandon, Slocan, on 27th inst., and next a first aid and mine rescue work demonstration arranged to be held at Coleman, Alberta, on July 1.

Mr. E. J. Conway, of Vancouver, B.C., on the Granby company's mining engineering staff, recently visited mining properties on Queen Charlotte islands.

Mr. Barclay Bonthrone, of Vancouver, B.C., has been visiting mining properties in country along the Grand Trunk Pacific Railway, east of the Skeena district of British Columbia.

Mr. Raleigh P. Trimble, who has for several years been actively engaged in connection with the development of mineral claims in the neighborhood of Rocher Deboule mountain, near Hazelton, Omineca mining division, last month returned to that region after having been absent for a while at Portland, Oregon, and other parts of the United States.

Prof. W. A. Parks, of Toronto, arrived in Victoria, B.C., early in June to resume his investigations, for the Canada Department of Mines, relative to the building and other stones of Western Canada.

According to the Rossland Miner, Mr. H. H. Claudet was expected to leave Denmark in May for Ontario. Mr. Claudet has for years been a representative of the company controlling the Elmore vacuum oil process.

The following news item from the Similkameen Star, printed at Princeton, British Columbia, is of interest: Last week the Star mentioned that Hugh Campbell, of Princeton, had taken out is 53rd miner's license. While the record is a good one, Edward Stout, of Yale, has it beaten by six years. Stout, who will be 91 years old in September, last month took out his 59th license.

Mr. Thomas Graham, chief inspector of mines of British Columbia, has been elected president of the Mine Inspectors' Institute of the United States.

H. R. Plommer, who for the last eighteen months has been accountant and sales manager for the Middlesboro colleries at Merritt, has accepted a position with the B. C. Copper Co. at Greenwood, B.C.

The following news item was printed in Vancouver Island newspapers about the middle of June: "Mrs. D. McLean, of Vancouver, B.C., has been notified from Ottawa that her husband, Donald McLean, had been officially reported missing since June 2. Donald McLean was well known in Ladysmith, and if he has made the supreme sacrifice, the sorrow will be universal, but the hope that he has escaped with his life, even if he should be a prisoner in the hands of the enemy, will be general." Mr. McLean, who until his enlistment for active military service, was principal of the School of Mines at Ladysmith, which is the residence town of nearly all the miners employed at the Extension colliery of the Canadian Collieries (Dunsmuir), Ltd., held a British Columbia first-class certificate of competency under the "Coal Mines Regulation Act, 1897." It is noteworthy that on the same date as he obtained it, January 21, 1905, others on the list of those who successfully passed the examination for manager's certificate were Messrs. R. W. Coulthard and J. Richardson Roaf, both now military officers energetically engaged in organizing battalions, in Alberta and British Columbia, respectively, for service at the Front. Mr. McLean joined the Canadian Mining Institute in 1911.

COPPER-NICKEL MATTES.

In a paper written for the Arizona meeting of the American Institute of Mining Engineers, Prof. G. A. Guess of the University of Toronto and Mr. F. E. Lathe of Grand Forks, B.C., describe an investigation into the flowing temperatures of copper-nickel mattes and copper mattes. The investigation was started with the idea of determining whether copper-nickel mattes might not have a lower flowing temperature than copper mattes, and thus perhaps aid in accounting for the difficulty so far experienced in attempts at pyritically smelting copper-nickel ores.

The authors conclude: "The results of these experiments have not shown as great a difference in flowing temperature between copper and copper-nickel mattes as was expected. Copper-nickel mattes appear to have a flowing temperature from 30 deg. to 50 deg. below copper mattes of the grade usual in blast-furnace work. This slight difference in temperature does not appear to us to be sufficient to explain failures in pyrite smelting due to a too early liquidation of copper-nickel matte in the furnace."

SPECIAL CORRESPONDENCE

NEWFOUNDLAND

Copper Mines.

The copper mines at Little Bay and Betts Cove are being reworked after being closed down for more than ten years. At both places from thirty to fifty men are employed, in mining and collecting the large quantities of ore that have been lying on the surface since the mines were last worked. The ore at Betts Cove is of a particularly high grade, large quantities of which give analyses of more than thirty per cent. copper. Tilt Cove, Little Bay and Betts Cove are only a few miles apart, and there are outcroppings of the ore at intervals between these places.

Batts Hill mine, Conception Bay, has about fifty men employed. A large part of the ore that is being taken from this mine is being locally smelted at the plant of the Hydro Electric Smelting Co. Extensive developments are expected to take place on this mine this year.

Coal.

The coal field in the region of St. Georges Bay is perhaps the most promising though not the most extensive in the country. This has been traced in a longitudinal line from W.S.W. to E.N.E. five miles, and is thought to extend a little further. Mr. Howley Head of the Geological Survey said of this field: "The best exposures of coal are near the western end of the trough Here it shows a width of about two miles. In the section exposed along the banks of the Barrisway river there are twelve coal seams ranging from a few inches to over five feet in thickness. On the Robinson's river two miles further east three seams were uncovered, one of which, the Howley seam, gave a thickness of four feet two inches."

During the past few years a number of well known mining experts have visited these areas both on behalf of the Government and of private parties. All reported most favorably on the prospects and the facility with which they could be worked.

It is not unlikely, therefore, that through sheer necessity some development work will be begun on some of these deposits this season, as no matter what the initial cost of mining the coal may be it is safe to say that the present prices prevailing will guarantee a safe margin of profit for those who undertake the work.

The iron mine at Snow's Pond, near Brigus, on which some development work was done two years ago by the Mining Engineer of the Reid Newfoundland Co., has been taken over by a company in the United States, who are prepared to spend one hundred thousand dollars on the property during the summer.

Mr. W. A. Mackay, who has been instrumental in having a smelter erected at St. John's, is at present in United States securing new linings for the furnaces.

The operators are experiencing some difficulty in securing sufficient men to work on the lime quarries at Port-Au-Port, owing to the large number of men enlisting in the army and navy.

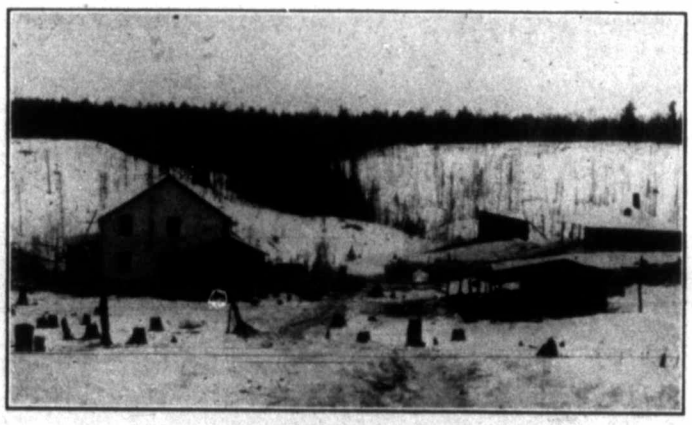
At the present time there are a number of mining engineers in the country, mostly from United States, examining different mining properties with a view to buying or having the same worked.

Wabana Iron Mines.

Work in the mines of the Dominion Iron and Steel Co.'s mines and those of the Nova Scotia Steel Co., at Wabana, still continues with unabated vigor. Several cargoes of ore have been taken away during the past month, and the only check on the extent of these operations is the severe scarcity of tonnage suitable for the work of freighting the ore. Quite a number of men who were employed in these mines during last winter have left the island to engage mostly in the fisheries. This withdrawal of large numbers of men will not, however, be felt so severely as might be expected, as both companies have already mined and placed on the surface enormous stock piles of ore aggregating not less than one million tons. With the excellent shipping facilities which both mines have at their disposal, in the nature of great automatic steam shovels, loading chutes and the endless chain bucket system, a large amount of work may be done with a minimum of labor. It is understood that both companies are well supplied with orders, sufficient to warrant active operations in mining and shipping all during the summer, and up to the close of navigation About seventeen hundred men are at present employed by both companies.

Copper Smelting in Newfoundland.

Under the caption of "Will make a fortune," the Mail and Advocate, one of the largest and best informed daily newspapers in the country, says recently: "We learn to-day from a very good authority that Mr. W. J. Mackay is about to close with an American company for the sale of his copper smelter in the West End (of St. John's), at a very good figure. We also hear that Mr. Mackay will sell his right to the copper on the dump at Little Bay. It is further said that the company has offered him one dollar per ton for the material, and as there are hundreds of thousands of tons of it there Mr. Mackay will clean up a fortune, as he well deserves to do, in reward for his pluck, enterprise and ability." This smelter was opened early last winter, and since then has been running regularly, turning out four hundred pounds daily of high grade copper. The smelter has been of considerable benefit to the country, inasmuch as owners of holdings all over the country were induced to test their deposits by submitting small lots to the smelter to test its value, and in this way some valuable deposits were disclosed, and beginnings are about to be made on some of the holdings thus tested.



Boston Creek Inn, Boston Creek, Ont.

Work in connection with another electric smelter has begun at Little Bay, once a famed mining district in the country, but of late years lying unworked. A dam 45 ft. wide and 20 ft. deep is under construction on Burkes river, a stream running through this district. At one of the old mines a number of men are employed on the dumps, and considerable ore is being extracted and placed ready for smelting. As soon as the smelting begins, mining underground will commence.

Tilt Cove Copper Mine.

The Tilt Cove mine is working at a fairly good clip, two loads of ore have been taken away by steamer during the past month. There are employed at the Tilt Cove mine at the present time about 250 men. The mine still shows no signs of exhaustion, and operations are expected to become more brisk later in the season.

During the present month an engineer from Boston examined the Bob's Head copper property, in the interests of an American party who are negotiating for the purchase. The ore is of good grade. Shafts sunk on the property are 80 and 50 ft. deep each. It is likely that a sale will be consummated within a few days, and work will begin on a moderate scale on the deposits.

Lead.

Work is progressing on the small lead mine at Dublin Cove, near Rose Blanche, considerable ore is on the surface, and it is not unlikely that increased activity will be in evidence during the summer on these holdings. The fine property in the district of Port-au-Port, which was worked on a small scale some years ago is likely to be taken over by some Americans who intend working it.

Newfoundland Products Corporation.

The Newfoundland Products Corporation, which intends the establishment of a colossal industry, at the cost of $21,000,000 in the country, in the manufacture of the salt ammonium phosphate (for fertilizing purposes), ammonia and cement, has at present employed over the areas on which they intend erecting the plants a large staff of men engaged completing the survey, which was begun last summer, and continued when the spring opened two months ago. It is doubtful whether or not construction operations will be attempted this summer; this will largely depend upon the rate of the survey.

The chief interest in the corporation is held by the Reid Newfoundland Co. of St. John's, Newfoundland. The Reid Co. are the owners of the entire railway system in Newfoundland, as well as of a large fleet of steamers doing passenger and freight service around the country. To produce ammonium phosphate, the chief and primary object of the corporation, five ingredients are necessary, namely: phosphate rock, sand, coal, marble, and pyrites—and it is assured that with the exception of phosphate rock, which at first is to be imported from Florida, all the other substances necessary can be produced in Newfoundland. This together with the large concessions granted the corporation by the Government, in the nature of water powers, etc., induced them to locate their industry here. The industry contemplated, when the plant is in full working order, will necessitate 29,805 tons of sulphate rock, ing order, will necessitate 239,805 tons of sulphate rock annually, or 657 ton sdaily, 600 tons of coal daily, 411 tons of limestone daily, and 29,200 tons of pyrites each year. This will produce 120,000 tons of ammonium phosphate, the value of which at $80 per ton will be $9,600,000 per year.

Newfoundland Coal Supply.

The Government anticipating a coal shortage throughout the country, owing to the scarcity of tonnage for freight, unless steps were taken to forestall what was impending, took up the matter of coal importation from Nova Scotia early this spring, and as a result the returns show the amount of coal imported to date to be 44,000 tons, which is considerably ahead of last year's importations for the same period, and is sufficient to prevent any severe shortage in the near future.

The SS. Kite, one of the wooden sailing fleet, has been chartered by a party of Americans to cruise for minerals in the Arctic regions during the summer; the Kite left last week for New York.

BRITISH COLUMBIA

Summer weather was being expected in the lower Coast district in the middle of June, but the season had been backward, so that field work was late in being generally undertaken. In parts of the interior, too, there has been delay in connection with mining, but late reports are to the effect that much progress is now being made. Advices from Cariboo told of snow having fallen about the middle of the month, which, however, is good news, since it means some addition to the water supply for gravel-washing purposes.

East Kootenay.

The output of the **Sullivan** mine for May was comparatively large; the total quantity of ore received at Trail from this mine during the month was 7,978 tons. Other receipts were restricted to a carload each from the St. Eugene and Monarch mines, together 54 tons. The total for the month from the district was, therefore, 8,032 tons.

In the first week in June receipts included 20 tons of ore from the **Giant** mine, Spillimacheen, Golden division, which had been non-productive for seven years, following lack of success commercially with some concentration experiments. It was claimed at the time that the Elmore oil process made a good separation, but was too expensive in its operation to be continued. The two "Texas tables" were put in, but these, while doing excellent work under favorable conditions, evidently were not found suitable to ordinary requirements intreating the bulk of the ore occurring here. The Provincial Mineralogist included the following in some of his published notes: "On the Giant group, situated on the left bank of the Spillimacheen river, about seven miles in from Spillimacheen landing on the Columbia river, and at an altitude of about 3,500 ft. on the southwest side of Spillimacheen mountain, there appears to be a line of contact of limestone on the south with a black colored slate on the north. Along this line of contact the lime seems to be more or less completely altered into barytes for a width of from 20 to 30 ft., when the barytes gives place gradually to a silicification of the limestone. This zone of barytes is in parts heavily impregnated with galena to the extent of from 5 to 10 per cent., together with some zinc, arsenic, and antimony sulphides. The galena is fine-grained, and occurs in numerous small seamlets running through the barytes gangue, and contains silver value in about the proportion of one ounce to the per cent. of lead. As far as could be determined by inspection, the mineralization diminished with the barytes, both being strongest next to the slate."

West Kootenay.

Ainsworth.—Four ore shippers from this division were on the Trail list for May, namely: Bluebell 621 tons, Comfort 25 tons, Florence 39 tons and Highland 249 tons; total 934 tons. Zinc ore was shipped by two or three other mines, but no particulars are available at the time of writing. As roads improve, so that heavy hauling may be resumed, an increase in output is looked for.

Slocan.—From the head office of the Rambler-Cariboo Mines, Ltd., Spokane, has come a report, as follows: The net earnings of the Rambler-Cariboo Mines, Ltd., operating the **Rambler-Cariboo** mine and concentrating mill near Three Forks, were approximately $11,000 in May. An advice just received from Supt. W. E. Cameron states that he is mining a considerable quantity of shipping ore from the 700 ft. level and other parts of the mine. At present prices for metals the crude ore nets about $5,000 for each 35 ton car, as compared with $3,500 for a similar quantity of silver-lead concentrate, for the last returns from the smeltery showed that a car of 34½ tons of concentrate netted $3,483. May shipments were 160 tons of lead and 70 tons of zinc concentrates, the return from which will be about $18,000. Expenditures during the month were larger than usual, because of heavy purchases of explosives, and will total about $7,000. Owing to a scarcity of suitable men we have been unable to recruit our force to permit operating the concentrating mill full time, but we expect to soon have a third shift working.

It has been announced that practically all of the new equipment purchased with the proceeds of the $70,000 bond issue floated in Spokane about four months ago, has been received at the **Slocan Star** mine, near Sandon, and part of it installed. The new machinery includes a 15-drill compressor, a 1,500 h.p. electrical plant, flotation process appliances, additional concentrating tables and an aerial tramway half a mile in length.

Mines in the Silverton region are active, those on the producing list comprising the Standard, Hewitt, Lucky Thought and Galena Farm. Three of them continue to ship zinc as well as lead products; the Lucky Thought is sending lead ore to Trail, but is not making a zinc concentrate, as are the others.

Nelson.—The Daily News states that 37 men are being employed at the **Granite-Poorman** mines, situated about five miles from Nelson, and that about $6,000 is being expended monthly in connection with the operation of these mines, approximately $4,000 in wages and the remainder for materials. The 20-stamp mill is running steadily on ore from the new workings on the Hardscrabble vein, which was further developed by a shaft sunk last winter. About 350 tons of ore is being crushed weekly; part of the gold content is saved by amalgamation, and part is in the concentrate sent to the smeltery.

Rossland.—The report of Josie mine, Rossland, for the month of April, has been received at the head office, London, of the Le Roi No. 2, Ltd., from the company's managers at Rossland, as follows: Ore shipped to the smeltery at Trail, 1,585 tons. Receipts from the smeltery were $16,871, being payment for 1,204 tons of ore; sundry receipts were $393; total of receipts was $17,263. Expenditures for corresponding period were: Ore production, $8,400; on capital account, $1,085; for development (including diamond drilling), $7,100; total, $16,585.

The following is a summary of Josie shipments and accounts for the four months, January-April, of 1916: Ore shipped to smeltery, 5,628 tons; concentrate shipped, 50 tons. Receipts were:: For 4,603 tons of ore, $63,616, and for 96 tons of concentrate, $2,640; sundries, $1,966; total receipts, $68,222. Expenditures were: On ore product3ion, $2,3845, and on milling, $400, making a total of working costs $25,245; on capital account, $4,128; on development, including diamond drilling, $36,381; total expenditures, $64,754. (Note—The concentrating mill was operated only during a part of January, and not at all during the three other months of the period under review).

Similkameen.

The Similkameen Star, published at Princeton, the chief town of Similkameen district, lately printed the following: "Business conditions are better generally, and mining particularly, is the report Mr. Ernest Waterman, general manager for the Princeton Coal and Land Co., brings home after having spent two weeks in Spokane and on the Coast. While in Spokane Mr. Waterman was approached by the officials of the big central heating system with a proposition for shipping the slack coal from the Princeton colliery for use in their plant. With an extremely low freight rate, it is thought such a scheme could be worked. On the Coast there were rumors to the effect that the Canadian Pacific, Grand Trunk Pacific and Canadian Northern Pacific Railway Companies were planning to reconvert their locomotives to coal burners and discontinue the use of oil as fuel, which change would be a great advantage to the coal mining industry of the Province."

The Lucky Todd Mining Co. recently made a small shipment of ore copper from its claims on Greenhorn mountain to the smeltery at Greenwood, with results stated to be sufficiently encouraging to warrant having another carload packed down to the railway in Otter valley. Efforts are being made to secure the construction of a wagon road from the railway to the claims.

Vancouver Island.

Supplementary to the information relative to the proposed reopening of the Tyee Copper Co.'s smeltery at Ladysmith, Vancouver island, sent for publication in the last number of the Canadian Mining Journal, is the following excerpt from the Daily Colonist, Victoria, of June 14: "During his visit to Ladysmith last week, Hon. Lorne Campbell, Minister of Mines, visited the smeltery and had a long conference with Mr. W. J. Watson, manager for the Tyee Copper Co. Mr. Watson showed Mr. Campbell over the smelting works, and the latter was very much impressed with what he saw, expressing surprise that a plant so modern and up-to-date in every respect had remained idle so long, while the ore that should have been smelted at Ladysmith had been shipped to the United States for treatment. He says there is enough British Columbia ore now being shipped to the United States from Coast mines to keep the local smeltery working constantly, and he will give the matter his immediate attention. Mr. Campbell had not the slightest hesitation in saying that the Tyee Co.'s smelting works will again be in operation before long. Ladysmith people who are interested in the reopening of the smeltery can be assured that there will be nothing left undone than can be done by the Department of Mines to provide an adequate supply of ore to keep the smeltery running full time."

General Notes.

Plant and machinery has been removed to Sandon Slocan from the concentrating mill at the Alice mine, near Creston, within 20 miles of Kootenay Landing, which latter is the western terminus of the Canadian Pacific Railway Co.'s Crowsnest branch railway. It is stated that some of this machinery will be added to the equipment of the concentrator of the Slocan Star Mines, Ltd.

Well-known men resident in Vancouver city are reported to have acquired some mineral claims on Rocher Deboule mountain, in Omineca mining division. They have organized the New Hazelton Gold-Cobalt Co., and several of those chiefly interested left Vancouver in June to visit the claims and decide where to do development work on the property.

Mine owners operating in the British Columbia part of the Crowsnest district, Southeast Kootenay, are interested in a movement among their employees, who have demanded a ten per cent. increase in wages as a war bonus. The executive board of District 18, United Mine Workers of America, requested the Western Coal Operators' Association to arrange for a joint meeting of the two associations to consider this demand.

COBALT, SOUTH LORRAIN & GOWGANDA

The Price of Silver.

After falling 13 cents in twenty-eight days, the drop in the price of silver has definitely stopped with the week ending June 23rd. There has never been any uneasiness in the camp that it would go to a point where the profits would likely be jeopardized. World conditions are such that to those watching the market from the outside, it appears likely that silver will again advance to the point attained earlier in the month. There has no doubt been every effort made on the part of purchasing Governments to keep down the price as low as possible, so that when big orders have been put in it is hoped that the price will drop again until the stocks of silver are depleted. It is then generally anticipated that the price will once more rise with the same startling rapidity as before. The remonetization of silver is becoming a live subject in all circles where silver operators meet. If this course is taken by the nations of the world after the war, it will mean large and permanent profits for all silver operators, and it is difficult at the present time to see how it would be possible to avoid such a course. In any case there is no uneasiness as to the immediate price of silver during the next four or five months. In fact many companies are now holding their ore until such time as the price does rise again. They have made good profits from cars marketed at a time when silver was 75 and 76 cents an ounce, and they can now afford to withhold their silver for some time. Another factor in the situation is the burning of the refinery at the Nipissing.

Labor Disputes.

As the outcome of several meetings held by the working miners in the Cobalt camp, it appears most likely that arbitration will be sought before any strike is attempted. In fact, the local union has given notice that they will apply for a conciliation and investigation board and they have definitely gone on record to the effect that they will not strike until such board has been refused. It is a grievance with them that the mine managers will not meet the Western Federation of Miners. They do not appear to recognize the fact that the record of the Western Federation of Miners in the West is almost a complete bar to any negotiations between it and mine owners. There would be no disposition at all to avoid a meeting of the representatives of almost any other union except the Western Federation. There is a pretty general feeling that owing to the high cost of living, further concessions might be made to the men, particularly in view of the fact that silver has fallen below the point where the surface men will get any bonus, but it will require a tactful and skilled mediator. If such is provided, there is every hope that a peaceful settlement of the disputes will be provided.

Discovery at Crown Reserve.

The Crown Reserve Mining Company has run into a shoot of ore at the 700-ft. level which is exciting a great deal of interest in the camp. The vein is about a foot wide, of massive smaltite and calcite. All this material is studded with heavy flakes of native silver. Smaltite will run about 100 oz. to the ton and across the foot of vein matter the average will be 500 oz. to the ton. At the time of writing, this vein has been developed for 12 ft. At the 500-ft. level, $40,000 was taken from this vein. The ore is typical diabase ore, but the exact formation in which the vein is located at the 700 ft. level has not been definitely ascertained. While it is far too early yet to base any hopes upon this discovery, it has excited much interest, and if the vein continues, will be conducive to much more exploration in the formation line below the conglomerate, in the Kerr Lake section of the Cobalt camp.

The Crown Reserve Mining Company is very busy with prospects; not only in Northern Ontario, but in California. While they have thrown up their option on the Globe, they have taken other options on the Reward mine in Inyo County and other prospects. The Reward mine has been a profitable producing mine in its day and there is ore in sight. It is understood that the option has been obtained at quite favorable terms. In Northern Ontario the Crown Reserve has taken up its option on the Cochrane mine. The shaft will be sunk to the 500-ft. level before any further work is attempted on the upper levels, where some mill ore was blocked out by the General Assets Company, when they had a lease. The company has decided to give up their option on the McRae claims in Boston Creek, and they have taken their machinery away. They still have the Johnston claims, just east of the R. A. P. Syndicate.

Oil Flotation.

The success of the oil flotation process in the Cobalt camp has now been assured, by the good results obtained in the McKinley-Darragh plant. While all experimental work at the Buffalo was most satisfactory, most mining companies have held back until such time as the process was proven to be profitable under regular mill practice. This is now well assured at the McKinley-Darragh plant. The first results obtained when some later improvements had not been applied, was a tail of 2 oz. from an 8 or 9 oz. head. This compared with 3 to 5 oz. from the same slime head. Later results have given a 1.7 oz. head and there is every prospect that this will be reduced later to a 1 oz. head. As has been said, the success of oil flotation with tails from water concentration plant is practically assured, but experiments on tails from cyanide process are still going ahead and the definite proving of its applicability to this practice in the camp has not yet been actually demonstrated. The Coniagas, Northern

Customs and Penn-Canadian have experimented with the callow system and will probably install it; at the Beaver another system of oil flotation is being tried. That the net result of the application of oil flotation to tails from Cobalt ores will be a saving of a large quantity of silver that previously went into the tailings dump, is now almost certain.

Mining Corporation Changing Mill.

Construction is actively being prosecuted at the Cobalt Reduction mill of the Mining Corporation. All ore from the Townsite, the City of Cobalt and the Cobalt Lake is now being milled at this plant and the Cobalt Lake mill has been closed down. Ore from the Cobalt Lake is now trammed underground to the main working shaft of the Mining Corporation, near the Cobalt Reduction mill. Extensive alterations are being made in the plant of the Mining Corporation. A new refinery is being built and a Marcey mill is at the present time taking the place of several batteries of stamps. The results obtained in this tube mill are to date so satisfactory, that it is quite possible that it will substitute some of the stamps in the Mining Corporation's plant. The Mining Corporation is now the largest actual producer of bullion in the camp, although the Nipissing ships more than they do, since they take a good deal of customs ore from the Kerr Lake and other mines.

People's Mine.

Work has actually commenced on the People's mine in Southeast Coleman. This work is to be carried on jointly by the Ophir Cobalt and the People's Mining Company. It was decided between the two companies that it would be more economical to sink the shaft on the John Black. This shaft is now down 310 feet, and it will be carried on to the contact with the diabase, which is expected to be found just above the 600-ft. level. Then a crosscut will be started from the No. 1 vein on the People's, which dipped out of the shaft. It will probably be picked up in about 70 feet and the drift on it will be carried on to the Ophir line; a distance of about 150 feet. Until that point is reached, all expenses will be shared by the Ophir and the People's Mining Company; after the crosscut has passed the line, expense will be borne according to the number of machines running. It is not probable that any definite results can be obtained until the late fall.

Beaver.

The Beaver shaft is now down to a point where the contact with the lower keewatin should be reached at any time. The station has been cut at the 1,650-ft. level. The diamond drill showed that keewatin should be entered at 1,680 ft., so that in the next two or three weeks, crosscuts to pick up veins should be started at any time. Once these are well under way, results may be obtained at any time. The progress of the work is being watched with a great deal of interest.

Peterson Lake.

The Peterson Lake Mining Company showed a surplus of $277,376. While the company has failed to discover any silver that could be mined at a profit on any of the leases that they are working, the income from the Seneca Superior has sufficed to give them working capital for their own operations and only reduced the surplus by about $27,000. There is no attempt to hide the fact that the Seneca Superior is the main source of income of the Peterson Lake and that the Seneca Superior is now practically worked out. Sir Henry Pellatt, in his address, says in part that "towards the end of the year the ore reserves of the Seneca were practically depleted and extensive development of the leased area did not lead to the discovery of any new orebodies. Your directors have diligently prospected the Peterson Lake area through Nos. 2 and 3 shafts by extensive underground workings, and have opened up the Nova Scotia territory in which several veins have been encountered. Up to the present time commercial silver has not been found in paying quantities." The fact that the Seneca Superior has this year declared and paid no less than 70 per cent. on their capitalization, insures Peterson Lake an income from their royalties on this mine at least as substantial as in 1915. There should therefore be no need of anxiety either in regard to working capital or dividends during the present year, but unless something is found this year, surplus will have to be drawn upon to finance operations in 1917.

PORCUPINE, KIRKLAND LAKE AND BOSTON CREEK

A Proposed Merger.

What promises to be of benefit to both participants if it goes through as at present drafted, is the merger of the Porcupine Vipond and the North Thompson. These two properties lie side by side and one mines the extension of the other's veins. It would therefore be simple to connect up workings and mine both from a central shaft. While both properties are of promise, the tonnage they would separately produce would not be large enough to reduce mining and milling costs to a point where profits would be very large. If the merger is effected, the present Porcupine Vipond mill which is now treating about 125 tons a day will be enlarged to treat 400 tons a day. The decreased costs of milling and mining would make it possible to develop and extract ore of a grade that is not now profitable. The Porcupine Vipond is now a producing mine with a mill. The North Thompson is developed on three levels with a fourth now being opened up, all in good ore; but they have no mill and under present war conditions find it difficult to finance the building of one. The project has been under discussion now for some time; Mr. Hamilton, the chairman of the Huronian Belt Company controlling the North Thompson mine, coming over from England to discuss the matter with Mr. Ward, of the Porcupine Vipond and the directorate. While final details have not been settled and papers have not been signed, it is most probable that the merger will be consummated as arranged.

Hollinger.

The Hollinger Mining Company showed a small decrease in gross profits for the period ending May the 19th. This was altogether due to the fact that the grade of ore fell from $9.09 to $8.00. Of the 30,586 tons hoisted during the 28 days, none came from below the 550-ft. level and only 2,110 tons came from the 550-ft. level itself. The mill ran 90.7 per cent. of the possible running time, treating 42,673 tons, of which 29,509 tons was Hollinger ore and 13,083 tons were treated for the Acme mine. The gross profits for the period ending May the 19th were $194.369, 33,558 tons of $8.00 ore. The total costs were $3.336 per ton. Milling cost 0.933 cents and mining $1.774. Both mining and milling showed a slight reduction per ton. Progress is being made with the foundations for the new mill and forms for the concrete foundations have now almost been completed. The drifts and crosscuts on the Acme and Hollinger are being joined up, so that the whole system will soon be unified.

Dome Lake.

The cyanide drum at the Dome Lake mine has proved to be a metallurical success, but it is still quite defective mechanically. One of the chief troubles is the breaking of the porous tiles with which the drum is lined, owing to the drum being somewhat out of line. The rollers upon which the drum runs have worn unevenly and it moves with a motion that breaks the tiles. The replacing of these lines is a matter of some difficulty and time and the drum has only been enabled to run a certain portion of the regular time. Its maximum capacity is 60 tons, made up of 5 charges of 12 tons each, per day. This may be increased later by some modification of feed. When the drum is not running the tails from the amalgamation plates run into the tailings pond and will have to be retreated later. The heads to the mills are running pretty high, owing to the opening up of some fine grade ore in a raise above the 300-ft. level on the No. 1 vein.

Stamps and Ball Mills.

The controversy between the advocates of stamps and ball mills will receive a fresh impetus by the determination of the Dome to pull out all their old stamps and install 8-ft. Hardinge mills, which have been such a success at the Dome. Two of these mills are now in place in the Dome mill, although but one of them is running. Three more are on order. It is reckoned stamps, without much difficulty.
that the five-ball mills will do the work of the 100

West Shiningtree.

What may be a new gold camp has recently come into some prominence in the West Shiningtree district. It is known as Wasapica. It is thirty miles southwest of Gowganda and about twenty-five miles from milepost 80 on the C. N. R. It is in Churchill Township on the west branch of the Montreal River. A shaft has been sunk in the andesite for 32 ft. on the Caswell claim. On the surface there is an 18-inch vein of quartz, about 4 inches of which is remarkably rich ore. On the Knox claim which is being operated by a Buffalo syndicate, a shaft has been sunk 40 ft. on a vein 18 in. wide, which on the surface ran $34.20. At 40 ft. the vein widens out to 2 ft. 6 in. A chisel sample across 18 in. of this vein ran $176 to the ton. Perhaps the most important, although the least spectacular of the working groups in this section is the Bourke. It is under option to a Cobalt syndicate, at the head of which is Mr. R. B. Watson. The main vein which will average about 2 ft. for 400 ft. shows very little gold, but gives consistently good assays. There are a number of quartz stringers running into this vein and these quartz stringers are very rich. This new field can be reached either through Sudbury and the C. N. R., or through Gowganda and the west branch of the Montreal River.

Boston Creek.

At Boston Creek the R. A. P. Syndicate holdings have been taken over by the Boston Creek gold mines. Messrs. Albright & Richardson still remain in control of the holdings, but Mr. Papassimakes has sold out most of his interest, although he still retains a small block of stock and is a director. The other directors of the company are Messrs. H. D. Symmes of Niagara Falls and J. P. Bickell, of Toronto. Mr. Symmes will be the manager of the company, Mr. Papassimakes going into Painkiller Lake to develop some properties he has under option there.

The Boston Creek gold mines will at once proceed to develop their holdings on a much larger scale. The shaft is now down about 180 ft. At that depth there is 4 ft. of very rich ore. The shaft will be continued down to the 200-ft. level, when a diamond drill will be installed to discover the exact bearing of the vein. The Kenzie claim and the Boston Creek Townsite are also included in the merger. It is proposed to install a much larger power plant at once and probably in a short time build a mill.

Power For Kirkland.

The power line from Cobalt to Kirkland Lake via Boston Creek, has actually been commenced. Men are now engaged in cutting out the right-of-way, which has been purchased, and the poles should soon begin to go up. From Cobalt to Kirkland Lake is a distance of 65 miles, and under the circumstances, it is most unlikely that power will be available before the snow flies. Once it is available developments through Catharine Township, Boston Creek and Kirkland Lake will be very much accelerated.

PORTABLE SMELTERS.

In its last issue, Northwest Mining Truth, published in Spokane, Washington, made the following editorial comment:

A member of the British Columbia Parliament, during a recent discussion in the House, suggested that the Government show its interest in the mining industry by supplying smelting facilities to isolated mines. The proposition appears to have met with some smiles and not a few outbursts of more plebean laughter. The honorable gentleman was not, however, cast down by this vulgar clamor and it is quite probable that the next slogan in British Columbia politics will be, "Every little mine must have a smelter of its own." It is possible that the plan would prove expensive in practice, but by proper supervision of details the Government may be able to "get by" without bringing bankruptcy upon the province. We realize that alien advice is not sought in such contingencies, but we nevertheless suggest that a start might be made by the erection of a nice, complete little smelter on wheels. It could be tried out upon different kinds of properties until it eventually found a permanent resting place on some lone hospitable mountain where self-fluxing ores are abundant. Its chaffeurs must, however, be careful that the wheels do not slip and land it on the dump of oblivion. We opine that the Honorable H. C. Brewster is a man of initiative and that ignorance of a subject does not deter him from laudable efforts to make the world better and richer. We are also inclined to believe that he has not graduated from the primary class of any reputable school of mines.

SILVER PRICES.

June—	New York. cents.	London. pence.
10.	63¼	30¼
12.	64⅞	31
13.	63⅞	30½
14.	63	30⅛
15.	62⅞	30 1/16
16.	63⅛	30 3/16
17.	63⅞	30½
19.	64¾	30 13/16
20.	64⅛	30⅝
21.	64¼	30 11/16
22.	65	31
23.	65⅜	31 3/16

MARKETS

NEW YORK MARKETS.

June 23, 1916—Connellsville Coke—
Furnace, spot, $2.40 to $2.50.
Contract, $2.50 to $2.75.
Foundry, prompt, $3.25 to $3.50.
Contract, $3.50.

June 23, 1916—Straits, Tin, 40.25 cents.
Copper—
Prime Lake, nominal, 26.62½ to 26.87½ cents.
Electrolytic, nominal, 26.62½c to 26.87½ cents.
Casting, nominal, 24.00 to 24.25 cents.
Lead, Trust price, 7.00 cents.
Lead, outside, 6.85 to 6.95 cents.
Spelter, prompt western shipment, 11.92½ to 12.17½ cts.
Antimony—
Chinese and Japanese, 18.50 cents.
American, 18.50 cents.
Aluminum, nominal—
No. 1 Virgin, 98-99 per cent., 63.00 to 65.00 cents.
Pure, 98-99 per cent., remelt, 61.00 to 63.00 cents.
No. 12 alloy, remelt, 48.00 to 50.00 cents.
Nickel, 45.00 to 50.00 cents.
Cadmium, nominal, $1.25 to $1.50.
Quicksilver, nominal, $76.00.
Platinum, nominal, $75.00.
Cobalt (metallic), $1.25.
Silver (official), 65⅜ cents.

Metal Products—Following base prices are all f.o.b. mill:
Sheet copper, hot rolled, 37.50 cents.
Sheet copper, cold rolled, 38.50 cents.
Copper wire, 30.00 to 31.00 cents.
High sheet brass, 38.00 to 39.00 cents.
Seamless brass tubing, 43.00 to 44.00 cents.
Seamless copper tubing, 43.50 cents.
Brazed brass tubing, 45.50 to 46.50 cents.
Brass wire, 38.00 to 39.00 cents.
Brass rods, 38.00 to 39.00 cents.
Sheet zinc, f.o.b. smelter, 19.00 cents.

TORONTO MARKETS.

June 26—(Quotations from Canada Metal Co., Toronto)—
Spelter, 18 cents per lb.
Lead, 8¾ cents per lb.
Tin, 46 cents per lb.
Antimony, 25 cents per lb.
Copper, casting, 29½ cents per lb.
Electrolytic, 30½ cents per lb.
Ingot brass, yellow, 16 cents; red, 21 cents per lb.

June 26—(Quotations from Elias Rogers Co., Toronto)—
Coal, anthracite, $8 per ton.
Coal, bituminous, $5.75 per ton.

STOCK QUOTATIONS.

(Courtesy of J. P. Bickell & Co., Toronto, Ont.)

Toronto, June 26,1916.

New York Curb.

	Bid.	Asked.
Atlantic Steel	50.00	53.00
Butte	4.62	5.00
Can. Car	65.00	70.00
Curtiss Aeroplane	42.00	49.00
Chevrolet	216.00	220.00
Cosden Oil	16.00	16.25
Cuban Sugar	56.25	57.00
Can. Copper	2.62	2.75
Chandler Motors	111.00	111.25
Canada Cement	68.25	68.50
Con. Ariz.	1.37	1.44
Emma Copper	44.00	46.00
First National	3.25	4.00
Houston Oil	14.00	17.00
Howe Sound	4.00	4.25
Intercontinental Rubber	12.00	14.00
International Petroleum	10.00	10.25
Inter. Nickel (New)	45.25	45.75
Kennecott Copper	48.00	48.50
Manhattan Transit	1.00	1.25
Maxim Munitions	6.00	6.25
Midvale Steel	62.00	62.25
Marconi	3.12	3.37
Magna	13.00	13.50
Mother Lode	27.00	28.00
Poole Engineering	115.00	120.00
Peerless Motor	24.00	25.00
Ray Hercules	3.25	4.00
Steel of Canada	58.00	59.00
Standard Shipbuilding	5.00	12.00
Submarine Boat	36.00	37.00
Salpulpa Oil	12.00	12.50
Success	77.00	78.00
Tonopah Extension	5.25	5.50
Triangle Film	2.18	2.25
U. S. Light	2.87	3.00
Ventura Oil	8.75	9.25
White Motors	56.00	56.50

Porcupine Stocks.

	Bid.	Asked.
Apex	.07	.07⅜
Dome Consolidated	.10	....
Dome Extension	.37	.37½
Dome Lake	.32	.32½
Dome Mines	....	27.25
Eldorado	....	.00½
Foley O'Brien	.48	....
Gold Reef	.01½	.02
Hollinger	29.55	30.00
Homestake	55	....
Jupiter	.32½	.33
McIntyre	1.57	1.60
McIntyre Extension	.40	.44
Moneta	.13	.14
Plenaurum	.40	.70
Porcupine Crown	.80	.88
Porcupine Imperial	.03¾	.04
Porcupine Tisdale	.01⅝	.02
Porcupine Vipond	.55	.57
Preston East Dome	.04¾	.05
New Ray	.40	.41
Teck Hughes	.21½	.22
West Dome Con.	.38	.38½

Cobalt Stocks.

	Bid.	Asked.
Adanac	.70	.72
Bailey	.08	.08¼
Beaver	.40½	.41
Chambers-Ferland	.20	.24½
Coniagas	5.00	5.60
Crown Reserve	.54½	.55½
Foster	....	.09
Gifford	.05½	.06
Gould	.00¼	.00½
Great Northern	.04	.05
Hargraves	.03½	.04¼
Hudson Bay	47.00	52.50
Kerr Lake	4.25	4.50
La Rose	.59	.65
McKinley	.52	.54
Nipissing	7.10	7.15
Ophir	.06½	.08½
Peterson Lake	.24¾	.25
Right of Way	.05¼	.05½
Seneca Superior	.30	.32
Shamrock Cons.	.10	.12
Silver Leaf	.02	.02¼
Temiskaming	.63½	.54
Trethewey	.23¼	.24
York Ontario	.01½	.02
Wettlaufer	.08	.09