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Editor:

J. C. MURRAY, B.A., B.Sc.

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MR. CLIFFORD SIFTON AND NATURAL RESOURCES.

For the position of President of the Commission on the Conservation of Natural Resources, the Hon. Mr. Sifton is specially fitted. His executive ability and his business acumen have been proved and amply recognized. While his appointment as president is acceptable to Canadians, it is obvious that in labours so wide and so diversified he must have the advice of strong and disinterested specialists. This statement is borne out by the recent utterances of Mr. Sifton himself.

In his exceptionally forceful address, delivered at Ottawa on January 18th, Mr. Sifton covered a great deal of ground. He dealt with many matters of moment. With only one of these are we concerned. Mr. Sifton made certain specific references to mining and minerals. Several of these are absolutely incorrect, one or two are absurdly wrong, and others are tinctured with error.

Before discussing these in detail, it is well to state that we are perfectly in accord with the spirit that pervades Mr. Sifton's address. It is obvious, however, that in facts and figures relating to mining some one has been leading him very much astray. For various good reasons, including strong internal evidence, we believe that Dr. Haanel is responsible. As a former protegee, and as a present friend of Mr. Sifton, Dr. Haanel has been permitted to retain a position that he cannot fill. His past and present relations to Mr. Sifton warrant a strong assumption that it was he who supplied the "dope." In any case, Mr. Sifton should be long in forgiving the fatuous offender who put him so much off the track.

We shall now proceed to quote: "In the Cobalt camp," says Mr. Sifton, "the mine owners are largely at the mercy of foreign smelters and refiners. Much valuable mineral . . . is lost to the owners and to this country because there is no effective method of treating these ores in Canada. Thorough investigation by experts is highly necessary. Probably the valuable mineral lost in the Cobalt camp in one year would pay for the whole investigation and build the plant necessary to treat the ores under proper guarantees."

This is awful. Look at the facts—and how shall we excuse Dr. Haanel for blinking them! The Ontario plants at Copper Cliff, Thorold, and Deloro can treat all the high-grade ore produced at Cobalt. Moreover, as these plants purchase by far the greater part of the high-grade ore of the camp, it is self-evident that they can treat that ore more economically than can foreign plants. Therefore, also, the Ontario plants pay higher prices.

Further, the ores mined at Cobalt are singularly complex. It is not to be expected, at the present stage of metallurgical knowledge, that all the constituents can be refined commercially at once. And where, in heaven's name, could they be marketed after refining! Silver and arsenic are now extracted. The residues, containing cobalt and nickel, are held for further treatment. Cobalt oxide can be turned out to meet all present demands. All the Canadian refineries seem satisfied with their processes. Their owners have secured, and paid for, the best technical assistance. A government experimental plant, such as Mr. Sifton suggests, could not secure as highly qualified men, simply because no government will pay such high salaries as do private companies. A government that will let a corporation outbid it for the services of Mr. M. J. Butler cannot be expected to compete successfully for the services of expert metallurgists, men who belong to a profession in which high salaries are demanded as a matter of course. On the other hand, a government plant, under the management of the Mines Branch as at present constituted would be an unmitigated farce.

Mr. Sifton, in his reference to mine accidents, has been again misinformed. It is not true that "Canada makes almost the worst showing in the world." As we have repeatedly pointed out, the coal mines of Nova Scotia are among the best regulated anywhere. Our Western coal mines show lower death rates per thousand men employed than do the majority of United States collieries. The death rate, due to accidents, at Cobalt in 1908 was not "24.8 per 1,000 employees working underground," but only about one-quarter of that rate. Moreover, to compare the 250 scattered mines and prospects of Ontario, with the large highly developed mines of the Transvaal, is patently unfair. It is fair, however, to institute such a comparison between these latter mines and the Copper Cliff mines. In this case we find that the fatality at Copper Cliff is, roughly, about half that obtaining in the Transvaal mines. Obviously the better record at Copper Cliff, as compared with Cobalt, is due to the concentration of attention to a few large workings.

In his statement that in electric smelting, "we have led the way in investigations," Mr. Sifton will find remarkably little support. The experiments in producing pig iron at Sault Ste Marie, were made under the direction of a French inventor, brought to Canada for the purpose. Just how far Dr. Haanel wished to advance the cause of science, and just how far the experiments were designed to exploit a private patent, we can only guess. But the actual truth (and it is high time that some one should tell it) is that economic results were not obtained at the Sault. In fact, about all that has been done in Canada is to describe the work of others. Our much heralded production of pig iron in the electric furnace has failed absolutely to materialize.

But enough of correction. We are sincerely glad that Mr. Sifton is to devote his unquestioned talents to

national economies. If we have spoken very plainly, it is entirely because we think that the time for talking official balderdash about mining has passed. Mr. Sifton can conserve our mineral resources and our patience best by reorganizing the department that he himself created. Meanwhile, we wish him all success.

ENGINEERS AND INSTITUTES.

Mr. A. B. Willmott contributes to our columns a profitable discussion of Mr. Kendall's paper on "Mining Engineers and Mining Institutes." It will be noticed that Mr. Willmott opposes strongly any radical restriction of the membership of the Canadian Mining Institute. Mr. Willmott points out that the Institute, as at present constituted, "is a wide-open congress . . . where all interested in mining, whether technically qualified or not, can meet and discuss matters of common interest. . . . Let us move slowly in the matter of change. . . . We want the broker and investor to attend our meetings and learn the views of our leaders on the ethics of mine finance and on the duties of directors to their shareholders."

To conserve professional standards Mr. Willmott suggests the formation of a Mining Engineers' Guild, to be composed of members of the Canadian Mining Institute, possessing certain qualifications.

The scheme outlined by Mr. Willmott will probably meet with both approval and censure. We are of the opinion that it is essentially sound and practicable. But there are many points that require the fullest discussion. And we hope that our readers will not be backward in expressing their views. We hope, also, that the whole matter will be thoroughly threshed out at the annual meeting of the Canadian Mining Institute.

THE PORTLAND CANAL MINING COMPANY.

Interest in the Portland Canal mining district is growing. The fact that Messrs. McKenzie and Mann, have acquired large holdings has given advertisement to the region. As usual, however, United States capitalists have been most energetic. But many British Columbia investors have sent, and are sending men north to stake properties.

One company, the Portland Canal Mining Company, Limited, with headquarters at Duncan, B.C., has issued its second annual report. From this report we learn that \$100,000, raised by the sale of a block of treasury stock, is being expended in erecting a 100-ton concentrator, an aerial tramway, and a water-power plant.

Three tunnels have been driven into the mountain side, aggregating a total footage of about 600 feet. Tunnels No. 1 and No. 2 are reported to be in rich ore. Tunnel No. 3, cuts a downward continuation of the ore body disclosed above. The ore carries from \$10 to \$30 in gold, and about \$45 in silver per ton. In thickness the vein apparently exceeds 13 feet. The ore contains galena, argentite, and native silver.

From all that can be learned at present, the Portland Canal region affords one of the best opportunities known in Canada for profitable mining.

THE TYEE COPPER COMPANY, LIMITED,—A CORRECTION.

We greatly regret that there appeared in our issue of January 1st, 1910, in the review of mining in the province of British Columbia in 1908, by Mr. George A. Ohren, a statement that "the Tyee Copper Company is reported in considerable debt."

The facts, as stated officially, are that this company, in addition to the large value of its properties, smelting plant, and stores, has available a cash reserve fund invested in Trustees' Stocks, of about \$350,000 and its financial status is so well known that its credit has never been questioned.

We deeply regret this statement, which was obviously based on misleading information, and we take the first opportunity of making this correction.

The good name of the Tyee Company throughout the Western country for prompt payment, and for honourable treatment of all parcels of ore sent to their customs smelting works, is so well and favourably known, that we trust the inaccuracy of our inadvertent statement did not cause a moment's embarrassment.

THE COST OF LIVING.

The Wall Street Journal, in an exceedingly sane and timely editorial, alludes to the "growing division of labour and specialization of functions," as a distinguishing tendency of modern commercial life. Our contemporary glances at the burden carried by each unit of population in the highly organized city of New York. According to the recent census report, the annual per capita civic expenditure for every man, woman, and child in New York, is \$23.84; or practically \$120 for a family of five. In addition to these astonishing figures, the per capita Federal Government expenses amount to about \$8, or \$40 per year for a family of five.

The Journal remarks that, while civilized nations are far from the unhappy state of Rome, which broke down largely because the burden of taxation stifled agriculture, yet conditions are becoming serious. In short, it is the object of the editorial to indicate that the multifarious and increasingly differentiated functions assumed by governments, whilst they may have a high ethical value, are uneconomic. How far they can be multiplied, is one of the questions that affects the grand problem of the cost of living.

THE DAVIS HANDBOOK OF COBALT.

Cobalt still looms large on the financial horizon. Its importance shews no sign of waning. The number of investors and others, interested directly and indirectly in the camp, is daily increasing. Meanwhile there

has been created a demand for some ready and complete book of reference covering the Cobalt district.

Such a book is soon to be published. Its compiler, Mr. H. P. Davis, is one of the pioneers of Cobalt. For three years he has been collecting material. His book, "The Davis Handbook of the Cobalt Silver District," is a compendium of all information necessary to guide the investor and to instruct the general reader. Following a sketch of the geology, mining methods, ore markets, etc., come full statistical statements and an exhaustive directory of all companies operating, or incorporated to operate, in the Cobalt district.

We have no hesitation in commending the Davis Handbook. It will be found reliable, exact, and perfectly unbiased. On another page, we publish part of an advance chapter from this volume.

EDITORIAL NOTES.

It is gratifying to Canadians to learn that to Dr. A. P. Coleman, of Toronto University, has been awarded, by the Royal Geological Society, the Murchison Medal for distinguished geological investigation. The honour is well deserved.

The Le Roi Mining Company faces a net loss of \$47,150 on its operations for last year. Its new exploration scheme includes about 35,000 feet of diamond drilling. Special attention is to be paid to the 1,650 foot level, where good ore was encountered last year.

The School of Mining, Kingston, Ont., is advertising for applications for the position of Assistant Professor of Geology. Applications will be received until March 15th, 1910. Particulars are set forth in our advertising section.

In the deep mines of the Rand, drill sharpening by means of electric furnaces installed underground has been introduced.

The peat electric station at Skabersjo, Sweden, which has been quietly worked more than five years, is supplied by a small bog of 37 acres, with peat averaging five feet in depth, and in this source is estimated to have fuel for about 30 years. The electric current is yielded by two generators of 150 horsepower each, which are coupled direct to two gas engines, receiving the peat gas from two Korting suction-gas producers. The current is conducted two or three miles to Svedala, and is used for lighting the streets, and for power for several small industries. The price to consumers is only about one-half cent per horsepower hour. Tar is the only by-product saved, but the experiments now in progress at different places indicate that the sulphate of ammonia and other by-products recovered in a somewhat larger station—one of a few thousand horsepower—will be so profitable that they will pay all expenses, leaving the entire power production as clear gain, or a product costing nothing.

SHEEP CREEK DISTRICT, B. C.

Written for the Canadian Mining Journal by A. H. Gracey.*

The gold camp known as Sheep Creek, is situated about 25 miles south-east of Nelson, B.C. The nearest railroad point is Salmo, a town on the Nelson-Spokane branch of the Great Northern R. R., 25 miles south of Nelson.

Gold mining in the district was first undertaken about thirteen years ago, when a ten stamp mill was installed at the Yellowstone mine, but about a year later the property was closed down. An adjoining property to the Yellowstone is the Queen group, which at that time was but a prospect. Several leases were afterwards taken on the Queen by different parties, and besides several shipments of crude ore to the smelter, considerable milling ore was treated in the Yellowstone mill, rented for that purpose. It is understood that these leases were financially successful but the development of the mine was not extensively pushed. Wm. Waldie, one of the owners, then took hold with such success that later on he was able to purchase the interests of his partners and also the Yellowstone mine and mill. From this time on the Queen was quietly and successfully operated by Mr. Waldie, until in the spring of 1908 he sold out to an American syndicate for \$175,000.

For three or four years previous to this sale different leases had been taken on other near by properties, chief among which were the Mother Lode and Kootenay Belle. Although the results were usually encouraging, to the extent of making small shipments of high grade ore, development was not undertaken and the leases lapsed with little accomplished.

In the fall of 1907 a prospect then little known, was taken up under lease and bond, by Mr. W. B. Pool and a partner. This was the now well known Nugget mine. During the following winter, as the result of less than 150 feet of development, Mr. Pool was able to ship to the smelter 190 tons of sorted ore, (taken practically from development faces only), which gave gross smelter returns averaging over \$100 per ton. This achievement attracted real notice to the camp. Up to date, with comparatively little development, properties within a radius of three miles have produced approximately \$1,000,000 in gold.

Mr. R. W. Brock of the Dominion Geological Survey, in his summary report of 1908, thus describes the geology of the camp: "The veins being worked at present occur in a band of quartzites, slates and schists, which extend northward from about Lost Mountains across Sheep Creek and Wolf Creek, and up the ridge between Sheep and Fawn Creeks. To the west is a wide band of crystalline limestone. Some granitic and aplitic dikes are intruded into the formation, and also some basic mica dikes. The general strike of the rocks is about N. 12 degrees E. with a dip of 50 degrees to the east. The veins are fissure veins cutting the formation, usually the quartzite."

During the seasons of 1908 and 1909 considerable progress has been made in both development and production. The Queen mill has been enlarged to 20 stamps, a new hoist and compressor installed and deep development undertaken. This latter is interesting for the reason that the Queen is the lowest property in altitude in the camp. The present lower workings are from 200 to 300 feet below the bed of Sheep Creek, where the vein maintains its size and values. The mill-

ing ore, stoped to widths of from 6 to 12 feet, has averaged \$15.00 per ton. This persistency in depth, is an encouraging feature in considering the camp's future. Ore from these lower workings carries a high percentage of sulphides, principally iron pyrites, but the percentage of recovery by amalgamation remains satisfactory and the concentrates, from Wilfley and Overstrom tables, amounting to about 7% of the ore milled, are shipped to the smelter.

In the spring of 1908 the one half interest of Mr. Pool's partner in the Nugget bond was purchased by A. H. Gracey and associates of Nelson, and the Nugget Gold Mines, Limited was organized. A four stamp mill, with Frue vanners, was installed and started crushing ore November 1st, 1908. This is a temporary plant for use during the preliminary development stage. Since its installation it has been in continuous operation and up to the end of 1909 approximately 6,150 tons have been treated, averaging in bullion recovery by amalgamation \$15.00 per ton. The concentrates amounting to from 2 to 3% of the ore milled, average \$90.00 per ton. In addition to ore milled and concentrates shipped, and also in addition to the 190 tons previously shipped, 350 tons of crude ore shipped since the mill started averaged \$115.00 per ton.

The total underground development, the deepest being 350 feet below the surface, amounted to 1,750 feet at the end of 1909. One ore shoot has been proved for a length of 400 feet and the stoping width varies from 4 to 10 and 12 feet. The average value of the ore has been \$28.00 per ton.

The Mother Lode Group adjoins the Nugget on the south. It was bonded from the owners in the spring of 1908 by J. L. Warner, of New York, who operated it during the following season, shipping considerable crude ore to the smelter, averaging as high as \$145.00 per ton. In February 1909 he sold his interests to Mr. John McMartin of Ontario, and under Mr. W. Watson, of New York, as consulting engineer, development has been vigorously pushed with very encouraging results. The deepest workings in the third level, prove the existence of extensive high grade ore shoots. From surface work various former leasers shipped over \$50,000 worth of ore.

It is the intention of the present owner to install a large treatment plant in the near future.

The Kootenay Belle Group, lying across Sheep Creek from the Mother Lode, has produced over \$100,000 under lease. It was also bonded by Mr. Warner at the time he acquired the Mother Lode. A four stamp mill was rented, and 1,300 tons of second class ore treated averaged in bullion recovery by amalgamation \$14.80 per ton. Crude ore shipped averaged \$70.00 per ton. It is understood that the property has recently changed hands and extensive development will be undertaken.

Adjoining the Nugget on the north, is the Golden Fawn Group, and while as yet in the prospect stage, the surface croppings of a large vein are very promising.

The Searchlight Group adjoins the Nugget on the east and lies in the strike of the Nugget veins. The group was bonded last fall by the Sheep Creek Development Syndicate, of Nelson. Surface croppings of good ore have been found which are probably extensions of the Nugget veins and during the coming season will be systematically developed.

*Manager Nugget Gold Mines, Ltd., Sheep Creek, B.C.

Last summer a good vein of high grade ore was found on the Clyde-Belt, a property adjoining the Mother Lode on the south-west, and shipments are now being made to the smelter. All indications point to the development of a valuable property. An extensive group adjoining the Mother Lode on the south, is known as the Golden Belle, and while little development has been done, two or three veins are reported which will be explored this season by a Vancouver syndicate, to whom the property was recently sold.

The Bonanza Group, consisting of five full claims lies just south of the Queen. Last summer the owners found and traced on the surface for 1,200 feet, a vein which is now being developed under a bond held by a company known as the Sheep Creek Bonanza Mining Co., of Vancouver. A substantial cash payment has been made and the company is now shipping sorted ore. The indications are that this property will develop satisfactorily with milling ore, averaging from \$10.00 to \$25.00 per ton. It is the intention to install a stamp mill next fall.

The Vancouver Group adjoining the Kootenay Belle, on the south, has lately joined the shipping list with ore averaging \$98.00 per ton.

Lying south of the Queen is the Ore Hill Group. Several veins are more or less developed, and a small mill was installed some time ago which was destroyed by fire and since that time little active work has been done.

The most southerly property which has so far been operated is called the Summit Group. The contact between the quartzite and limestone belts passes through the group, and accompanying this contact is a mineralized zone containing, as exposed by surface cuts, large lenses of ore carrying considerable galena, iron pyrites and zinc blende. The chief value contained is, however, gold and average samples assay from \$10.00 to \$45.00 per ton. No underground development has been done in this contact vein.

In the limestone three or four small fissures have been found which intersect the contact vein and from them, at some distance from the contact, several shipments have been made which averaged from \$200.00 to \$450.00 per ton. This property has also been bonded by Vancouver people who are now developing and shipping ore.

Over 25 strong and permanent looking fissures have so far been discovered in the above mentioned properties. They are all approximately parallel in strike and occur within a radius of 3 1-2 miles. There are, of course, many other claims and groups less known, located on veins, some of which may prove valuable.

The developed milling ore of the camp averages from \$15.00 to \$30.00 per ton, and the more extensively developed veins have steadily improved in depth. Experiments have shown that with the cyanide treatment in addition to the present simple methods of amalgamation and concentration, a total extraction of 95% of all values may be expected, and no doubt within the next two years several large reduction plants will be in operation.

Up to the present time the camp has the unusual record of having practically from its own production developed and equipped itself, but outside capital is now seeking investment and the prediction frequently made by those well qualified to judge, that Sheep Creek will prove a very important lode gold camp, seems justified.

EXCHANGES.

The Engineering Magazine, January, 1910.—"Concentration of Magnetic Iron Ores" is the title of an interesting paper by N. V. Hansell, a writer well known to Canadians. Mr. Hansell's article sketches the development of magnetic concentration, and gives practical instances. One plant, now being built at Syd Varanger, Norway, contains 12 parallel grondal units, and will have a rated capacity of 3,600 tons per 24 hours. 1,500 tons of concentrates will be obtained daily. From an ore containing only 34 per cent. of iron, a concentrate running as high as 69 per cent. will be produced. The total product will be exported to German iron works.

The Mining Journal, January 15, 1910.—Mr. W. H. Cutten, himself interested in the manufacture of dredges continues in this issue of the **Mining Journal**, a heated discussion of the relative merits of American and New Zealand dredging practice. In the course of his communication, Mr. Cutten challenges any reader to mention a single instance in either Russia, Africa, or South America where an American dredge is paying its way, "For although" says he, "I can hear of many failures, so far I have not heard of any success."

The Labour Gazette, January, 1910.—The Labour Gazette is the official organ of the Federal Department of Labour. It will, hereafter, be noticed regularly in this column.—We note that in the fatal accidents reported for the whole Dominion for December, 1909, mining comes sixth in the list of industries and trades. For agriculture, 28 fatalities are recorded; for navigation, 24; metal trades, 16; railway service, 14; lumbering, 12; and mining, 11.

The Quarry, January, 1910.—Attention is drawn editorially to the fact that Great Britain imports annually, ordinary rock products, such as cement, slate, sand, glass, earthenware, etc., to the value of nearly seven million sterling. The total value of the yearly output of these materials in the United Kingdom is approximately equal to the value of the imports. **The Quarry** raises the very pertinent question as to whether tariff reform would not double the home output.

HOURS OF WORK IN BELGIAN COAL MINES.

The hours of work in the coal mines of Belgium are restricted to nine a day by the new law recently passed by the Belgian Senate. It is only in the large mines that mechanical appliances are used underground, and the new law will either shut many of these down or compel them to adopt these appliances; or it may be they will be absorbed by the larger companies. But the undulating character of the coal seams in many of the mines makes it difficult to use coal-cutting machines, so that the result of the new law with nine hours' work from bank to bank must restrict the coal output.

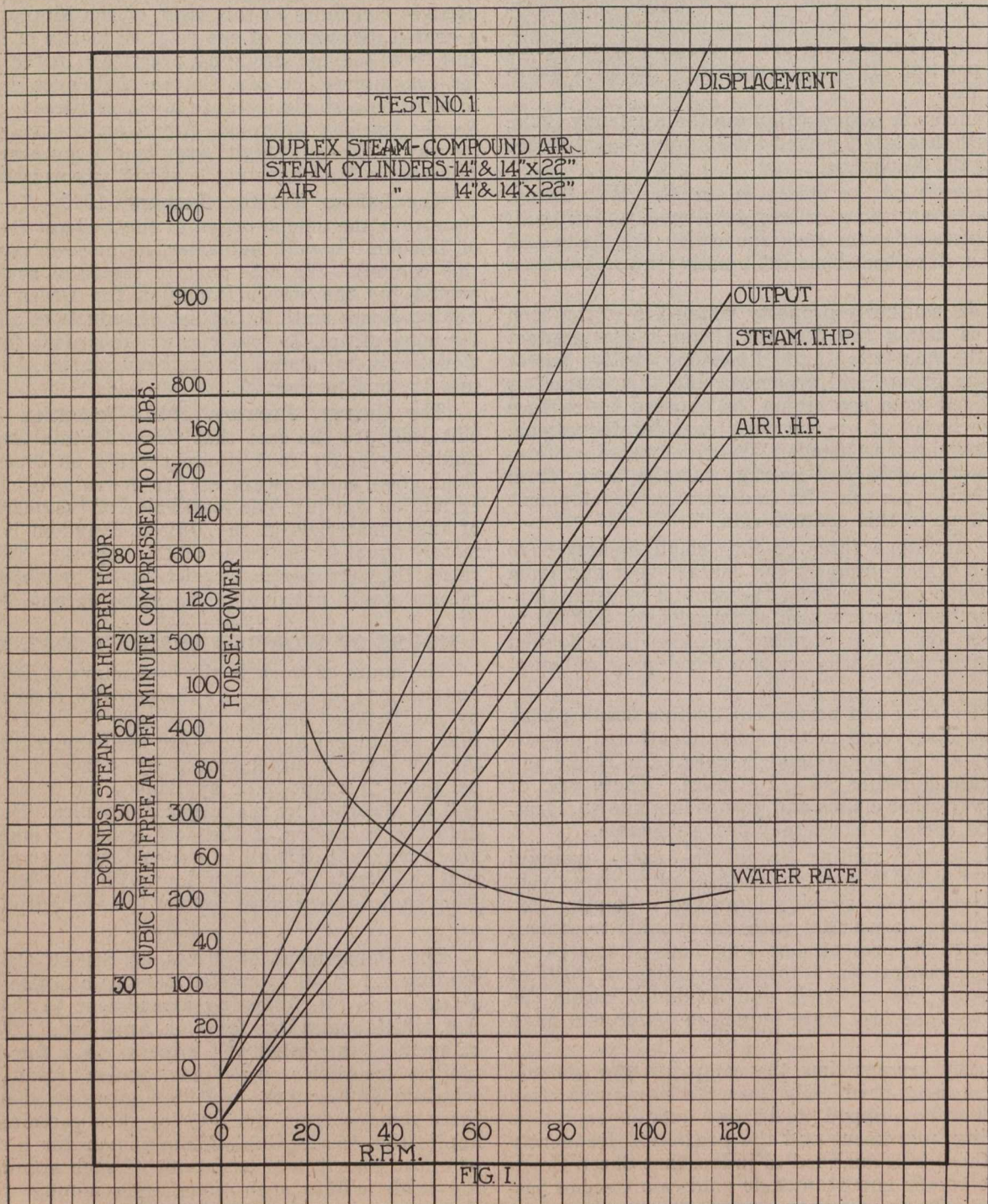
The Department of Mines of British Columbia is sending out to all interested persons a notice directing attention to the following amendment to the Mineral Act, which comes into force on April 1st: "The owner or agent of the owner of a mineral claim for which the mining recorder's certificate, under form 1 of the schedule of this Act, has been granted, shall within three months from the date of such certificate, make application to the Gold Commissioner for a certificate of improvement, and in default of such application being made within such time, such mining recorder's under form 1 shall lapse and become absolutely void."

COSTS OF PRODUCING COMPRESSED AIR IN A CANADIAN MINING CAMP.

Written for the Canadian Mining Journal by Richard L. Webb.

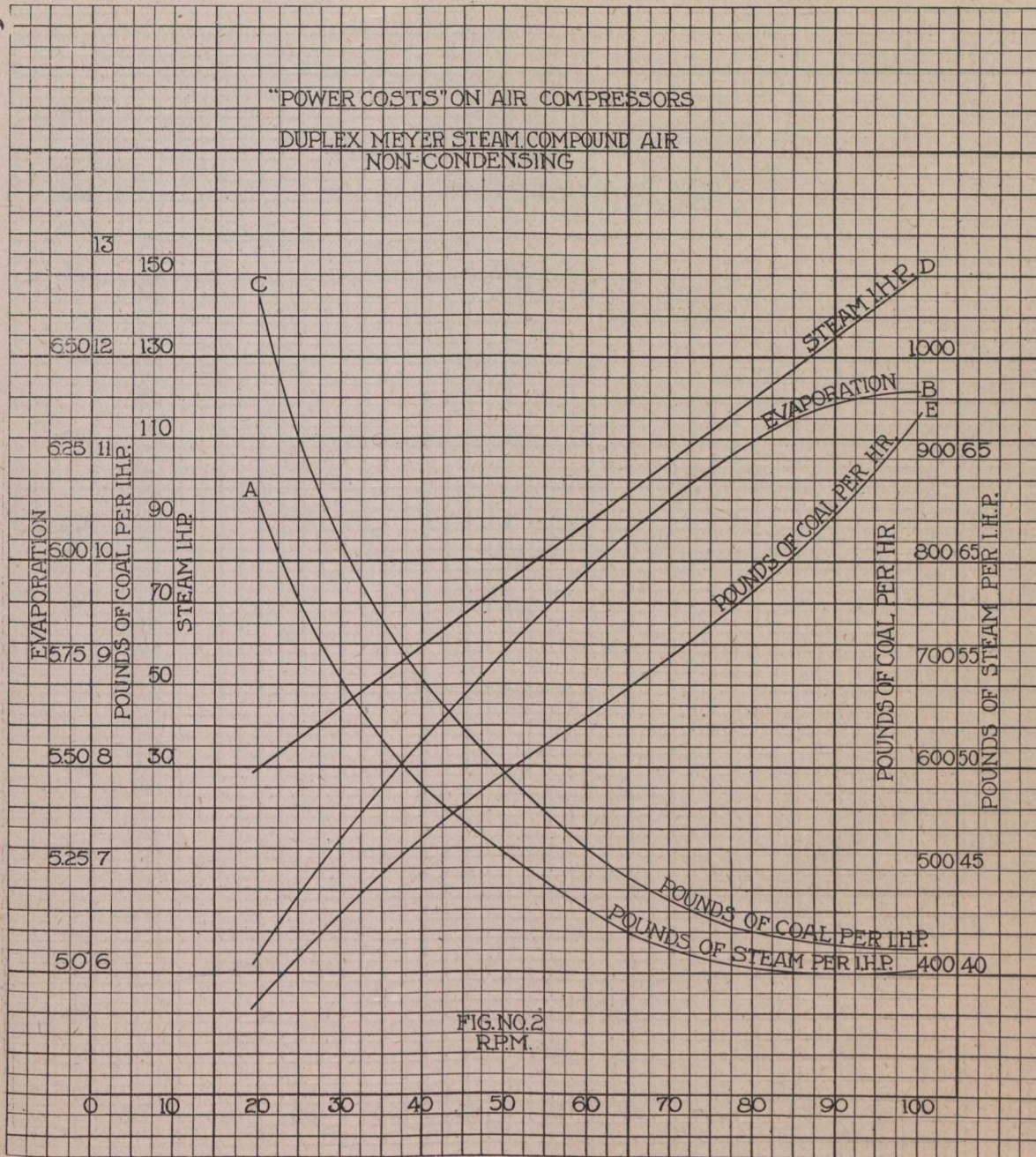
Copyright Pending.

Surprising as it may seem, no data have been published about the effective horsepower of air compressors. Heretofore, it has been customary to divide the indicated horsepower of the steam cylinders by the indicated horsepower of the air cylinders as determined by indicator cards, the difference being the friction of the machine. In other words, the manufacturer of air compressors has rated his machine by its



mechanical efficiency without taking into consideration the other elements of loss besides friction. In fact, the manufacturer seldom mentions any other loss, leaving the impression that friction loss is the only loss to be considered. Such a test is far from answering the question as to whether the air compressor is commercially efficient, and gives no indication as to the actual effec-

in operation for a considerable length of time, and that are operating under ordinary working conditions. It is needless to state that the various companies operating these compressors employed the best technical and mechanical engineers available, and the actual results obtained may be safely taken, not only as a fair, but probably as a very high average of actual conditions



tive horsepower of air compressors under ordinary working conditions.

The writer has just finished a series of exhaustive tests on a large number of air compressors. In making these tests he has had access to plants that have been

existing elsewhere throughout the United States and Canada.

The object of the following article is to point out the real efficiency of air compressors as found under ordinary working conditions. These are not shop tests.

The machines tested have been in operation for a year or more under competent supervision, and have been kept in excellent condition by competent machinists.

How the Tests Were Made.

In every case the following plan was employed in making the tests: A boiler test was run for not less

at intervals of 10 R.P.M. up to its rated full speed. The average speed under which the compressor operated was determined by a revolution counter. A meter was installed on the discharge pipe of the compressor to measure the air actually delivered. The temperatures were taken at the suction, at the intercooler, and at the discharge. Cards were taken on all the cylinders. All readings were taken simultaneously. The compressor

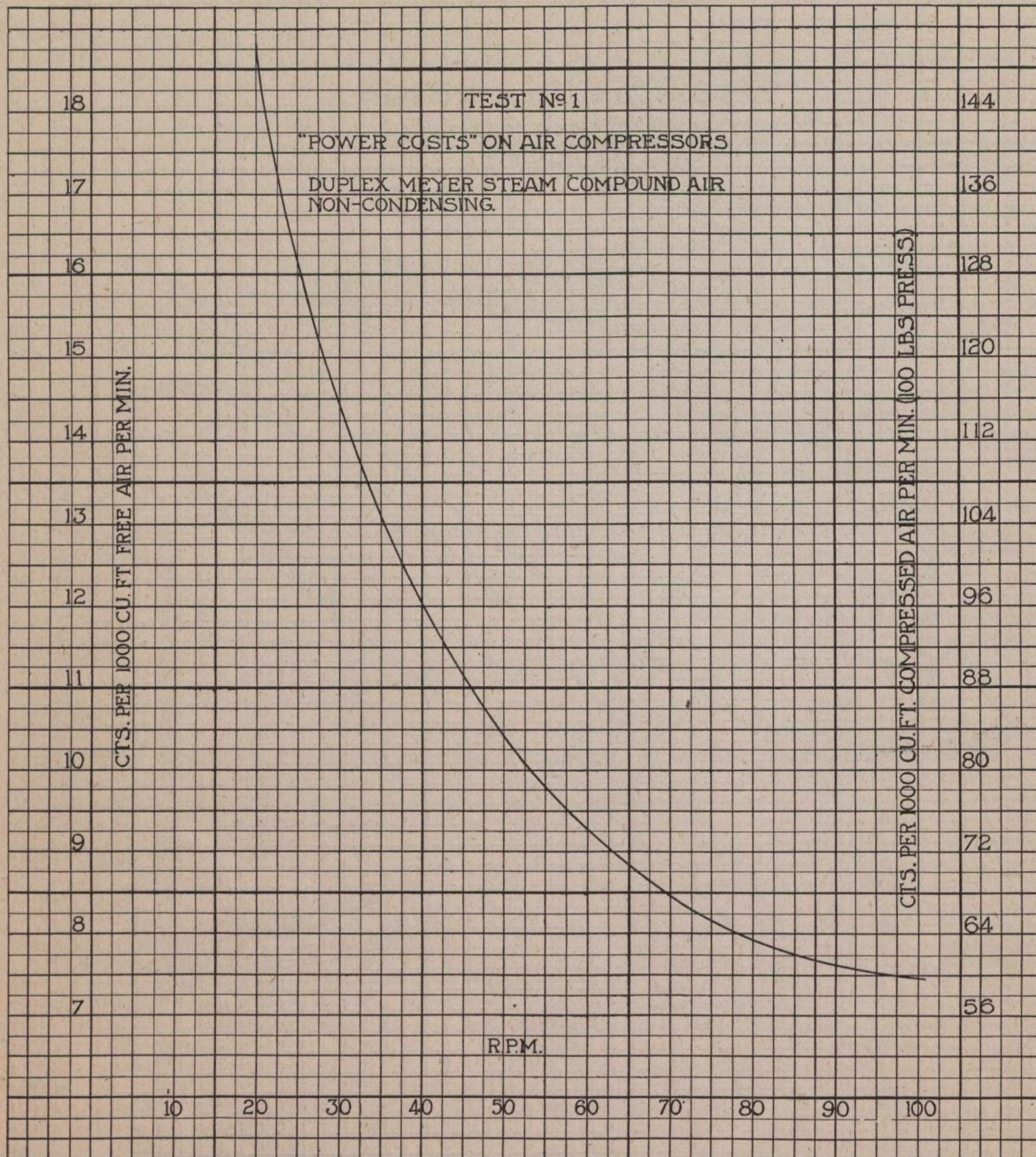


FIG. No. 2A.

than two weeks, the coal being weighed carefully, and the water pumped into the boiler being carefully measured. A meter was installed at the throttle of the compressor to measure the steam consumption. The compressor was operated over its entire range of speed

test showed by the steam rate the number of boiler horsepower required to develop a steam I.H.P. at this average speed. The compressor was then charged with the number of boiler horsepower as shown. Readings on the revolution counter of the air compressor were

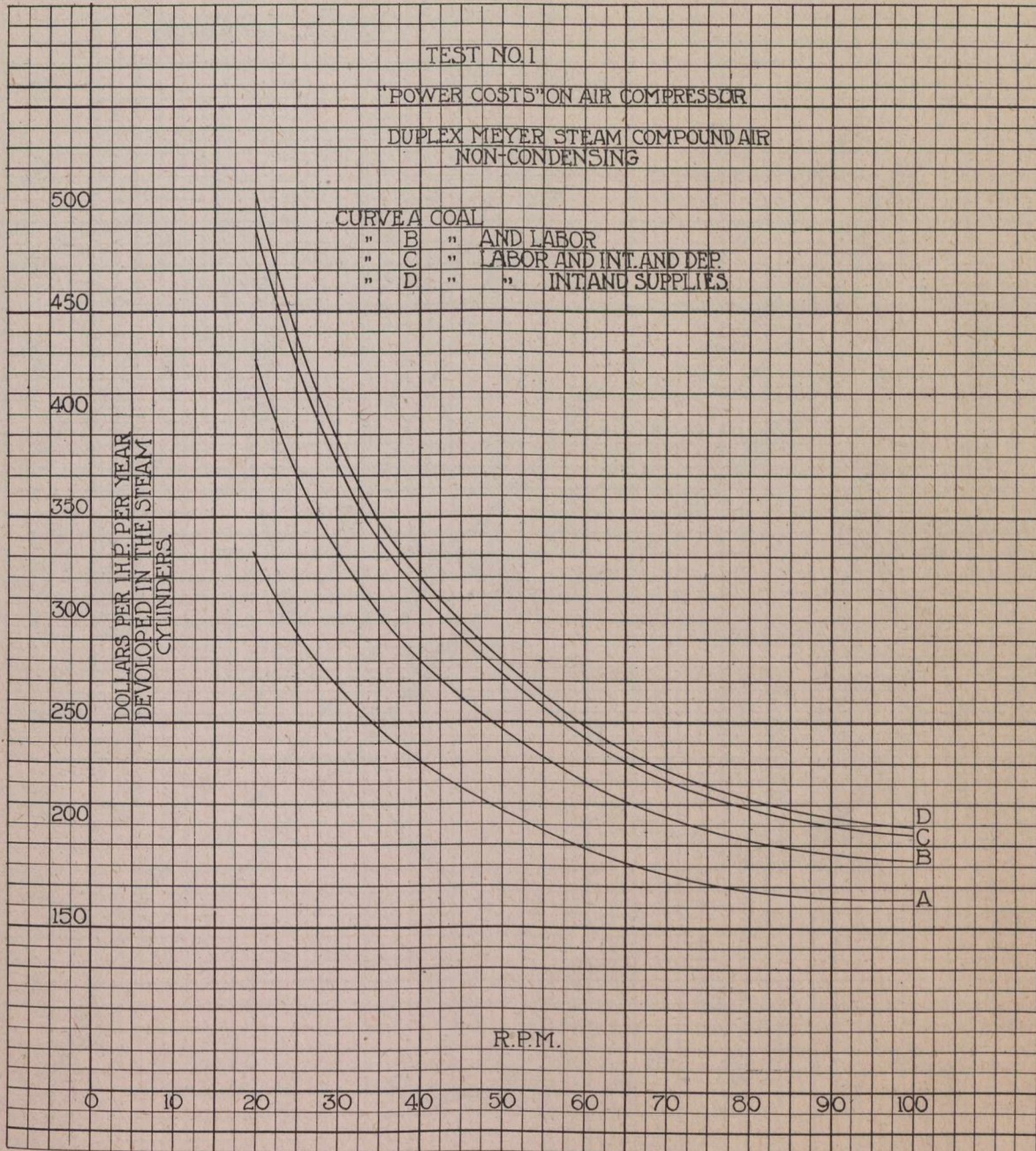
taken hourly through a period of two weeks so that the average revolutions per minute were actually determined under working conditions and were not arbitrarily assumed.

Instruments used in Testing.

The air and steam meters were of the Dodge type as developed by the General Electric Co., Schenectady,

Results of the Test.

It quickly appeared that the friction loss was only a small item in the total, and that various other items of loss which have heretofore been entirely disregarded by the manufacturers and overlooked by engineers, played such a large part in cutting down the actual efficiency of the average air compressor under usual



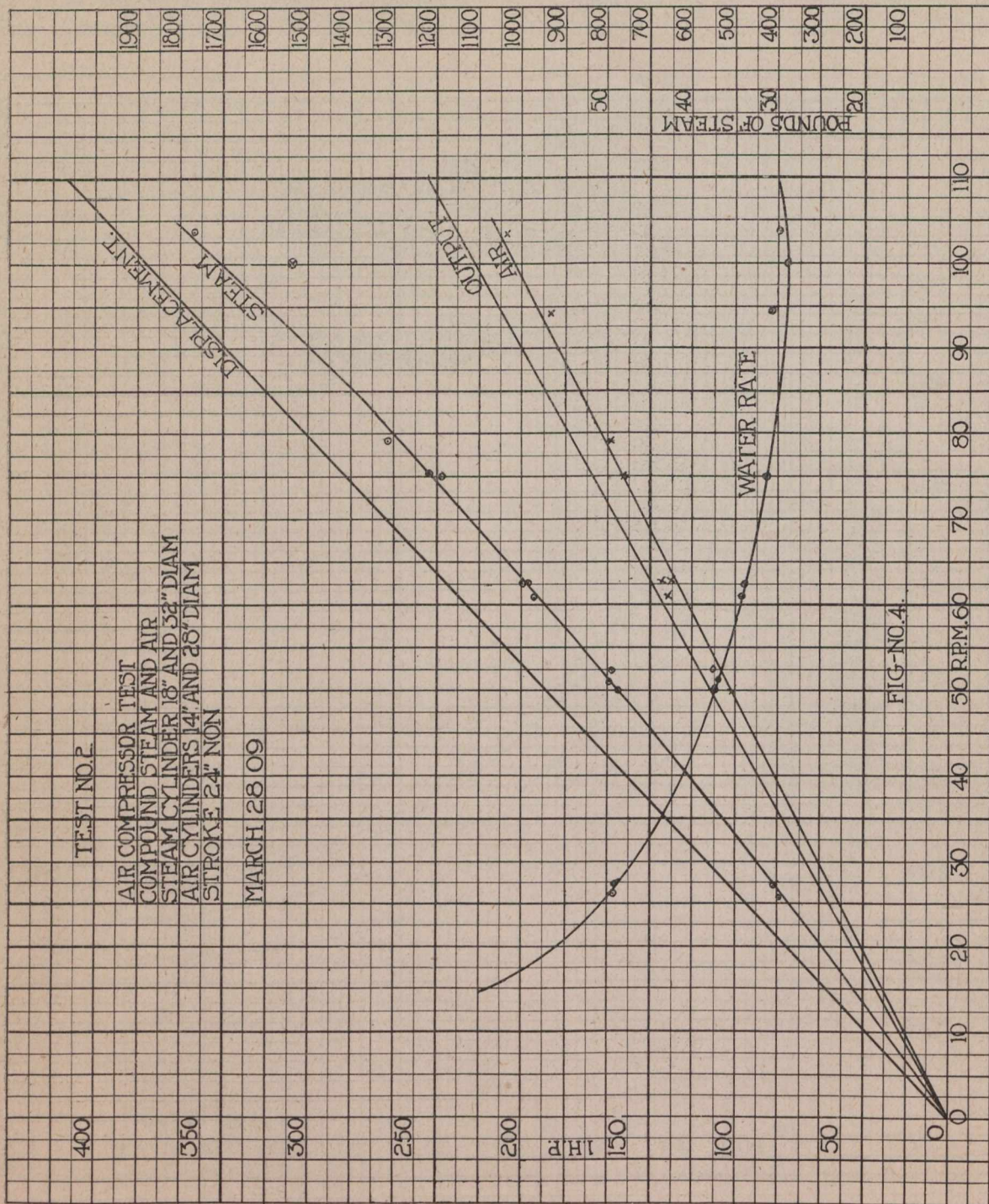
N.Y., and were operated by an expert sent by that company for that specific purpose. The indicators were of the American Thompson and Roberts-Thompson makes, which are well known and generally accepted as standard. The tachometer and thermometers were made by Messrs Schaeffer & Budenberg.

working conditions as to raise the question as to whether it is not one of the most wasteful machines ever employed.

As noted above, the manufacturers of air compressors rate their compressors by the volume of space in the cylinder. The efficiency of the machine, as they

state it, is only mechanical, and is obtained by dividing the total I.H.P. of the air cylinders by the total I.H.P. of the steam cylinders, the difference between these being the friction of the machine. For example, if the I.H.P. of the air cylinder is 100 horsepower and the

The friction loss will range generally from 10% to 25%, the first figure being the one most commonly mentioned by the manufacturers in their catalogues and prospectuses. On the other hand, losses from the various causes mentioned will run anywhere from 30% to



total I.H.P. of the steam cylinder is 110, then the manufacturer rates the efficiency of his machine as 91 per cent. This rating absolutely disregards the losses due to the heating of the cylinder, adiabatic loss, the loss of the discharge, and the loss of delivery.

60%, thus cutting down the real efficiency of the average air compressor to such an extent as to make the figures of the manufacturer appear ridiculous.

Reports on Actual Tests.

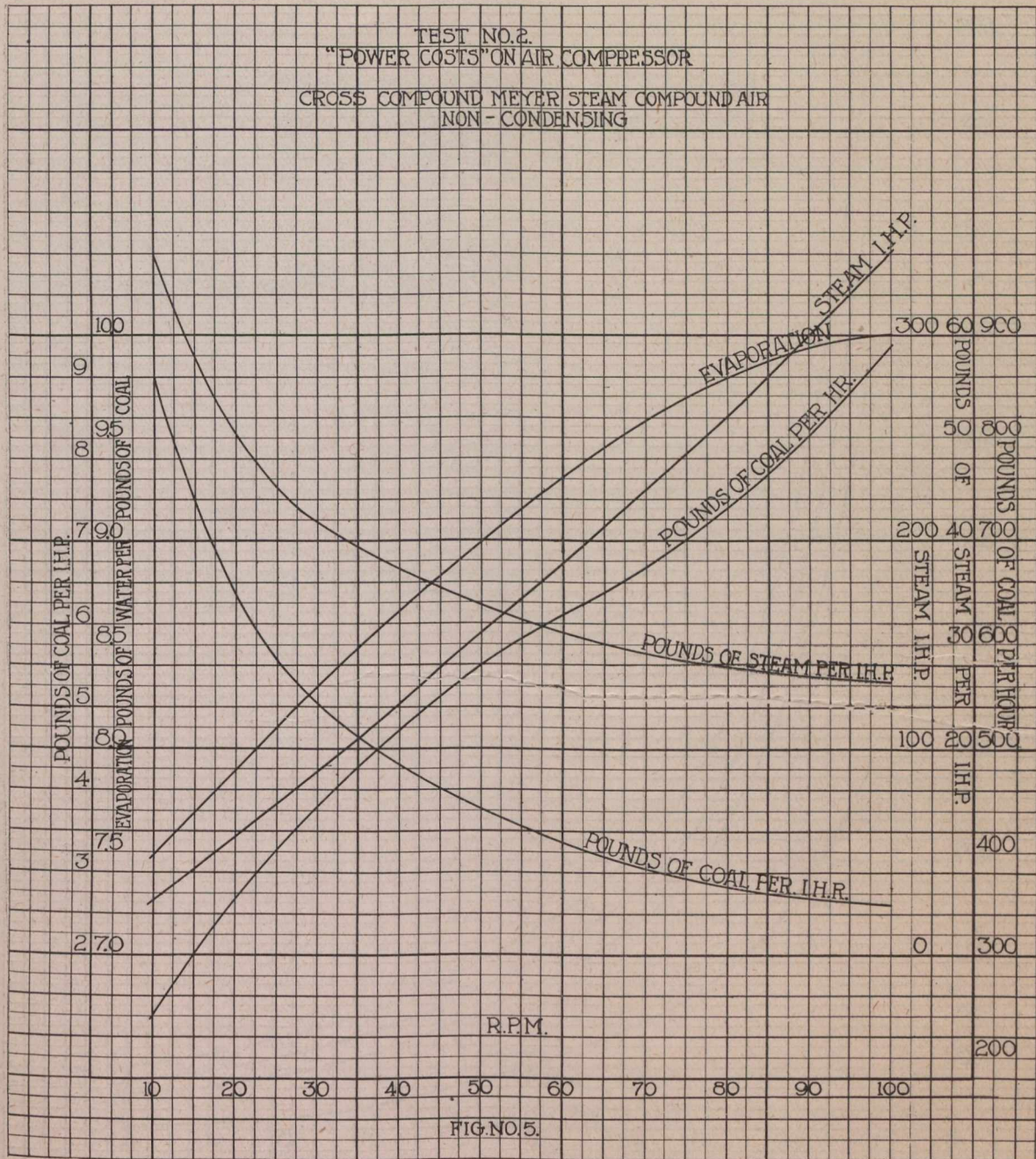
The writer is not at liberty to disclose the identity

of the particular plants at which the tests were made, and for that reason the plants have been designated by numerals instead of by name.

Plant No. 1.

In plant No. 1 there were installed three 150-horsepower return tubular boilers, supplying steam for a

valve, simple steam, the air cylinders being two-stage, and was rated by manufacturer at 1,015 cubic feet of free air per minute at 105 R.P.M. The test at this plant lasted over a month. Hourly readings of the revolution-counter were taken, which showed the average speed of 36.05 R.P.M. The steam consumption at this speed was 51 lbs. per I.H.P. hour as measured at the throttle. The meter showed that at this speed the com-



Corliss engine, the air compressor, and the steam heating. The cost of the boiler horsepower was determined as above stated. The steam-meter was placed on the compressor during the test run, so that only that portion of steam actually used by the compressor was charged to it. The compressor was a duplex Meyer

compressor delivered 275 cubic feet of free air per minute, an actual efficiency of 68.7.

Taking the ordinary method of computing the efficiency of this compressor, at 105 R.P.M. we should have 140 indicated air horsepower divided by 157 indicated steam horsepower, giving an efficiency of 89

per cent. as compared with the actual efficiency of 68 per cent.

The cost per indicated horsepower steam per year as shown by the books of the company amounted at the average speed to about \$340. for coal at \$6. per ton. The accompanying diagrams show just how the tests were worked out and the results obtained.—

Fig. No. 2—Shows how the total coal consumed per hour over the entire range of speed was determined, the curves being taken A.B.C.D and E.

The accompanying table takes the coal consumption, metered air output as already determined, and costs of operating as supplied from the owner's books and shows the cost of producing compressed air. From

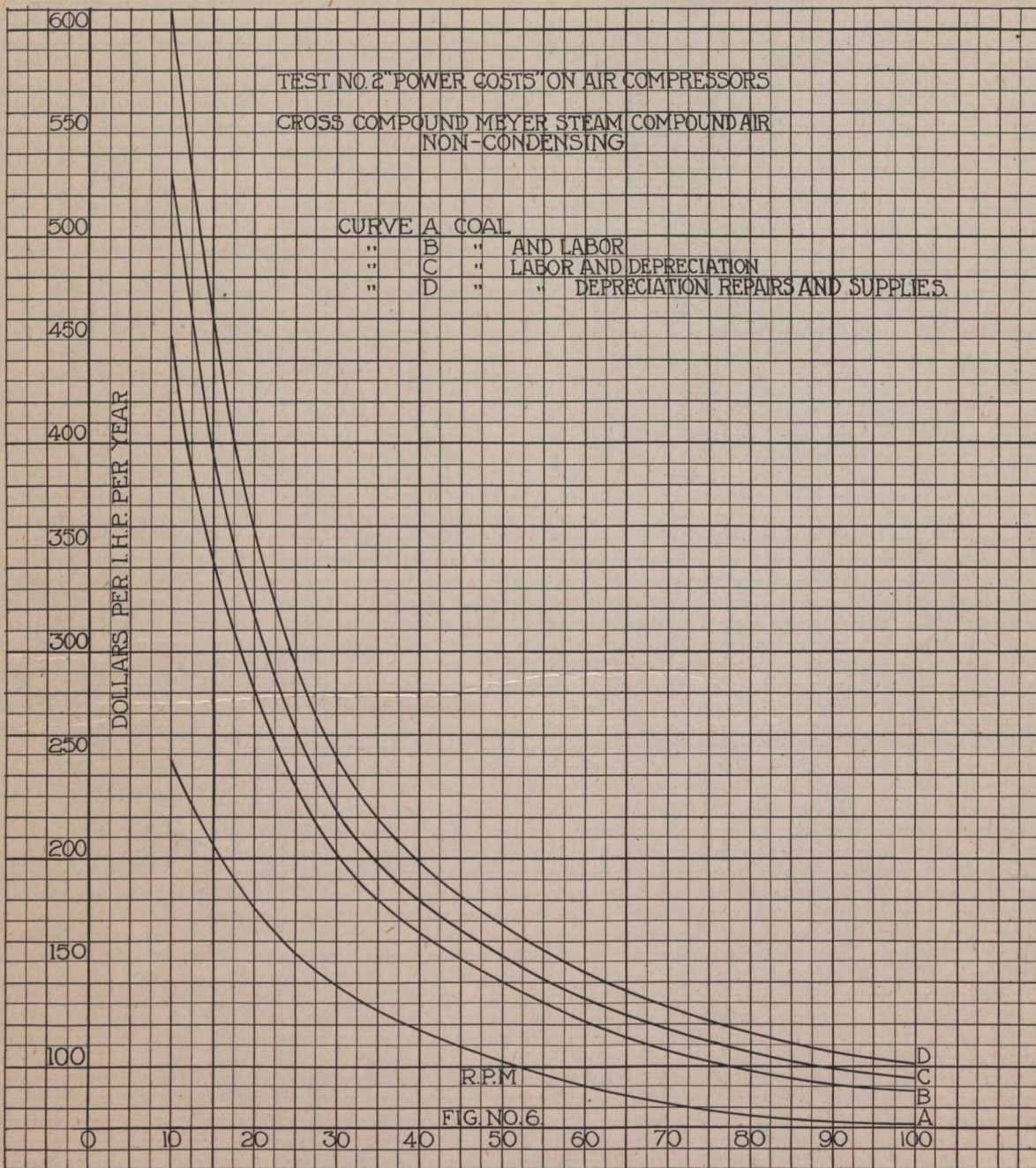


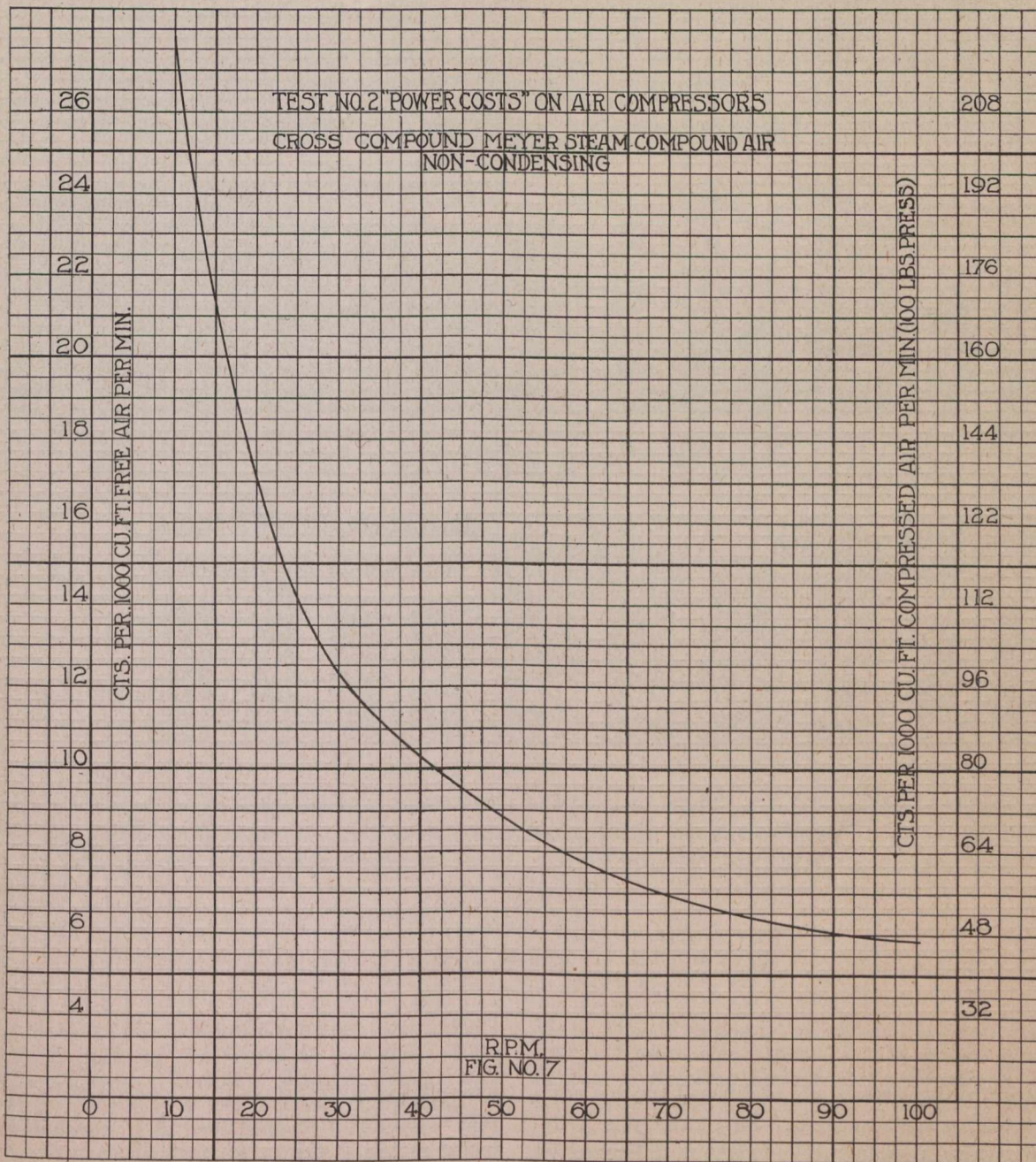
Fig. No. 1—Shows the indicated H.P. of the steam and air cylinders, the displacement of the piston, the metered air output after temperature correction and the pounds of steam consumed per indicated steam H.P. hour.

this table, the curves shown in Fig. 2 were plotted, showing the cost of producing a steam indicated horse power per year and Fig. 3 which shows the cost of delivering 1,000 cubic feet of compressed air to the receiver over the entire range of speed.

Plant No. 2.

This plant consisted of a cross compound Meyer valve steam and two stage air compressor supplied with steam from two 125 H.P. return tubular boilers. This machine was rated by the manufacturers at 1880 cubic feet free air per minute at 100 R.P.M. A two weeks' test was run on this plant in exactly the same

owner was aware of this, the machine could not be spared, having been operated in this condition for months. This is something that the manufacturer of the machine is in no way accountable for, but the writer is of the opinion that it is not exceptional, and many owners will not allow a plant to be shut down for repairs so long as it will turn over. The output of this



manner as at Plant No. 1. The average speed of the compressor was 66 R.P.M., the steam I.H.P. at this speed 210, the air I.H.P. 128.5, which would show the mechanical efficiency to be 61.2%, or a friction loss of 38.8%. This is very high, and can be accounted for by the crank shaft being in bad condition. While the

compressor at its average speed was 734 cubic feet of free air per minute, which would show the over-all efficiency to be 46.2%.

The attached curves, Figs. 4, 5, 6, 7 and the accompanying table were worked out in the same manner as on the test of Plant No. 1 and may be followed.

Summary.

The writer has no desire to arouse a controversy on the merits or demerits of air compressors. The object of this paper is to show the absolute necessity for demanding from the manufacturer of air compressors a definite statement of the effective horsepower, or guar-

and that generally higher than the machine will stand for continuous operation. It should be remembered that an air compressor is generally a variable speed machine, its speed being usually regulated by a throttle governor connected to the pressure regulator, so that the machine is only called upon to run as fast as the

TEST NO. 2													
POWER COSTS ON AIR COMPRESSORS													
GROSS COMPOUND MEYER STEAM COMPOUND AIR													
NON-CONDENSING													
R.P.M.	EVAP. WATER RATE	LBS. OF COAL		LBS. OF STEAM		COAL		COAL AND LABOR		COAL LABOR AND DEPRECIATION		COAL LABOR DEPRECIATION REPAIRS AND SUPPLIES	
		PER I.H.P.	PER I.H.P.	PER HOUR	PER HOUR	DOLLARS PER MONTH	DOLLARS PER YEAR	DOLLARS PER MONTH	DOLLARS PER YEAR	DOLLARS PER MONTH	DOLLARS PER YEAR	DOLLARS PER MONTH	DOLLARS PER YEAR
10	7.5	67.65	9.02	27.0	2435	556	247.20	1015.13	451.17	1185.13	526.70	1358.56	604.00
25	8.1	451	5.57	72.3	4030	920	152.70	1379.13	22900	1549.13	257.30	1727.26	286.90
40	8.65	370	4.28	120.7	5170	1179	117.20	1638.13	16285	1808.13	179.70	1991.16	198.10
60	9.3	310.2	3.34	188.5	6300	1436	91.50	1895.13	12060	2065.13	131.50	2254.76	143.50
66	9.48	2969	3.13	210.0	6580	1500	85.76	1959.13	11190	2129.13	121.65	2320.66	152.60
80	9.8	2741	2.8	261.0	7310	1600	76.60	2125.13	9775	2295.13	105.50	2491.16	114.50
100	100	262	2.62	340.0	8910	2030	71.70	2489.13	8790	2659.13	93.90	2861.96	101.10

R.P.M.	OUTPUT CU. FT. FREE AIR PER MIN.	COST (FREE AIR)		COST (COMPRESSED AIR)		RELATIVE PER CENT OF TOTAL COST			
		CTS PER 1000 CU. FT. FREE AIR PER MIN.	CTS PER CU. FT. FREE AIR PER MIN.	CTS PER 1000 CU. FT. COMP. AIR PER MIN. @ 100 LBS. PRESS.	CTS PER CU. FT. COMP. AIR PER MIN. @ 100 LBS. PRESS.	COAL	LABOR	INT. AND DEP.	SUPPLIES
10	113	2742	.02742	21936	.21936	40.92	3380	12.52	12.76
25	280	14084	.014084	112672	.112672	53.25	2659	9.84	10.32
40	445	10216	.010216	81728	.081728	59.20	2306	8.54	9.20
60	668	7706	.007706	61648	.061648	63.71	2034	7.54	8.41
66	734	722	.00722	5776	.05776	64.63	1979	7.33	8.25
80	889	63977	.0063977	511816	.0511816	66.90	1841	6.81	7.88
100	1110	5886	.005886	47088	.047088	71.00	1601	5.91	7.08

anteed output of compressed air, delivered by this compressor, at various rated speeds. Particularly is it desirable to require a guarantee of output delivered at speeds approximately those at which the compressor will be run in actual service. Manufacturers of electric motors give the efficiency at 1/4, 1/2, 3/4 and full and 1 1/4 loads. Manufacturers of air compressors, on the other hand, give only the volume swept through the cylinder by the piston and call it the output in free air, and even these data are given at only one stated speed,

demand for air requires it. Consequently, it is of the highest importance to require the manufacturer to give actual rating at the various speeds.

Furthermore, some definite data should be given by the manufacturer to enable the managers of plants to calculate the cost per horsepower delivered at the compressor. Up to this time, if the compressor is rated at 100 horsepower and the cost per annum \$7,500, the manufacturer claims a cost of \$75 per horsepower per year. Few plants, however, develop more than half

TEST NO 1
"POWER COSTS" ON AIR COMPRESSORS
DUPLEX MEYER STEAM COMPOUND AIR
NON-CONDENSING

RPM	EVAP.	WATER RATE	LBS. OF STEAM		LBS. OF COAL		COAL AND LABOR		COAL LABOR AND INT AND DEP.		COAL LABOR INT AND DEP. AND SUPPLIES		
			FER I.H.P.	1 H.P. FER HOUR	DOLLARS PER MONTH	DOLLARS PER YEAR	DOLLARS PER MONTH	DOLLARS PER YEAR	DOLLARS PER MONTH	DOLLARS PER YEAR	DOLLARS PER MONTH	DOLLARS PER YEAR	
20	5.04	62.9	1248	29.8	371.9	814.44	327.95	1055.54	425.05	1216.54	487.90	1247.29	502.70
25	5.18	57.9	1118	37.2	45.9	907.8	292.83	1148.90	370.70	1303.90	420.95	1341.15	432.95
35	5.44	51.1	939	530	4978	1090.23	246.84	1331.33	301.43	1486.33	336.80	1524.58	345.10
40	5.55	49.0	883	600	5500	1160.70	232.14	1401.80	280.40	1556.80	311.50	1595.53	319.10
60	5.97	43.0	720	901	6490	1421.31	189.29	1662.41	221.20	1817.41	242.10	1858.11	247.75
80	6.29	40.3	641	1201	7700	1686.30	165.49	1927.40	192.60	2082.40	208.00	2125.10	212.25
100	6.42	40.1	624	1503	9380	2054.22	164.00	2295.32	183.22	2450.32	195.60	2495.02	199.10

RPM	OUTPUT CU FT FREE AIR PER MIN.	COST FREE AIR		COST COMPRESSED AIR		RELATIVE PER CENT OF TOTAL COST			
		CTS PER CU FT. FREE AIR PER MIN.	CTS PER 1000 CU. FT. FREE AIR PER MIN.	CTS PER CU FT. COMPRESSED AIR PER MIN.	CTS PER 1000 CU FT. COMPRESSED AIR PER MIN.	COAL	LABOR	INT. AND DEP.	SUPPLIES
20	152	0.1673	18.73	1.4984	149.84	65.25	19.34	12.46	2.95
25	190	0.161	16.1	1.288	128.8	67.70	17.96	11.56	2.78
35	267	0.1303	13.03	1.0424	104.24	71.55	15.80	10.15	2.50
40	304	0.1198	11.98	0.9584	95.84	72.75	15.10	9.72	2.43
60	457	0.0928	9.28	0.7424	74.24	76.50	12.97	8.34	2.19
80	610	0.07954	7.954	0.63632	63.632	79.35	11.35	7.30	2.00
100	761	0.07485	7.485	0.5958	59.58	82.35	9.67	6.22	1.76

TABLE I

their rated capacity on an average, so that instead of costing \$75 the horsepower actually delivered costs from \$150 per year upwards. A certain amount of vari-

ation is, of course, necessary to take care of the maximum load, but such discrepancies as in the example given above should not be allowed to continue.

OUR LONDON LETTER.

Mining shares of the London Exchange during 1909. Mines of most parts of the world in demand. Even "Jungles" looking up. Technical Mining enterprise in the University of Leeds. A fine training equipment. A cupola development. A new patent boring bar with many good qualities. Export of mining furnaces. J. P. Johnson on the ore deposits of South Africa.

Special Correspondence to the "Canadian Mining Journal."

London, January 18th, 1910.

The various mining share markets on the London Stock Exchange experienced pretty fair business all through last year. The early part of the year found

West African mines in favour and later on South African or Kaffirs went ahead in fine style. The last six months of the year has also been signalled by activity in Diamonds and Rhodesian descriptions.

In view of the further improvement in the technical position of the Rand gold mining industry by the reduction effected in working costs, it was evident at the beginning of the period that a revival in the Kaffir market was only a matter of time. But for the Balkan affair and the unprecedented floods on the Rand which interfered with the working of a number of the mines, the first quarter of the year would probably have seen Kaffirs active and buoyant; as it happened, the revival was deferred until the second quarter. Then dealers had no cause to complain on the score of business, and

speculators for the rise had a nice run, prices moving up substantially.

A slump, the usual sequel to a boom, came in the second half of the year, the continued falling off in the native labour supply, which, of course, affected the returns of the mines, being a depressing influence, in addition to the liquidation of the unwieldy bull account that had been built up in the market. The market was gloomy for several weeks, but when the liquidation appeared to be at an end, the lower level of values attracted fresh buyers and during the closing weeks of the year and the opening ones of 1910, Kaffirs have displayed a cheerful tone, although they have not been particularly active. End-of-the-year prices are some way below the best of the period, but still show fairly good gains on balance.

Taking a few typical mining shares, substantial gains on the year can be shown. East Rands have risen from \$32.50 per share to \$37.50 per share, Rand mines from \$40.00 per share to \$47.00 per share. De Beers, Diamond Deferred shares are up on the twelve months from \$56.00 a share to \$98.00 per share, and even Chartered, the share in which perhaps more money has been lost in this country than any other share existing, have moved up from about \$4.00 to \$7.50. In the days of Cecil Rhodes and the great men these latter shares were often loaded on the public here at \$40.00 each. Their face value is \$5.00.

The discovery of a new banket field in the Abercorn district of Rhodesia materially helped that market as also did such other things as the progress of the railway from the south towards the Congo and the commencement of production upon several of the copper mines in that neighbourhood. The Rhodesian gold output for the year is the largest ever obtained.

"Jungle" mines, as West African descriptions are briefly called, have made substantial progress. This district had its boom in 1900-1901 when by every boat from the West African coast there came immaculately attired negroes with leather bags of concessions, many of them, after having been sold, being untraceable to any known district in the Gold Coast Colony or Ashanti. Last year, however, the great South African mining house, known as the Consolidated Gold Fields of South Africa took part in the reorganization of leading West African mining concerns and other big Rand houses such as Wernher, Beit and Goerz, have followed. It is due to this influential backing that the West African mining field is on a sounder basis than ever before. Prices of the dozen leading mines are, with one exception, up on the year.

West Australian mines have been weak and prices are down on the year with very few exceptions. This group makes the least satisfactory showing on the year. Broken Hills have been busy and are better for it, although Australian labour troubles have tended directly to restrict business in this group during the last few months. Tin shares have not showed much life and it seems impossible to revive public interest in either Indian or Russian mining descriptions.

The technical section of the University of Leeds is so remarkably well equipped and is such a new feature that a brief reference to its coal and metallurgical mining department there will be of interest. The accommodation of this department includes, in addition to the lecture room, which will seat fifty students, a drawing office, a general mining laboratory and a photographic and lamp room. There is a full equipment for underground and surface surveys and a shaft-plumbing outfit.

The general mining laboratory is arranged for the study of ore dressing and coal washing, using small samples. There are laboratory crushing and sampling machines, slime tables, small jigs, upward current classifiers, and settling-boxes, with gold-washing pans, and other apparatus. In order to test the products from washing, there is the necessary assaying equipment.

Larger-sized machinery for coal-washing and ore-dressing is placed in an annex to this laboratory. There is a stone-breaker 8 in. by 5 in., a three-head prospecting battery, a pair of Cornish rolls 15 in. by 9 in., a modified trough-washer for coal, a record vanner, a 9 ft. percussive vanning table, and a four-compartment Hartz jig.

The mining department has also a centrifugal pump, which is electrically-driven, and an experimental fan suitable for research and elementary work. A transmission dynamometer enables power measurements to be made. The galleries, which are used for explaining and demonstrating matters which affect the ventilation of coal-mines, are of great service in enabling the student to grasp the principles of this important detail of mining work. The mining department receives occasional students direct from the works, and university mining students are instructed in underground and surface surveying at the mines, as well as in general mining work. The mining and the gas departments seem to be closely affiliated, to the benefit of both. Especially advantageous is this arrangement for testing lamps in explosive conditions. There is obviously a close connection between the two great industries of coal-getting and coal-using. Whatever kind of gas is made, and from whatever materials—coal, coke, or oil—the gas engineer is dependent upon the miner for the supply of the raw material. There is a feeling of the fitness of things when we see both departments so closely allied with each other and with the engineering department.

The support given to the mining department by the West Yorkshire Coal-Owners' Association and the Drapers' Company of London should be mentioned for it is difficult to over-estimate the advantages, to the University and the practical men in the industries concerned, of this assistance. It may be mentioned that the well-equipped geological laboratories of the University are an essential adjunct of the mining department.

A well-known firm of foundry engineers of Keighley, Yorkshire, has introduced a small cupola for melting from one to ten hundredweights (English) of iron per hour. It is said that mining engineers will find this cupola of great convenience in the event of a breakdown in machinery, which needs immediate repair in order to avoid disturbance of work and consequent loss. A mine is often situated a long distance from a foundry, and to such a one this emergency cupola is of special value as it provides at small cost, cupolas of greater efficiency, the means wherewith to make a casting for repair work on the spot without delay. The Taquah Mining and Exploration Company of West Africa are amongst the users of this inexpensive little cupola for rapid melting.

There have been a good many objections to drilling machines of the hand-held hammer type, but they are gradually being cleared off. A new patent boring bar put on the market by a well-known house here, appears to go a long way towards getting rid of any remaining trouble. In very hard rocks where the rate of penetration is less than 4-6 inches per minute, and when the boring holes are above the level of the waist, the workman needs to rest occasionally, thus losing time and les-

sening the output of the machine; or it is not uncommon to find one man taking the dead weight of the machine, and another pushing it forward against the rock. The automatic feed and standard overcome this trouble to a certain extent, but have the disadvantage of taking up room in the heading, and in addition one of the greatest advantages of the hand-held hammer drill is lost, i.e. the possibility of continuing the boring whilst loading out is in progress.

The patent Simplex boring bar overcomes these drawbacks. It is a solid forging throughout in steel, and is provided with a tapered circular portion at one end through which a hole is bored to permit the drill steel to pass freely. In operation the machine is first used to bore a hole (slightly larger than the finished hole) to a depth of two or three inches. This work occupies barely a minute under any circumstances. This drill is withdrawn from the hole and the slide bar driven in. The machine is placed on the bar, and boring commenced in the usual way. The workman merely pushes the machine forward as fast as the hole deepens. It will be seen that the machine is fitted with a bracket fitting round the slide bar, and it has no tendency to loosen itself. When the boring is finished, a few taps with a hammer are sufficient to loosen the bar in readiness for the next hole. A large number of these machines have been supplied for metalliferous mines as well as collieries, and I am informed that they are being used for sinking and stoping in some of the hardest rocks known.

The Merton Furnace Company is doing good business with its furnaces. Thirteen have just been shipped out to Tasmania. Some of these are to be erected at the Mount Hercules Mine, which is adopting the Gillies process, others on the Rosebery mine, which is adopting the Metals Extraction bisulphide process, and one is going to Broken Hill.

A new mining book by one who knows is J. P. Johnson's "Ore Deposits of South Africa." The author is a mining geologist and engineer living in Johannesburg and his book is right up to date. It deals chiefly with the two great gold-fields of South Africa, where the mode of occurrence of the precious metal is remarkably similar in many important respects and is yet so distinct from that of the other big gold deposits of the world as to constitute a type demanding separate consideration.

The Witwatersrand goldfield is a bare ridge of hills about 30 miles in length and the ore deposit in regard to length of strike—its outcrop and sub-crop has been traced for a distance of 70 miles—and continuity of pay values is unique among and stands at the head of the great ore deposits of the world.

Some idea in the way of comparing this field with others may be gathered from the statement that the next in order of size is the Kearsarge amygdaloid of the Lake Superior copper field, which has seven producing mines, four developing mines and one idle mine ranged over a distance of nearly fifteen miles, and which is in turn approached only by the Baltic amygdaloid of the same field with its promise of a future ten mile line of mines.

The Theta-Beta horizon of the Pilgrimsrest goldfield will, however, eventually take second place. Three possible explanations are given as to the origin of the gold in the auriferous conglomerates of the Rand, but not one of these is generally accepted. The theories are:—firstly, that the gold, together with the quartz-pebbles, is derived from the denudation of gold bearing rocks; secondly, that it was chemically precipitated from the water at the time of the formation of the beds;

and thirdly, the theory is that the gold, together with the minerals that form the bulk of the matrix, was subsequently introduced into the conglomerates by percolating solutions.

Explanation number two is not even nowadays given serious consideration. The others, namely that the gold is either a detrital accumulation or that it is an impregnation, have powerful followings. In the newer Pilgrimsrest goldfield the presence of the gold in the beds is clearly an impregnation.

Johnson's book is of great service to prospectors, students and others possessed of an elementary knowledge of geology and some mining experience.

MINING ENGINEERS AND MINING INSTITUTES.

Written for the Canadian Mining Journal, by A. B. Willmott.

With the objects aimed at in Mr. Kendall's paper I fully agree and thank him for having again presented the subject for discussion. Several objections to the scheme occur to me, and I believe the objects sought can be better obtained in other ways.

His scheme as I understand it entails:—

1. A serious restriction in the number of the members of the Institute.
2. The formation of a close corporation with powers similar to those now possessed by the doctors, dentists, et al. and which are being sought by the embalmers of Ontario.

My objections are as follows:—

1. The proposed restriction of membership I consider a mistake. We need a wide-open congress of some sort, where all interested in mining, whether technically qualified or not, can meet and discuss matters of common interest. This our institute is now doing well. Let us move slowly in the matter of change. We want the broker and investor to attend our meetings, and learn the views of our leaders on the ethics of mine finance, and on the duties of directors to their shareholders. To shut out these men and also the younger men of the profession who might not be able to qualify, is to shut out from the Institute the very men who profit most.

Again to get sufficient numbers in the small local centres to make a live branch, the basis of membership must be wide. These members are by constitution members of the main Institute.

Still further we require all the funds we can raise to carry on our work. To restrict the membership to purely technical men would sorely cramp the Institute financially.

2. My second objection is the great difficulty of securing the legislative power to compel all engineers to pass the necessary examinations and enroll in the Institute. This matter is controlled by the provinces, and it would mean a separate campaign in each for a number of years. Then, in all probability it would be found that the conditions prescribed by the different provinces would not be alike. The doctors and the dentists who are far in advance of us in organization, have not yet succeeded in getting a common standard for all the provinces. If worth while I would not balk at this difficulty, but I think there is a better way.

3. My third objection is that even after the membership has been restricted in the way Mr. Kendall proposes there will still be "engineers and engineers" as he himself states. A man may be an excellent chemist, and so fully qualified for membership in the Institute, and be quite incompetent to report on the best

methods of developing a mine. Another man may be thoroughly versed in mine machinery and so an acceptable member, and yet not be qualified to value a placer deposit. The truth is, the mining engineering profession is a very wide one and no man can be thoroughly qualified in all its many branches. Yet, under Mr. Kendall's proposals we would virtually say to the public "the membership of this Institute has been carefully selected by law and you can safely employ any member for any mining service."

My solution of the problem, is the voluntary incorporation by some of our leading engineers of a Mining Engineers Guild. The qualifications for membership would require a high standard in technical education, experience and probity. There should be an initiation fee of fifty or a hundred dollars, and an annual fee of ten dollars over and above membership in the Institute. This money should be spent in educating the public to the necessity of employing only competent engineers. Advertisements would state the qualifications for membership in the Guild, and urge the public to demand reports by fully qualified men. Lists of all members with their special qualifications would be kept by the secretary. Advertisements would state that these lists would be furnished on application. This advertising would be of great assistance to the individual, and he could well afford the fees charged for membership. Nor would it interfere with his own advertising.

Such a guild would urge the employment of competent engineers as no individual could think of doing. It could criticise fraudulent promotions as no private engineer dare do. It would protect its members against the unfair use often made of their reports. It could control the whole subject of professional conduct by its own by-laws.

Some of the qualifications for membership in such a guild would be:

- An age limit, say thirty years.
- Graduation from some recognized college.
- Practical experience of— years.
- Ethical qualifications.
- Canadian residence.

It is recognized that many of our most qualified men might not join such a guild, having at present positions where they are not looking for public employment. There would be no compulsion that they should join. Many who might like to join might be debarred for a time, until age or experience gave them the necessary qualifications. As soon as they qualified they would be received. All Guild members should be members of the Institute in good standing.

In proposing this alternative scheme I am quite aware that objections can, and will be raised just as I have raised them to Mr. Kendall's proposals. I offer the suggestions, with the hope that out of the joint opinions of the members a scheme can be evolved which will involve the mining fakir in oblivion.

LEGAL COLUMN.

[Editor's Note.—Before this appears in print the Senate will probably have dealt with the proposed addition to the Criminal Code. The points brought out by our correspondent, however, are of signal importance.]

A debate arose in the Senate last week on a proposed addition to the Criminal Code, making it an offence for a person to have ore in his possession for which he couldn't account.

Legislation of this kind has regularly followed the founding of mining camps. It probably started in

Australia, where there is still a most stringent statute in force, under which it is an offence to be the occupier of premises where gold suspected of being stolen is found, or to walk along a vehicle containing such gold. The discovery of diamonds in South Africa resulted in the development into an established industry of illicit diamond buying. Such great ingenuity was shown by the workmen in concealing diamonds that emetics and purgatives were used to supplement the law. Consequently the law was made as stringent as possible. It is a compliment to our enforcement of the laws we have that the demand for more easily enforced legislation has been so long delayed.

The following is the proposed addition to the Criminal Code: "424A. Everyone is guilty of an indictable offence and liable to two years' imprisonment who, having in his possession or on his premises with his knowledge any rock, ore, mineral, stone, quartz or other substance containing gold or silver, or any unsmelted, or untreated, or unmanufactured, or partly smelted, partly treated or partly manufactured gold or silver, is unable to account satisfactorily for or prove his right to the possession of the same."

This section was passed by the House last year with the words, "prove that he came lawfully by the same," in the last line instead of the words, "account satisfactorily for," etc., but it was rejected by the Senate. The objection raised in the Senate appears to be that the proposed section is a departure from well-recognized rules as to the onus of proof, and may work a hardship on persons having ore in their possession, but being unable to prove technically where such ore came from. It was to meet this objection that the clause was amended in the House this year.

In its amended form this objection does not really appear to be very serious practically, and it is largely on the question of principle that it has been opposed in the Senate. The principle, however, has suffered other breaches in the Code. One wonders if the attention of the Senate has been called to the strange provisions of Section 395: Where anyone has in his possession "any live or dead fence, or any post, pale, wire, rail, stile, or gate, or any part thereof, of the value of 25c at the least," and cannot satisfy the justice of the peace that he came lawfully by the same, he is guilty of an offence and liable to a penalty not exceeding \$10 plus the value of the article so found."

After that there cannot be any serious departure in principle in the passage of the new amendment proposed. In fact, the Code already provides (Section 988) that the possession contrary to the provisions of any law on that behalf of any smelted gold or silver or any quartz-bearing gold or any unsmelted gold or silver by any operator, workman, or labourer, shall be prima facie evidence that the same has been stolen by him. This provision was passed, we believe, to stop high-grading in Nova Scotia. (One of the objections raised to the proposed section is that it was for the benefit of Ontario alone.)

The present law regarding stolen ore is embraced in two sections of the Code: 378 and 424 as amended in 1909. Section 378 makes it an offence punishable by two years' imprisonment to steal ore of any metal or any quartz, etc. With this paragraph should be read Section 637, which provides that a justice of the peace may issue a search warrant as in the case of stolen goods upon a written complaint to search for gold or quartz, silver or silver ore, and that such justice may restore it to the lawful owner as he considers right (subject to an appeal to the County Court judge).

At the same time, Section 893 provides that an error in the indictment under Section 328 or 424 as to the name of the owner may be amended at the trial, and that if no owner is proved, the indictment may be amended by alleging the Crown to be the owner.

Section 424, Sub-section 3, prior to the amendment of 1909, made it an offence punishable by two years' imprisonment for any person not the owner of a working claim, or the agent, or not authorized in writing by the proper officer named by any Provincial Act, to sell or purchase any quartz containing gold or any smelted gold or silver within three miles of any gold district.

Sub-section C provided any person who purchases any gold in quartz or any unsmelted or smelted gold or silver of the value of one dollar or upwards, except from such owner or authorized person, should execute a written instrument, setting out the particulars, and file the same with such proper officer within twenty days.

This section is obviously very defective. It would work hardship in the Yukon, where gold dust is used as a medium of exchange, and it was useless in Ontario, where no officer was provided to issue licenses to deal

in gold, and consequently there was no place where the instrument required to be filed could be filed.

The section was amended in 1909 to include "any rock, ore, mineral, stone, quartz or any substance containing gold or silver or any unsmelted, untreated or unmanufactured or partly smelted, partly treated or partly manufactured gold or silver." The three-mile limit was abolished, the instrument was required to be filed within ten days with the officer with whom bills of sale and chattel mortgages are filed, and the Yukon Territory was excepted from the section.

The original section was evidently borrowed unreflectingly from the Transvaal ordinances. Even as amended, it is much more limited than the Transvaal ordinances, which prohibit trading by or with any person without a license. Under that statute it has been held that it is not necessary to prove that the accused was seen to handle the gold, it is sufficient if the gold was found in his possession; it has also been held that it is no defence that the accused acts as agent for another; and that the mere fact of agreeing to buy without an actual sale taking place is a breach of the ordinance. None of these cases would be covered by our present statute.

INDUSTRIAL SECTION.

A LARGE ELECTRIC MINE PUMPING INSTALLATION FOR HANDLING HOT WATER.

In reopening the Ward shaft, at Virginia City, Nev., a considerable flow of hot water was encountered, which for a time baffled the efforts of the workmen. The great depth of this shaft, 3,480 feet, and the high temperature of the water, 175 degrees, made the work of pumping out the impounded quantity very difficult, but a temporary electric pumping outfit was finally successfully put into commission, and has since been supplanted by a permanent installation, which easily handles the present continuous hot flow.

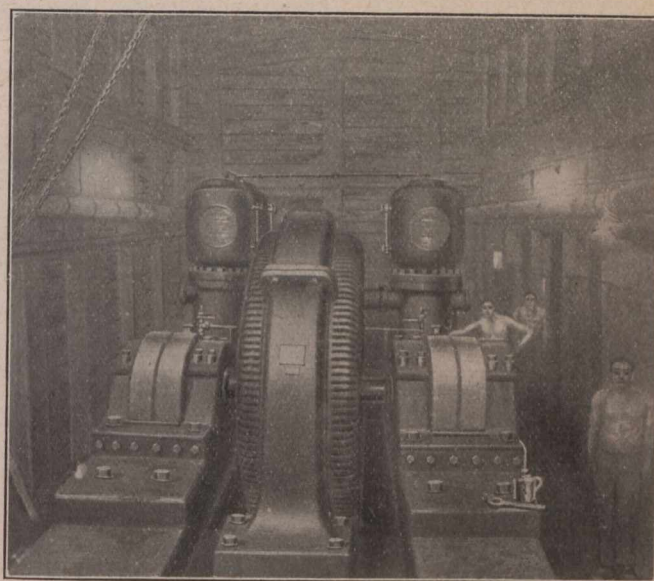
For the emptying of the mines, in the first place, a temporary motor-driven pump equipment was installed, by which compressed air driven sinker pumps at the bottom of the shaft lifted the water to a centrifugal pump on the 2,330 ft. level. This in turn delivered to a vertical triplex pump on the 2,100 foot level. The sinker pumps were supplied with compressed air from two 100 horsepower Ingersoll-Sergeant compound air compressors driven by 100 h.p. Westinghouse motors, located on the surface. The three stage Byron Jackson centrifugal pump on the intermediate level was belted to a 50 h.p. Westinghouse induction motor, while a 100 h.p. type "C" Westinghouse induction motor drove the 6 $\frac{3}{4}$ x 8 inch Knowles vertical triplex pump at the uppermost pumping level.

This apparatus has since been replaced by the installation of the permanent pumping plant located in a pumping station 80 ft. long, 24 ft. wide and 20 ft. high, connected with the shaft 3,100 ft. below the surface. The permanent pumping equipment consists of a special slow speed, 800 horsepower Westinghouse type "H F" induction motor direct connected to a Knowles express type, duplex, double-acting pump, operated at 195 revolutions per minute.

The valves are of the automatic Poppett type arranged in nests of 13 each, presenting a valve area of 104 square inches, which makes necessary very slight move-

ment of the valves, and is conducive to a high speed and a minimum of wear. The valves and other visible parts are of bronze, and the pump has a capacity of delivering 1,600 gallons per minute against a total head of 1,550 feet.

The plant is equipped with a three stage electrically driven air compressor for charging the air receivers, besides a vacuum pump and an automatic oiling system.



For convenience of erection and repair, the pump station will be fitted with a 15 ton travelling crane; in fact, it is intended to include in this plant everything that will insure reliability and ease of operation.

The over-all dimensions of each pump are 27 feet 3 $\frac{3}{4}$ ins. in length, 17 feet in width, and 14 feet 2 ins. in height. The motor is 13 feet in diameter, and the steel crank shaft, forged from one piece, is 13 $\frac{3}{4}$ inches

in diameter and 14 feet 4½ inches long. The total cost complete for operation was about \$125,000. These pumps are supplied by either one of the two centrifugals located in the pump at the bottom of the shaft, and operated by special 75 h.p. Westinghouse motors on a vertical shaft.

The water is discharged through a 16 inch steel column with welded steel flanges. The thickness of this pipe varies from ¼ inch at the tunnel level to 9-16 inch at the bottom. The column is supported by means of heavy weight iron clamps 6 inches in length, which in turn rest upon the wall and end plates. To resist the pressure of 675 pounds to the square inch, male and female flanges are used and each fitted with a lead-filled copper gasket.

The electric current is taken down the shaft at 2,240 volts over a three-conductor, lead-covered, steel-armored cable of 400,000 circular miles capacity. The electrical equipment, from the automatic oil circuit breakers on the surface to the motors themselves, is the best that money can buy; and in operation, with the splendid Westinghouse plants of the Truckee River Electric Company behind it, results have been obtained never before approached for this class of work.

The accompanying illustration of the present permanent pump house, 3,100 feet underground, was retouched from an actual flashlight photograph, obtained during a recent visit to the mine. The normal temperature of this pump room, 110 degrees Fahrenheit, is attested by the costume of the men, who work their daily shifts of twelve hours under these conditions.

BRUCE, PEEBLES & CO.

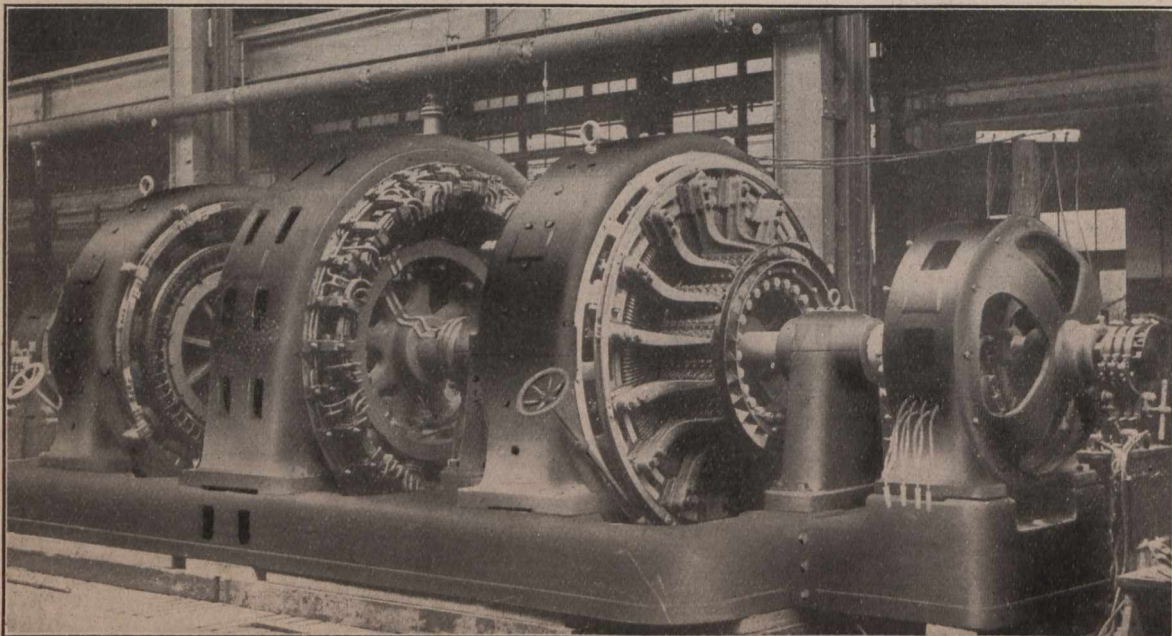
Announcement is made on another page of this issue of the establishment in this country of the business of Bruce, Peebles & Co., Limited, Edinburgh, Scotland, manufacturers of electrical apparatus, through their Canadian representatives, Messrs. Vandeleur & Nichols, Dineen Building, Toronto. The firm of Bruce, Peebles & Co., Limited, was established in 1866, but it was not until 1897 that the electrical department was added.

The business, however, in their electrical specialties has grown so rapidly as to almost eclipse other departments, and the works were gradually increased until they now occupy a site covering ten acres, the location being near Granton, just outside of Edinburgh.

It is interesting to note that the works are entirely self-contained, water is pumped from their own wells and the sewage treated in a septic tank in the grounds. Steam boiler house and gas producer plant provides the motive power for large generators, while a storage battery will operate all the lights and any department when the main plant is closed down. The main works building is 600 feet long by 150 feet wide, and is divided into five bays. Additional structures provide accommodation for office staff, drafting, designing and estimating departments.

Messrs. Bruce-Peebles were not long in the field before it was recognized that their product stood for all that was desirable in quality of workmanship and material. The passing of time proved the reliability of their machines under periods of stress and overloads, and their desirability under all conditions of service. The British Government repeatedly places large contracts in their hands, of which mention might be made of H. M. Dockyard, Chatham; H. M. War Office, Wat-ham Abbey Powder Factory; Enfield Small Arms Factory; H. M. India Office, equipment for state railways, and the Crown Agent for Natal Government, turbo-generators and motor converter sets. Other large contracts have been awarded, such as the furnishing of complete street railway systems for Shanghai, China; Delhi, India; Athens, Greece; Llandudno and district, Wales, and Sunderland and district, England. These systems have included the entire equipment from the powerhouse to the conductors' uniforms, and were turned over to the purchasers in actual full operating order. In addition to these contracts, numerous other large installations for industrial purposes could be mentioned.

Messrs. Vandeleur & Nichols form the last connecting link in a chain of branch houses and agencies which encircles the entire globe.



One of Two 1,500 H. P. Motors supplied to the Newcastle on Tyne Electric Supply Co.

THE LARGEST ROCK CRUSHER IN THE WORLD.

The largest rock crusher in the world will be one of the features of interest at the rock crushing plant, which Messrs. Laurin and Leitch will have in operation at Outremont, Quebec, within a few months. They have contracted with the Montreal Water and Power Company to build a reservoir about 800 feet long and 400 feet wide on the side of the mountain and, as the contract must be completed within four years, one of the problems involved was the economic disposal of the rock which is to be excavated. In view of the large and increasing demand for crushed stone for concrete and other purposes, they decided to erect a plant of sufficient capacity to take care of all the rock which might accumulate during the process of the work. Having visited the largest and most modern crushing plants in the United States, especially in New York and Michigan, Messrs. Laurin and Leitch selected the Gates gyratory breakers as those best suited to their requirements, and gave to Allis-Chalmers-Bullock, Limited the contract for the complete equipment. It will involve an expenditure of upwards of \$200,000.

Another serious problem was to arrange a plant of such proportions on the land available in that locality. Messrs. Laurin and Leitch purchased a site about 1,000 feet away from the reservoir and have arranged for direct connections with both the Electric Railway and the C. P. R. while the quarry cars will be hauled along two incline railways from the reservoir to the edge of the crushing plant property. There will be a powerful hoisting engine, capable of lowering four cars, each carrying 20,000 pounds in one train over the incline of 1,000 feet at the rate of 250 feet a minute. The incline will be operated with two barneys, so that if desired an additional train of rock may be elevated to the crusher plant without letting the empties down as the barneys carry the rope back. By this method no coupling or uncoupling of trains will be necessary. Two additional hoists will operate separately, each taking one of these loaded cars at a time, elevating it to the crusher, and, after it is dumped, lowering it to the bottom of the incline again. Steam shovels will be used for loading the quarry cars.

The principal rock crusher known as a No. 21, weighs 240 tons, and has a capacity of 10,000 tons in ten hours, or about 500 railway car loads daily. This machine receives the largest pieces which it is practicable to take from a quarry and crushes them without the need of any preliminary breaking by sledge hammer, or secondary blasting. There are two discharge openings through which the crushed product leaves the machine instead of only one which is usual with smaller breakers. It is thus possible to build the machine lower and make it more stable. The broken rock from each spout will fall into large steel frame elevators, which in turn will deliver it into heavy steel frame screens, each 6 feet wide and 22 feet long with $2\frac{3}{4}$ inch perforations. The rock which escapes this mesh will be conveyed to several of the No. 6 Gates breakers, equipped similarly, though on a smaller scale, with elevators and screens. To care for such an enormous amount of stone daily, there will be a carefully planned system of storage piles and bins while the tracks will be arranged in such a way that crushed stone can be loaded by steam shovels into either railway cars or horse carts.

Having purchased the largest rock breaker in the world, Messrs. Laurin and Leitch determined that the rest of the equipment should be of the most modern character. The entire plant will be driven by a 700 h.p. triple expansion engine, and a cooling tower will be

erected so that the engine may run condensing. Electric power will be used whenever it is advantageous, and the firm will have its own electric plant consisting of a 175 k.w. alternating current generator, belted to the main shaft, switchboard, transformers and other apparatus. The smaller breakers, elevators and conveyors will be run by induction motors. Even the rock drills will be operated by electric power. When completed the plant will be the largest of the kind in Canada. Allis-Chalmers-Bullock, Limited, will act as consulting engineers in connection with the erection and operation of the plant.

CORRESPONDENCE.

The following is a copy of a letter sent by the Toronto solicitors for the Mond Nickel Company, Limited, to the chairman of the Select Standing Committee of the House of Commons on Mines and Minerals. The letter is self-explanatory:—

Feb. 4th, 1910.

The Chairman, Committee on Mines, etc.,

House of Commons, Ottawa, Ont.

Dear Sir,—We have communicated a synopsis of the allegations before your committee by cable to our clients, the Mond Nickel Company.

We are instructed to protest most emphatically against the statement that the International Nickel Company of New York controls all the supplies of Canadian nickel.

The Mond Nickel Company own their own mines in Canada, and do in this country most of the work required in producing nickel. The purchase money went into the pockets of Canadians, and the Canadian public has benefitted; for instance, one of their properties was purchased by them from the late Aeneas McCharles, who, with part of the proceeds, founded an endowment for research to be administered by the University of Toronto. Out of this fund an award was made the other day to a distinguished citizen of Ottawa.

Our clients have expended large sums in exploration for further ore bodies, but in addition to those which they acquired some time ago they have not been able to find new ore bodies which can be worked in competition with the rich nickel deposits of New Caledonia. At the present time our clients are producing nickel from their mines in Canada, and are supplying the British Government and the Indian Government with nickel mined, smelted, bessemerized and refined within the jurisdiction of His Majesty. About ninety per cent. of the entire wages are expended in this country. The completion of the refining is done in Great Britain, the nickel produced by them from Canadian ores being completely manufactured within the British Empire.

All well-informed persons know that the Sudbury District has no monopoly so far as the supply of nickel is concerned.

And, moreover, the use of nickel is very limited. Large amounts have been spent by nickel refiners in the effort to increase the use of nickel and to educate manufacturers as to the advantages of nickel steel, and notwithstanding these efforts, it seems impossible to enlarge the scope of the industry.

A large proportion of the nickel used at the present time comes from New Caledonia, and within the last few years new works have been started in Europe for refining New Caledonian ores. Besides these, Norway has also commenced to produce nickel again, and deposits of rich nickel ores have recently been discovered in Russia and other parts of the world.

Under these circumstances, to impose an export duty on nickel ore or matte would be to strike a severe blow against Canadian and British industry, and to favour the products of convict labour in the penal colony of New Caledonia.

The only Canadian director of the Mond Nickel Company was the late Sir George A. Drummond, whose loss will be regretted not only by this company, but throughout Canada and Great Britain.

We have asked the secretary of the committee for a copy of the evidence submitted, which we shall send to our clients in London so that they may have an opportunity of sending you a formal statement.

Yours truly,
CLARK, McPHERSON, CAMPBELL & JARVIS,
Solicitors for the Mond Nickel Co., Ltd.

Quebec, Jan. 25th, 1910.

Editor Canadian Mining Journal,
Sir:—

In the number of the Canadian Mining Journal of the 15th instant, I notice in Mr. Harpell's article on the Asbestos industry a statement, rather sweeping and unjust towards the Department of Mines, of the province of Quebec.

The article ends with the following sentence:

"The present Quebec Government cannot be held responsible for the condition of land holdings that exists around Thetford Mines and Black Lake, but they will be responsible for these conditions in new districts, such as Chibougamau where they are creating a state of affairs no better than that created by their predecessors in the Asbestos district of the Eastern townships."

That large land holdings exist in the Chibougamau district, is inaccurate as regards both mining rights and surface rights, and allow me to correct the impression that the sentence conveys.

The Chibougamau district, by order in council passed in January 1907, was withdrawn from sale for colonization purposes. This means that no mining concessions, nor surface rights may be sold or disposed of without a new order in council being passed, throwing the district open.

Up to the present, only Mining Concessions applied for before the withdrawal from sale have been granted, and the area of these is altogether about 2,500 acres. The balance of the district, which comprises about 1,200 square miles is, at present, held by the government both as regards the mineral rights and the surface rights.

There are therefore in the Chibougamau district no large tracts of the "best agricultural lands held by one or two individuals" as the statement published in the journal seems to imply.

Let me state, Mr. Editor, that we always receive in the best spirit all well meant criticisms, and that we carefully note such for future guidance, but before making such condemnatory statements as the ones referred to above, it might be well to inquire as to the actual facts.

The Department of Mines of the province of Quebec is entirely at the disposal of any inquirer for information, and had Mr. Harpell realized the condition of the land holdings in the Chibougamau district, I am sure, he would have refrained from writing the last sentence of his article.

Yours truly,
Theo. Denis
Superintendent of Mines.

IN THE HIGH COURT OF JUSTICE.

Between Peterson Lake Silver Cobalt Mining Company, Limited, Plaintiffs, and Edward Steindler, D. M. Steindler and J. A. Jacobs, Defendants—Consent Minutes of Judgment.

It is hereby agreed by and between all parties to this action that judgment be entered by consent in the following terms:—

1. The defendants shall forthwith pay to the plaintiff company in full settlement of all claims the sum of \$50,000, and shall also forthwith pay to the plaintiff company the further sum of \$3,000 on account of its costs.

2. The defendants shall forthwith surrender to the plaintiff company 160,000 paid-up shares of the plaintiff company's stock by delivering up to the plaintiff company certificates representing the said 160,000 shares of stock accordingly.

3. The plaintiff company admits a liability to the defendants David M. Steindler and Jacob A. Jacobs of \$28,291.10, and shall forthwith deliver to the said defendants in payment thereof two promissory notes for \$14,145.55 each, bearing date the 19th day of January, 1910, payable in one and two years respectively from the date thereof, with interest at 5 per cent. from the said date.

4. The said defendants J. A. Jacobs and D. M. Steindler shall forthwith procure the dismissal of an action pending in this court against the plaintiff company, in respect of the said sum of \$28,291.10, and the discontinuance of a like action and attachment proceedings in connection therewith, pending in the State of New York or New Jersey, in respect of the same matter, the said action to be dismissed or discontinued without costs, and the defendants will give such consents and do all such other things as may be necessary to release the moneys attached in said proceedings so that the same may be payable to the plaintiffs without costs or charges.

5. The defendants shall forthwith procure the dismissal without costs of an action pending in this court between Warren, Gzowski & Co., and the plaintiff company in respect of the transfer on the books of the plaintiff company of certain shares of stock of the defendants in the plaintiff company.

6. The plaintiff company shall rescind all resolutions barring or restricting the transfer of the stock of the defendants or any of them, and shall forthwith remove all restrictions in connection with the transfer of any such stock, other than such as are contained in the general by-laws of the plaintiffs applicable to all the stock of the plaintiff company generally.

7. The plaintiff company shall forthwith procure the dismissal without costs of an action pending in this court against the defendant Jacobs for an account and for other relief.

8. The judgment herein shall be without costs, except as hereinafter stated, and shall declare and adjudge that the above-mentioned payments and surrender of stock by the defendants shall be and be deemed to be a full and complete payment, satisfaction, settlement and discharge of all amounts payable by the defendants, or any of them, in respect of any and all of the capital stock of the plaintiff company heretofore at any time issued to the defendants or their nominees, or any part of them, and as entitling the defendants to receive all of the said stock at any time issued to or received by them or any of them or their nominees as

fully paid-up, non-assessable stock, and shall also be and be deemed to be full and complete payment, settlement, satisfaction and discharge of all claims against the defendants, or any of them, for misfeasance or otherwise in respect of the issue of any of the said stock or of any subsequent transfer or distribution or other disposal thereof, or in respect of the issue of any stock of the plaintiff company to any other person or persons whatsoever or in respect of any act or acts whatsoever of the said defendants, or any of them, as directors, promoters, agents or servants, or as director, promoter,

agent or servant of the said company; and in full settlement, satisfaction, payment and discharge of all claims of the plaintiff company against the defendants, or any of them, for moneys, had, received or retained by the defendants, or any of them, and generally in settlement, payment, satisfaction and discharge of all claims and demands at law or in equity of every kind whatsoever by or on behalf of the plaintiff company against the said defendants or any of them.

Dated this 19th day of January, 1910.

SPECIAL CORRESPONDENCE

NOVA SCOTIA.

Glace Bay.—During the first half of January the output of the Dominion Coal Company's mines, was roughly 95,000 tons, which compares with an output of 85,000 in the first fortnight of January of last year. There was a slight falling off from the figures of December, due to the prolonged holidays taken by many of the men at Christmas. The daily output ranges round 9,000 tons, but it will not be until the end of January that the maximum will be obtained.

The announcement that Mr. M. J. Butler, C.M.G., had been appointed General Manager of both companies, was made at a meeting of the Coal Board on the 12th January, and on the 17th, Mr. Plummer, together with Mr. Butler and Mr. D. H. McDougall, the new Superintendent of Mines, paid a visit to the mines. Mr. Plummer had a conference with the three Divisional Superintendents of Mines and the Mine Managers, after which a statement was issued to the local newspapers by Mr. Plummer, which in part was as follows: "Mr. Plummer stated that he had not met the representatives of the United Mine Workers, and that he does not consider it necessary that he should meet them. The position of the Coal Company, as regards its employees has already been plainly stated in his telegram to the Sydney and Glace Bay papers, and a meeting with these representatives, even to discuss the terms on which the men, now out of employment may return to work, might be misconstrued, and regarded as a recognition of the United Mine Workers, which is against the policy of the company." This whole-hearted endorsement of the policy, hitherto pursued by the Coal Company towards the U.M.W.A. invaders has greatly pleased those whose duty it has been throughout the past six months to fight the various influences which have been brought to bear, to gain recognition for the United States organization.

At the time of writing, the Annual Convention of the U.M.W. is meeting in Indianapolis, and it may be that Mr. Lewis will have hard work to justify his actions and those of his representatives in Nova Scotia during 1909. Some of the Canadian newspapers which have supported Mr. Lewis in his campaign to gain control of all Eastern Canadian coal mines have recently hinted very plainly that the strike is lost, and further fighting on the part of the U.M.W. is futile.

One of the most significant facts that has transpired during the strike was given to the Halifax Morning Chronicle by Mr. John Moffatt, the Grand Secretary of the P.W.A., of Nova Scotia. On a recent visit to Pittsburg, Mr. Moffatt discovered that at certain mines in Pennsylvania the miners are working under a reduced scale of rates, known as the "eastern rate," which it is explained, is necessary to enable the U. S. operators to capture the Eastern, or in other words, the Canadian market. Mr. Moffatt was shown affidavits in which it was stated that these special rates were paid under a "tacit understanding and private agreement" between the President of the Pittsburg Coal Co. and Mr. Tom Lewis, the President of the U.M.W.

The coal operators of Nova Scotia may well be pardoned if they consider the present condition of affairs a peculiar one. In 1909 the output of Nova Scotia was reduced one million tons, by the actions of the U.M.W. President in calling the several strikes. The importation of American coal was greatly increased by the same action, taken, it must be remembered, by the same labour leader who has the "tacit understanding and private agreement" with the head of a great U. S. coal company, that wishes to extend its coal sales in Canada. At the same time, action is taken in the Canadian Courts, charging the coal operators of Nova Scotia with enhancing the price, and with "unduly limiting the facilities for mining coal" in Canada. The costs of the prosecution are paid out of the treasury of the U.M.W. by the gentleman with the "tacit understanding and private agreement" with a U. S. coal company. The inference is too obvious to need elaboration. All this is being done by the irresponsible leader of an unincorporated foreign body, that is amenable to Canadian Laws, for it is well known that there never would have been any strike in Nova Scotia, had it not been deliberately planned and brought about by the Executive of the U.M.W.A.

Glace Bay.—One result of the unfortunate strike brought about by the U. M. W. A. in Nova Scotia has been to compel many of the local miners to seek employment in other parts of North America, but these men do not seem to have found better conditions or more attractive remuneration in all their wanderings. Letters are daily received at the offices of the Coal Company from such widely separated addresses as Taber, Alberta; Nanaimo, Vancouver; from Illinois and Pennsylvania, and they all tell the same tale. The miner at Glace Bay has generally been certain of steady work and certain payment, but this does not appear to be an unvarying rule in the coal mines of other provinces and states. The more exact acquaintance with the workings of the U. M. W. A. which these men have gained by working in mines controlled by this union has cooled their enthusiasm as nothing else could have done. Many of these men are stranded and without the means to return to Glace Bay. There were numerous cases of good workmen who left Glace Bay when the strike was called, not because they sympathized therewith, but simply because they were men of peace, who hated a fuss, and dreaded the treatment to which those who attended their work were subjected. This class of miner was composed almost entirely of European nationalities, who felt little interest in the faction fight of two unions, accompanied by complications they did not understand, and they preferred to leave the town rather than be mixed up in the anticipated troubles.

Another class was made up of native miners, who, bitten with the western fever, thought the strike presented a favourable opportunity to see the country and work in those favoured provinces where the beneficent rule of Tom Lewis held sway. But all classes unite in a consensus of opinion, that Glace Bay and the Dominion Coal Company are hard to beat—and it is a

thousand pities that it should have proved necessary to travel so far afield and to lose so much to learn this lesson. If half the statements that these expatriated strikers made are true, the U.M.W. of America have little excuse for spending \$600,000.00 in a forlorn and useless struggle in Nova Scotia, such time as conditions in the mines of their own country are the shame of a civilized community.

Whatever faults the town of Glace Bay may possess, a lack of variety is not one of them, and the recent municipal elections have furnished some amusing reading. The following excerpt will serve to show the extremely candid brand of criticism in which the local journals indulge. The Glace Bay Standard, which is the organ of the United Mine Workers of America, recently remarked as follows: "The officials of the Coal Company have never yet shown any ability in running the company's own business in any but an experimental and blundering manner; it has become the laughingstock of those who have an idea how such a concern ought to be administered. . . . Let the Coal Company's officials stick to their business, and perhaps, under the new teaching such as they are now getting, they may after a while learn something of their own business." This is a fair and average sample of the "journalese" with which the newspaper readers of Glace Bay have been regaled since the beginning of the United Mine Workers' strike.

The output of the Dominion Coal Company's mines for January was, approximately, 212,000 tons, which compares with 200,000 tons in the month of January, 1909. A comparison of the figures by collieries is as follows:—

Colliery No.	1909.	1910.
1.....	36,473	45,000
2.....	36,178	45,000
3.....	15,417	18,000
4.....	20,664	26,000
5.....	25,036	28,000
6.....	3,838
7.....	9,255	6,000
8.....	12,882	10,000
9.....	22,605	17,000
10.....	13,634	11,000
12.....	4,194	4,000
14.....	2,000
Total	200,176	212,000

The outputs during the first half of the month were much disorganized by the Christmas holidays, but they recovered towards the end of the month, and during the last week the output maintained an average of 9,330 tons per day.

It is apparent and has been apparent for a long time that the so-called "strike of the United Mine Workers" has failed, and it is difficult to know what justification this organization has for its expenditure to maintain the pretence of a strike in face of the foregoing figures.

Mr. Duggan's departure from Glace Bay and his retirement from the active management of the Dominion Coal Company gave occasion for a gathering of a significant character. Mr. Duggan was waited upon by a committee, which included representatives from all the lodges of the Provincial Workmen's Association at the mines of the Dominion Coal Company, and who presented him with a very tangible token of their esteem, and expressed their regret that Mr. Duggan was leaving Glace Bay. This committee represented some 3,500 workmen of the Coal Company, and the address which was read referred to Mr. Duggan's good faith in every negotiation he had had with the workmen under his charge, and was, in fact, a tribute such as is rarely given to an official of a large corporation by workmen. The number of men who have followed the mistaken lead of the United Mine Workers' organizers does not, at the outside, exceed 1,700 men. To the unbiased observer, matters in Glace Bay must seem a little topsy-turvy when a disgruntled minority of workmen, aided by the funds of a labour organization with

headquarters in the United States, is allowed to intimidate the great majority of the workmen who desire nothing better than to attend to their work and manage their own business in the way that seems best to themselves. It may not be realized that this small body of strikers has for seven months held a carnival of coercion and intimidation throughout the colliery districts, which is costing the peace authorities and the Coal Company a large expenditure of money, and blocking the wheels of industrial progress in a manner unprecedented in Nova Scotia. It is one of the basic principles of British politics that a minority has rights, but by no stretch of the imagination can a minority of workmen have the right to act in the manner in which the United Mine Workers of America have acted since the 6th of July, 1909.

ONTARIO.

Cobalt.—It is understood that a 51 per cent. interest in the Provincial mine has been sold. The mine has been incorporated in a company known as the Cobalt Provincial Mining Company. This property was bought at the last sale from the Provincial Government.

The new road into the South Lorrain camp is practically completed. It leaves the Kerr Lake road at the Lumsden mine, near the Rochester, and goes through the Pan Silver, John Black, Ophir, Highlands, and Ontario Development Company's properties. Stages are now running over the road, and the trip into the Keeley mine can be made in three hours. This road will be of great benefit to Cobalt, as formerly the only way to get into the district was by way of Haileybury. The Mines Power is making preparations to deliver cheap power to the district, and is building a substation on Beaver Lake, and when it can deliver power, mining costs will be much reduced. The present year should see several mines added to the list of shippers. The Keeley and Wettlaufer are certain, while the chances are excellent for the Little Keeley, Beaver Lake, the Newman, and Maiden Companies. The Beaver Lake Company has discovered silver in its big smaltite vein at a depth of 135 feet. The vein was very wide on the surface and in the shaft, but the silver values were low. In drifting on the vein, however, on the 135-foot level leaf silver was encountered. The Keeley is the oldest property in the camp where values were found. The company has so far been labouring under a serious disadvantage, as the gas producer plant that it installed has given it a great deal of trouble. Another gas producer plant has been ordered to run a ten drill compressor. The company has on hand about half a car of high-grade ore that will run high in silver. The shaft has been sunk to the 140-foot level, and drifts are being run on the vein. At the 65-foot level a cross-cut has been started to cut No. 2 vein. There is also a shaft down 75 feet on No. 3 vein, but no work has been done on this for some time. The Beaver Lake has, however, found silver in this same vein at greater depth, so the possibilities for the Keeley finding it are also good. Up to date this property has shipped a little over forty-four tons of ore. For some time past it has been known that Adolph Lewisohn, who controls the Kerr Lake mine, has been negotiating for control of the Wettlaufer. This he was unable to get, but he has acquired a large interest. The Lewisohns are not, however, in the habit of being contented with minority interests, so that it is fairly safe to assume that this is only a preliminary to acquiring control. The Wettlaufer Company is capitalized at \$1,500,000, and when the stock was first put on the market it was sold for 45 cents, and less than a year ago 150,000 shares of treasury stock were sold at that price. When it was known that the Lewisohns had invested heavily in the property the stock sold as high as \$1.42 per share. This mine has had high-grade ore from the surface, and the first carload that was taken out from development work more than paid all the initial expenditures on the property. The shaft has now been sunk about 140 feet, and there is high-grade ore in

the bottom. There are two levels, and over 500 feet of drifting has been done. Up to date two cars of high-grade and two cars of medium grade ore have been shipped.

The Cobalt Lake mine is coming to the front on account of the shipments of high-grade ore that have lately been made, and on account of the better physical condition of the property. The new vein, known as the Pellatt, is showing good values, and has now about five inches of high-grade ore. It has been decided to continue the winze from the 190-foot level to a depth of 250 feet. From this depth a cross-cut will be run to cut the Pellatt vein.

It has been denied that the Bartlett has reverted to the original owners, McLaughlin and McIntyre, but it is understood that when work is again started these men will be directly interested in it. The Bartlett will now have a chance to make good when operated under conservative management. The property is one of the best located in the Gowganda District, and the surface showings were exceptionally good. However, under the previous management no trenching or surface prospecting was done. The company is unfortunately cursed with a high capitalization.

Active development work is now being carried on at the Drummond mine, and they are cross-cutting on the 200-foot level under Kerr Lake in an effort to reach the conglomerate. The Hargraves opened up a good vein some time ago in the vicinity of the Drummond boundary, and it is probable that the latter company will recommence prospecting in that vicinity. About two years ago they sank a shaft on a small vein close to this point, and when the values pinched out the working was abandoned. This company still continues to make large shipments from the dump to the Trout Mills concentrator, and it is understood that the rock is assaying higher than was anticipated.

The big Peterson Lake and Steindler and Jacobs suit has been settled by arbitration. All through the action Justice Teetzel advocated a settlement, and gave it as his opinion that the suit was so complicated that he doubted his ability to render a satisfactory judgment. After a good deal of discussion the interested parties decided to leave the matter in the hands of the judge. Steindler and Jacobs are to pay \$50,000 in cash and surrender 16,000 shares of stock, besides contributing \$3,000 to the costs of the action, while the Peterson Lake Mining Company will pay Steindler and Jacobs the sum of \$28,000 in two years. The independent suit against Mr. Jacobs has been withdrawn, also the claims for stock alleged to have been improperly issued. The question of the location of the lease has yet to be settled by the courts.

Another ore shoot has been discovered on the 200-foot level of the Crown Reserve about 350 feet west of the No. 1 cross-cut. It has been drifted on for over 15 feet, and shows high-grade ore. This company is in an excellent condition financially, and after paying all dividends has a surplus of approximately half a million dollars.

Already this year four companies, the T. & H. B., Crown Reserve, Nipissing and La Rose, have paid a total of \$888,457.50 in dividends.

The new Trethewey shaft being sunk at the northern extremity of the property is about completed, and will soon be in shape for timbering. This shaft is being sunk to work the veins developed by the Hudson Bay. The latter company also put up a raise to meet the shaft, thus much reducing the time necessary to carry out the work. The new shaft is being connected with the mill by an incline tramway, and the cars will be run with a small hoist. Good progress is being made with the mill, which will probably be finished before the power is ready. The stamp batteries are in place, and a large part of the other machinery is on the ground, and is being rapidly installed.

The position of the King Edward has much improved since the mill started running. It is probable that in the future the shipments will average nearly a car of mixed high-grade ore and concentrates a month.

It is reported that a rush of some proportions has started to Fort Matachewan, which is about forty miles north of Elk Lake. Some good specimens of gold-bearing quartz have been brought down.

The road from Latchford to Maple Mountain has been opened up, and supplies have already started in over it.

With their 2 per cent. dividend cheques the La Rose sent out a brief financial statement. It reads as follows:—

Cash in bank, ore in transit and at smelters.....	\$335,828.97
Ore sacked at mine ready for shipment	46,810.00
	\$382,638.97

Up to date the La Rose has disbursed to shareholders dividends to the amount of \$1,379,279.00. It is interesting to compare the above statement with that of the Nipissing, as these two properties are the principal ones in the district. During 1909 the increase in tonnage over 1908 was 3,005 tons, and the cash surplus was \$402,510.34 more, while the increase in dividends paid amounts to \$660,000. In addition to this it is stated that the ore reserves are greater than at any time in the previous history of the mine. The statement of January 1st, 1910, is as follows:—

Cash in bank	\$819,223.86
Ore in transit and at smelters	413,033.64
Ore sacked at mine ready for shipments	90,728.00
	\$1,322,985.50

The 1909 dividends, including the one payable January 20th, 1910, amounted to \$1,500,000.

In 1909 the company shipped 6,510 tons of ore, valued at, net	\$2,210,364.00
In 1908 the company shipped 3,505 tons of ore, valued at, net	1,263,783.00

Increase, 3,005 tons, net increase

\$946,581.00
The Nipissing has been steadily improving its position, and it is expected that vein 122 will take the place of the Kendall as the principal producer. Some exceedingly fine ore is also being taken out of No. 64, which is a continuation of one of the Hudson Bay veins.

A notice sent to the shareholders of the Beaver advises them that the second carload of ore shipped gave a net return from the smelter of \$47,948.81.

A consignment of silver bullion amounting to 29,000 ounces was shipped recently direct from the O'Brien Mine to Mocatto & Goldsmid, bullion brokers for the Bank of England.

The third carload of silver to be shipped from Gowganda was sent out recently from the Reeves-Dobie mine. The other shipments were made from the Blackburn and the Reeves-Dobie. The ore was sent out from the mine to the end of steel on the Canadian Northern, and the trip only occupied a little more than a day. It is understood that the Mann and the Boyd-Gordon will also shortly ship a car, while more may be expected from the Reeves-Dobie.

The Right of Way has cut a new high-grade vein from their No. 3 workings between the Silver Queen and the McKinley-Darragh. The vein was discovered on the 120-foot level, and shows about four inches of ore that will run in the neighbourhood of \$2,000 of silver.

Mr. E. T. Corkill, Inspector of Mines for Ontario, has laid information before the magistrate against the Goodwin Mines, alleging negligence and non-compliance with the Mines Act in connection with the death of one of the workmen a short time ago. The case comes up February 4th, and will be the first of its kind for over a year. The penalty is between \$100 and \$1,000.

The report that the O'Brien option on the Gillies and Miller claims in the Porcupine had been abandoned came as a great surprise. It was known that Mr. O'Brien was endeavouring to get an extension of the option, and it was understood that he

had been successful, but a few days afterwards all work was stopped. Particular interest was felt in this option, as it was on these claims that the diamond drill was working in an effort to cut the vein at some depth. When the drill was first started and was down a short distance it was figured that it would take a 600-foot hole to cut the vein, so that hole was stopped and another one started at a lower angle. Before this was down very far, however, the option was abandoned and the drill stopped. It is understood that the owners had several good offers for the property, and were not content to extend the option without a large part of the initial payment of \$50,000 being made. Encouraging results are being obtained from the Hollinger properties, which are under option to the Timmins. The main vein can be traced for over 1,000 feet, and the shafts that are being sunk show that the values are going down as far as the shafts have been sunk. When a depth of 50 feet is reached cross-cuts will be run to cross the veins and prove their values. On the claims owned by McArthur & Co., of Glasgow, Scotland, the main energies of the management have so far been directed toward the erection of camp buildings, and as soon as these are completed several shafts will be sunk. It is reported that McCormick Bros., of New York, have purchased the Wilson claims. This property, which consists of eleven claims, is generally conceded to be the best in the district. Some time ago Mr. A. A. Cole, engineer for the Temiskaming & Northern Ontario Railway, made a report on the district.

It is not expected that the phenomenal values found in some places will hold, but it is hoped that the values in the veins will average up to make a good low-grade proposition. Engineers are confidently looking for the appearance of sulphides with greater depth.

The annual report of the Hargraves was very encouraging to the shareholders, as it showed a cash balance of over \$30,000, and ore on hand to the value of \$10,000. The property is looking better than at any previous time in its history.

The Nancy Helen mine has been closed down for an indefinite time. The power plant has been leased to the Cobalt Light Company until the 1st of March.

The Otisse-Curie and the Gavin-Hamilton properties in Elk Lake have assigned. It is understood that there is a likelihood of a settlement being effected and of work being resumed.

Following the starting up of the Colonial mill, that property has shipped a car of ore for the first time in over a year.

BRITISH COLUMBIA.

Rossland.—The local mining situation remains steady and unchanged, with the exception of the recent leasing of the Mayflower mine in the South belt. A good ledge of pay ore has been uncovered in No. 3 tunnel on this property, and Mr. N. Hansen, the lessee, expects to begin shipping on a small scale in a short while. A crew of five men is now at work on the property, and an ore chute from the tunnel to bins near the railway track is being built.

The Le Roi 2, Ltd., is quite active, and is preparing for operations on a larger scale than at present. This concern is asking figures on an electrical hoisting apparatus to replace the present 150 h.p. hoist at the Josie headworks. Preparations are also being made to explore that area of ground north of the No. 1 shaft. Some of the finest copper ore ever produced in this camp has been mined in the No. 1 workings, which are about 650 feet deep. This part of Le Roi 2 property has not been worked for some years. The cross-cut on the 1,300-foot level of the Josie has been driven 100 feet toward the ore zone, and work on this level will be energetically continued.

The Le Roi continues to ship a moderate tonnage each week. Nothing new is heard from the ore discoveries made in the lower levels with diamond drill, but it is understood some indications of good ore have been located. The Consolidated Centre Star-War Eagle group is shipping nearly four thousand tons per

week, and development in the lower levels is yielding a big tonnage of ore.

Resolutions affecting the mining industry, that will be placed before the Associated Boards of Trade, in convention at Nelson, January 25th, will include one from the Rossland Board, that the Government of the Dominion of Canada be requested to coin silver dollars at the Mint in Ottawa. Men interested here would like to see this adopted for two reasons. It would mean an increased use of the .999 fine silver produced at the Trail refinery, and it would probably retire some of the filthy, germ-laden bills now in circulation. A quasi-radical resolution will be considered suggesting the abolition of the present personal tax on merchandise, machinery, stock, etc., carried for the conduct of business. It seems that some of the men connected with the Government have hinted that this tax might be abolished when the finances of the province were in a flourishing condition, and there were good days ahead. As things look now, it is thought that the time is about ripe for a consideration of this measure.

The following change in the Mineral Act will become law on April 1st: "The owner or agent of owner of a mineral claim for which the mining recorder's certificate, under Form 1 of the schedule of this Act, has been granted, shall within three months from the date of such certificate, make application to the Gold Commissioner for a certificate of improvement, and in default of such application being made in such time, such mining recorder's certificate shall lapse and become absolutely void." It seems that there has been much delay in applying for the certificate of improvement in the past, and this measure will overcome that by constraining the owners of mineral claims to prompt action within the specified three months.

The Boundary.—The action of the Granby Consolidated, to sell 13,500 shares of its treasury stock, is looked upon with favour here for several reasons: The amount derived from the sale of this stock (\$1,147,500) even at the preferred figure to present shareholder of \$85 will be more than sufficient to pay off the indebtedness of the company incurred in the purchase of stock in the Crow's Nest Pass Coal Company. Then it is stated by the Granby officials themselves that as there will be no improvements of such magnitude as undertaken last year, a more substantial dividend may be paid than was the case in 1909 (2 per cent.), provided, of course, things remain normally favourable and no disastrous labour or fuel trouble crops up, which possibility is most remote at this writing. The Granby is maintaining a good average in ore shipments, and for the first three weeks of this year has sent 78,532 tons to its Grand Forks smelter, where seven furnaces are working now, one of the battery undergoing some minor repairs. This average maintained for the last week of the month will mean a production of 2,303,500 lbs. copper for the first four weeks of the year, as Granby ore will average nearly 22 lbs. copper per ton and under \$1 in gold and silver. It is thought the Granby will pay from 5 per cent. to 8 per cent. in dividends this year, under favourable operating conditions.

There is not much fear of work being suspended at the mines and smelter of the B. C. Copper Co. over the threatened labour difficulty now that a board of arbitration has been called for under the Lemieux Act. Some phases of the demand of the miners' union for "closed shop" are ridiculous to fair-minded men, and they are not receiving the support they would get were their grievance founded on more substantial ground. The net profits of the B. C. Copper Co. during December last were about \$22,700, and the cost of making the red metal per pound was 10c, as compared with 7.35c in November. This was partly caused by the several holidays and inclement weather interfering with surface mining. Shutting down a big mining and smelting concern easily runs up costs and is quite expensive, though it be but for a day or two. For the first three weeks of the year the B. C. Copper Co. has shipped 29,745 tons of ore from its Mother Lode and Oro Denoro mines.

The Golden Eagle, on the west fork of Kettle River, shipped 120 tons of ore to Granby smelter during the past week. The mine has closed down temporarily. The Riverside property has been purchased by a local syndicate, and work will be started along development lines shortly.

Nelson.—A substantial tonnage of high-grade ore is being sent to the smelter from the Slocan, Nelson and East Kootenay mines, and several new properties have joined the shipping list already this year. The outlook for the coming season is cheerful. There is a good tonnage of ore blocked out in the Ottawa, at Slocan which is under lease. A 14-foot vein of ore is being worked in the Standard, Silvertown, and shipments are being made. A force of over 100 men is now employed at the Van Roi, where about 150 tons of ore per day is being milled. The Silvertown Mines, Ltd., is working the Hewitt and Lorna Doone property. The Molly Hughes shipped 59 tons of ore last week, carrying a quantity of native silver.

An ore body has been opened up in the lower tunnel of the Lucky Jim, carrying from 52 to 53 per cent. zinc, which is considered a rich find. The property is temporarily shut down at this time.

A party of French capitalists, who are interested in the Blue Bell mine, being operated by the Canadian Metal Co., visited the property last week. As a result of this visit it is hoped that the production at the mine will be doubled. With this end in view, steps are to be taken toward the improvement of the reduction plant at Riodel. The zinc reduction problem in this district is a profound problem, but now that the attention of

the mining public is centering on it, there is no doubt that steps will be taken toward its solution.

It is reported that the face of the 360-foot tunnel on the old North Star mine is in ore carrying 60 oz. silver and 40 per cent. lead. Development is now being undertaken to prove the value of the strike.

Vancouver.—It looks as though something definite is to be done at last with the British Columbia iron deposits. Recently J. A. Moore, president of the Irondale Smelting Co., invested \$60,000 in coal lands on Graham Island, and states that it is intended to erect a steel plant on the coast that will cost from a half to a million of dollars. This plant will very likely be on Vancouver Island, where extensive iron deposits have been found. The same concern has invested \$75,000 in the magnesite beds of Atlin. This mineral ($MgCO_3$) is not common, and this deposit is probably the only one of the same character on the continent. One of the uses of magnesite is as a refractory material for linings for the converters used in the basic Bessemer process for making steel. The deposit behind Atlin was bought as an investment.

The Red Cliff Mining Co. now has its boiler and compressor plant at the mine, and will shortly begin the installation. Extensive work is planned for the coming season at Portland Canal. The O. H. fraction near the Portland Canal group has been bonded for \$75,000, and will be worked immediately. There are several rich veins on the property. The owners of the Britannia are spending about \$30,000 per month in development and equipment, and the property is rapidly coming to the front.

GENERAL MINING NEWS.

NOVA SCOTIA.

Halifax.—The coal boring operations in Prince Edward Island which have been in progress for nearly two years, have been concluded. The work has not brought the results which all have so earnestly hoped for. The last borings made were at Miminigash, where a drill had been sent down to a depth of seventeen hundred feet. Work here was brought to a sudden termination a few days ago by the fact that there was a cave in of about one hundred feet of the upper earth, which buried the apparatus and knocked on the head all possibility of continuing the work at that place.

Sydney, Jan. 28.—The present winter up to the present has been one of the mildest experienced here in many years, and shipping men look for an early opening of navigation.

Not since 1902 has there been so much activity in Dominion Coal Co. shipments as there is this winter. The coal carrying capacity of the fleet now in operation is 34,300 tons, as against 16,000 tons last winter.

The above figures represent dead weight capacity. As almost the whole of the coal shipped goes to Halifax, St. John, Portland, or Boston, the steamers of the Coal Company's fleet are able practically to make weekly trips. Fully half the amount shipped for this winter has been from the Sydney piers.

The company looks forward to a very busy season in coal shipment during the coming summer, and is making preparations at the collieries accordingly.

QUEBEC.

Montreal, Feb. 9.—The last hope of the U. M. W. of America was shattered to-day when President Plummer of the Dominion Coal Company refused to meet a delegation of high officials from that order to discuss the Glace Bay strike.

Mr. Plummer absolutely declined seeing the delegates, sending Hector McInnes, K.C., the company's solicitor, to tell them that such a conference would be useless, and would give rise to misconception and misunderstanding; and also for the reason that his policy had already been announced, and that there was no possibility of a change.

Thetford Mines, Que., Feb. 3.—The very mild winter has been a great boon to both Thetford Mines and Black Lake, in as much as it has permitted the Amalgamated Asbestos Corporation to carry forward very extensive plans for improvements and extensions, and the progress already made on the larger contracts indicates that the company will be able to increase its output materially in the near future.

ONTARIO.

Cobalt, Feb. 2.—Sandy Christie and Jas. Hope, two miners, were blown to pieces on Monday afternoon in the shaft of the Silver Leaf mine.

The two men went down the shaft about three o'clock to load some holes. The dynamite had been packed in and the fuses set. Hope lit one fuse and before he noticed anything wrong he started a second.

Some loose powder had evidently been left near the hole for the flame from the end of the fuse leaped to the powder and an explosion followed immediately.

After the second hole had gone off other men ventured down and found the two bodies terribly mutilated.

BRITISH COLUMBIA.

Greenwood, January 26.—Once more work on the great tunnel to Phoenix is in full swing. The newly installed drill compressor started at 9 o'clock on Wednesday morning last. Two hundred and twenty-six feet was driven by hand, and now the rate of progress with the drills will be very much accelerated. There are 22 men employed, superintendent, 8 miners, 9 muckers, 2 compressor men and 2 blacksmiths. The complete equipment is now ready for continuous work and the management expects to make from 12 to 18 feet per day.

Queen Charlotte, B.C., January 27.—News is just to hand from the camp between Massett and the Yakoun that the diamond drill at work there has struck a large body of coal.

Three seams of excellent coking and steam coal are reported, the largest seam being 9 feet 6 inches at 600 feet below the surface.

MINING NEWS OF THE WORLD.

GREAT BRITAIN.

It was finally agreed at a meeting of owners and miners in Newcastle-on-Tyne, on January 15th, that further meetings should be held between the men's representatives and the managers at the individual collieries, with a view to endeavouring to arrive at a settlement on the lines of the conversation that had taken place that day between the representatives of the two associations.

The South Wales and Monmouthshire Coal Trade Conciliation Board continued negotiations at Cardiff, January 26th for the drawing up of a new agreement between the coal owners and the miners. Both sides were chiefly engaged in holding separate conferences for the purpose of deciding upon their future course of action, and so much time was occupied in this manner that it was decided to adjourn the discussion on the most important questions until today, when the chief topic will relate to the minimum and maximum wage difficulty. It is expected that both parties will put forward modified proposals.

GERMANY.

Notwithstanding economic depression prevailing during the greater portion of 1908, the production of coal in Germany in that year reached record figures. It amounted to 148,966,000 tons, as compared with 148,621,000 tons in the preceding year, or an increase of 345,000 tons, and the output of lignite, or brown coal, totalled 68,355,000 tons, as against 66,450,000 tons, being an increase of 1,905,000 tons. The imports of coal in 1909 amounted to 12,198,000 tons, as contrasted with 11,661,000 tons in the previous year, or an increase of 537,000 tons. On the other hand, the exports of coal were 23,350,000 tons, as against 21,190,000 tons in 1908, being an advance of 2,160,000 tons. The total consumption of coal in Germany amounted to 137,814,000 tons, as compared with 139,091,000 tons in 1908, thus showing a falling off of 1,277,000 tons.

Berlin, January 15th.—The "Tageblatt" points out that, in consequence of the introduction of the miners' eight hours' day in England, the British steel and iron manufacturers have been obliged to raise their prices, thereby enabling their German competitors to raise their prices, which had sunk to a very low level. Since then there has been a genuine revival in the home markets, so that the German iron and steel industry is able to count on an active trade and higher prices. As a result of the coal strike, a number of iron works in the north of England are closing down, and if the strike is protracted great advantages will certainly accrue to the German coal and iron industries. The "Tageblatt" points out that as a consequence of the cessation of the importation of British coal the German consumer will be compelled to pay higher prices for German coal, and concludes, therefore, that in the general interest it cannot wish for a protracted strike in England.

AUSTRALIA.

Sydney, January 15th.—The ballot among the Southern miners has resulted in favour of the acceptance of the award of the Wages Board.

Sydney, January 25th.—The position of the Northern and Southern miners remains unchanged. The judge on the Northern Compulsory Board has determined to proceed to compel the attendance of witnesses. The s.s. "Quito," the first government coal ship, is expected to arrive to-night from Calcutta. Free labourers have been engaged to unload her. The Crown is prosecuting nine miners at Maitland for obstructing workers in the local colliery.

NEW ZEALAND.

New Zealand is likely to become an important oil producer at no distant date, and extensive prospecting operations are in

progress. An area some 300,000 acres in extent, near Gisborne, in the North Island, has recently been taken up, and will no doubt shortly be the subject of a prospectus. From other parts of the world comes news of active operations, and among pending flotations are the Timor Oil Fields, which is being formed to acquire property in the Dutch East Indies, while a concern having interests in Madagascar is also expected to make its appearance shortly. In California a great demand for oil lands is reported, but the supply has now become very limited. Favourable reports are to hand from Angola and the Portuguese territories of West Africa.

RHODESIA.

Rhodesia, like the Rand, managed to create a fresh record in its gold output for the past year, but, also like the Rand, it did not make so much progress as in 1908. The total production of £2,624,000 in 1909 was an increase on the previous best in 1908 of nearly £100,000; but, on the other hand, 1908 gained as compared with 1907 nearly £350,000.

CHINA.

The directors of the Pekin Syndicate announce that the output and sales of coal for the month of December were:—Output, 23,350 tons; sales, 30,000 tons; boiler consumption, 1,850 tons.

UNITED STATES.

Primero, Colorado, February 1.—Of the 150 miners employed in the Primero colliery of the Colorado Fuel and Iron Company, fully one-half are victims of a gas explosion that took place this morning at 4:30 o'clock. Both fans were shattered by the explosion. It took three hours to repair them. 24 bodies have been already taken out by rescue parties equipped with breathing helmets. One miner was rescued alive. Numbers of miners volunteered to aid in the search. The work of superintendent J. F. Thompson was notably heroic. He was twice overcome by gas.

Ely, Nev.—The work of retimbering the new shaft of the Giroux company is progressing at the rate of 15 feet a day, which insures the completion of the shaft not later than the middle of March. Sinking has been commenced from the bottom of the shaft and will be continued, it is said, until the 2,000-foot level has been reached.

The Giroux shaft is 18 x 10 feet, inside dimensions. There are five compartments, one 10 x 6 for a double-decked cage which is to handle men and timber. Thirty-five men can be taken at a single trip and a car of 9 x 6 timber can be run onto the cage, lowered to the point desired, and then run off on the level, without any shifting. There are two skip roads each 4½ x 5 feet and the rest of the shaft is taken up with ladder and pipe-ways cut up to the best of advantage. A platform running on guides will be provided for pumpmen and pipemen, so that inspection of these lines may be made readily and properly and new lines added as may be needed.

Cherry, Ill., February 1.—Work was resumed in the St. Paul mine to-night by scores of men, following the removal late to-day of the hermetic seal that had kept the mine closed for two months. Efforts will be made to clear the mine of noxious vapors, wall-in any smoldering fires and recover the 160 odd dead bodies of miners who have lain entombed since the fire of November 13th.

Mine experts in oxygen helmets descended 350 feet to the bottom of the shaft and reported that an unprotected man could not live a minute there. Accordingly, efforts are now being directed to clearing the mine of poisonous gases. No one will venture to estimate when the bodies can be removed.

COMPANY NOTES.

It is announced that the quarterly dividend of 3 per cent. due February 1 has been passed by the directors of the Coniagas Mines Company.

Last quarter the dividends were recommenced, the previous quarterly payment having been passed to admit of a concentrator being built.

B. C. Copper Company's Earnings.

The British Columbia Copper Company, in its fiscal year ended November 30th last, earned 10 per cent. on its capital stock, which prior to increase amounted to \$2,515,000.

Coal and Coke Company Meeting.

The annual general meeting of the Western Coal and Coke Company will be held February 14, in Montreal. Books will be closed from January 31 until after the meeting.

Coal Pfd. Dividend.

The Dominion Coal Company has declared the regular half-yearly dividend on the preferred stock of 3½ per cent., payable February 1, to stockholders of record January 21.

CROWN RESERVE MINING COMPANY, LIMITED— REPORT OF THE GENERAL MANAGER.

Cobalt, Ont., 25th January, 1910.

To the Directors:

Herewith follows report of the operations of the company for the year ending December 31st, 1909.

Mine Development.

The No. 1 cross-cut was driven across the lake to the north boundary, and cut vein No. 14, besides several small stringers. About 365 feet north of the shaft the diabase was encountered; no veins were cut beyond this point. This cross-cut proved, however, that the diabase was farther north than expected, due to the northeasterly dip of the conglomerate, giving the property a greater area of the vein-bearing conglomerates with depth than was expected. The No. 2 cross-cut was driven 536 feet and then stopped, as it was considered dangerous to go farther on this level because of water. This cross-cut exposed veins Nos. 15, 17, 24, and others. A solid concrete wall was put in the face of this cross-cut, and at present the development of this cross-cut is being done by means of a flat diamond drill hole, which is now in 315 feet. Silver assays were obtained between 191 feet and 195 feet, although we were unable to get the cores at these points. (Since January 1st another vein has been struck at 420 feet.) The practice of installing heavy doors in concrete frames was continued, so that any portion of the mine can be isolated, practically eliminating any chance of danger to the mine from water.

In all, 24 veins were exposed by cross-cuts Nos. 1 and 2, although some of them may prove to be stringers of the same veins. The most important veins, besides the Carson vein, are Nos. 2, 14, 17 and 24.

Carson Vein.—On the Carson vein the east and west winzes were sunk to the 200-foot level, and then connected by a drift. This vein did not have any particular change until the 165-foot point in the west winze and 175-foot point in the east winze were reached, when the Keewatin was encountered and the vein became smaller and more shattered, and the values decreased somewhat; the vein, however, still shows good values at the 200-foot level, and in one place it is about 9 inches in width and assays 4,700 ounces. Besides this there is good milling ore for about 4 feet adjoining the rich ore. However, it cannot be said that the vein at this level is as phenomenal as it was in the conglomerates above, although it is better than the average high-grade vein in the Cobalt District. The east winze at the present time is being sunk from the 200-foot level to the 300-foot level, and shows the vein strong at the bottom at a depth of 225

feet. In the development work on this vein about 800,000 ounces were obtained, and stoping on this vein during the year produced 2,750,000 ounces.

No. 2 Vein.—The No. 2 vein runs about east and west, and is about 25 feet north of the Carson vein. It averages about 3 inches in width of heavy smaltite ore assaying about 3,000 ounces. This vein has been stoped for a length of 115 feet and a height of 15 feet at the 100-foot level, the stope producing approximately 70,000 ounces.

No. 14 Vein.—The No. 14 vein when cut was about 3 inches in width, and assayed about 6,000 ounces, but the shoot of this ore was only about 20 feet in length and then ran into smaltite ore assaying about 200 ounces. This vein has been drifted on for 300 feet, but only stoped for a length of 90 feet and a height of 10 feet, the ore in the stope being quite spotty. About 30,000 ounces has been taken from this stope.

No. 17 Vein.—The No. 17 vein when cut was about 4 inches in width, and assayed about 4,000 ounces. The vein was drifted on in a northwesterly direction for 80 feet, showing continuous rich ore, which then split up into two stringers running parallel to each other, one being 2 inches and the other 1 inch in width, and each assaying about 3,000 ounces. A winze was sunk to the 200-foot level, and shows continuous ore for the whole depth, averaging 4 inches in width, and assaying 4,000 ounces. At the 200-foot level this vein was drifted on for 150 feet, and shows rich ore from 1 to 6 inches in width. With the exception of the Carson vein, this is the most important vein at present discovered. In the development work alone it has produced 250,000 ounces, and no stoping has been done at the 200-foot level. There is ore blocked out on three sides 100 feet high and 150 feet long. The most significant fact that the development work on this vein has proved is that the ore and values at the 200-foot level are better on this vein at least than on the 100-foot level.

No. 24 Vein.—Vein 24 is 60 feet east of vein No. 17, and runs almost parallel to it. The ore is from 2 to 4 inches in width, and averages over 4,000 ounces. A drift was run at the 100-foot level for 130 feet in continuous rich ore and a stope about 5 feet high was taken out above it. At present a winze is being sunk from the 100-foot level to the 200-foot level, and it is now down 15 feet, and shows about 4 inches of rich ore at the bottom. This vein has produced about 150,000 ounces, practically all taken from the 130 foot drift and the small stope.

Besides these veins, there are others that are still undeveloped and that will more than pay for the cost of developing them, and some will undoubtedly show very substantial profits.

The mine plans accompanying this report show all underground work in detail.

Total Mine Development.

	1909. Feet.	Total. Feet.
Sinking and raising	465	705
Drifting	1,539	1,825
Cross-cutting	2,042	2,402
	4,046	4,932
Stoping in cubic feet		105,050
Stoping in square feet of vein area		12,470

Plant and Equipment.

During this year we added quite materially to our plant and equipment, as we found our plant of last year inadequate. The new buildings include a bunkhouse 56x36 feet, for the accommodation of 125 men, and an addition 24x26 feet to the dining-room, so that this will now accommodate 200 men at one sitting; storehouse 35x25 feet; carpenter shop 45x30 feet, equipped with a band-saw and buzz-planer; and an addition to the office,

24x18 feet. The powerhouse was made larger, and another 100 h.p. boiler installed, also a twenty-drill compressor in place of the six drill machine. We replaced the hoist with a larger one capable of lifting a load of 7,000 lbs. at 300 feet per minute, and added a 20 kilowatt dynamo, besides fire pumps, condensers, etc., so that our equipment is of the highest efficiency necessary for the development of this property. We also erected six double and five single houses on the property of the Imperial Crown Mines, Limited, who granted us a lease for this purpose. These houses are occupied by our married employees, and will pay for themselves in rental in five years.

Ore Production.

The total production for the year 1909 was 4,034,325 ounces of a gross value of \$2,080,156.08 produced from 3,092 tons of ore, as compared to the production of the year 1908 of 1,798,954 ounces of a gross value of \$910,350.62 produced from 650 tons.

The total production in detail follows:—

			Weight.
High grade			1,513,895 lbs.
Low grade			4,664,578 lbs.
Bullion			76,152 ozs.
Total			3,093 tons
Ounces	Gross	Freight and	
Silver.	Value.	Treatment.	Net Value.
3,622,029	\$1,867,509.22	\$126,609.83	\$1,740,899.39
346,085	176,820.64	56,190.26	121,630.38
66,211	35,826.22	2,871.07	32,955.15
4,034,325 ozs.			\$1,895,484.92
Average Value of Ore.			
		Ounces per ton.	Value per ton.
High grade		4,784.7	\$2,466.96
Low grade		184.4	75.81
Total		1,304.6	\$672.66

Bullion, 869 thousand fine. Average price received for silver was 51.56c.

Cost of Ore, 1909.

Smelter charges and deductions	\$184,671.16	
Ore handling and marketing	39,984.31	
Mining and development	97,717.74	
Power and light	29,826.67	
Maintenance building, plant and equipment.....	13,664.10	
Mine, general expense	19,389.31	
Superintendence and travelling	12,332.00	
Head Office expenses	4,225.46	
Depreciation at 20 per cent. on B. F. & E.....	14,330.15	
Total		\$416,140.90
New buildings, plant and equipment	\$65,403.26	
Total cost of silver per ounce	1031c	

This shows a net profit of 41.25c per ounce, or a total net profit of \$1,664,015.81 for the year. This is equivalent to 83.20 per cent. of the capital of the company and 93.07 per cent. of the dividend-paying stock.

Conclusion and Recommendations.

Owing to the irregularity of size and values of the veins in the Cobalt District and the great element of error in the sampling of very high grade ore, it is almost impossible to estimate absolutely ore blocked out, especially in the Crown Reserve, with the lake overlying the property; such an estimate would be little more than a guess. I might say this, however; the mine up to date produced roughly 5,800,000 ounces, of which the Carson vein has produced in development below the 100-foot level 800,000 ounces, and the other veins a total of 500,000 ounces, so that the stope above the 100-foot level on the Carson vein has produced about 4,500,000 ounces, or a little over \$2,250,000.00. There is still as much ore left at this level on the Carson vein

alone as has been extracted, and the whole stope between the 100 and 200 foot levels is practically intact. Besides this, veins Nos. 2, 14, 17 and 24 have rich ore shoots blocked out, and some of the other veins will be good producers.

For the coming year, I recommend that stoping be done on veins Nos. 2, 14, 17 and 24, so that they may produce a good percentage of the ore shipped, and that the other smaller veins be developed at the 100-foot level; that the Carson and No. 17 veins be exploited to the 300-foot level, and that at the 200-foot level the No. 2 cross-cut, with other cross-cuts running north from it at 500-foot intervals, be run for the entire length of the property. This, our diamond drilling and development work on the Kerr Lake, has shown the presence of veins on our property farther east, which these cross-cuts will undoubtedly cut.

Although the Crown Reserve mine produced practically one-sixth of the entire output of Cobalt during the past year, it is in much better physical condition, and has a great deal more ore blocked out than it had a year ago at this time, and I can see no reason, if the above recommendations be carried out, why the coming year should not be at least as successful as the past.

Very faithfully yours,

(Signed) S. W. COHEN,

General Manager.

CROWN RESERVE MINING COMPANY, LIMITED.

Statement of Assets and Liabilities, 31st Dec., 1909.

Assets.	
Mining lands, minerals, mining rights,	
buildings, plant and equipment, etc.	\$2,085,014.59
New buildings, plant and equip. (1909)	65,403.26
Stores and supplies on hand	9,287.12
Ore on hand	50,000.00
Due from smelter	395,982.95
Cash on hand and in bank.....	313,400.77
Accounts receivable	1,715.33
	\$2,920,804.02
Liabilities.	
Capital stock	\$1,999,957.00
Royalty accrued and accruing to Gov't.	87,548.28
Accounts payable, current	18,701.22
Dividend No. 7, due Jan. 15, 1910.....	265,322.10
Surplus	549,275.42
	\$2,920,804.02

LE ROI MINING COMPANY, LIMITED.

The tenth ordinary general meeting of shareholders of Le Roi Mining Company, Limited, was held on January 18th, at Salisbury House, London-wall, E.C., Mr. T. D. Grimke-Drayton, J.P., presiding.

The Secretary (Mr. Harold A. Wesson), having read the notice convening the meeting and the auditors' report,

The chairman spoke in part as follows: Gentlemen,—From the report and accounts you will see that, after deducting the sum of £34,026 8s 9d on account of exploration and development work, depreciation at mine and smelter, and other items, details of which are set out in the report and accounts in your possession, the operations for the year resulted in a net loss of £9,701 14s 1d. This is, of course, very disappointing, but I have no hesitation in saying that it is unavoidable. The absence of profits is to be attributed entirely to the lack of any considerable bodies of payable ore. At our meeting last year I told you we had discovered some rich ore in the 1,650 ft. level—the bottom level of the mine. For three or four months work done on this ore body indicated that it was likely to develop into a large and a very valuable asset. Unfortunately the rich ore found on this level, which was of considerable size, was not found on the winze level below, nor on the level above. In carrying on our work we came across large quantities of ore too low in value to handle.

Under the circumstances it soon became evident that a great deal more work must be done to ascertain if the extension of the

rich ore found on the 1,650 ft. level could be discovered on other levels; or if, by means of diamond drilling, payable ore could be found at greater depth in the mine. To carry out an exploration and development scheme of such magnitude necessarily involved very careful consideration. Mr. Carlyle, our consulting engineer went out to Rossland last winter and spent some weeks there looking thoroughly into everything on the spot, both above and below ground. Mr. Carlyle recommended that work should be suspended at the mine and smelter for a time until a large scheme of exploration work could be decided upon and the necessary arrangements made to carry out the same. Mr. McMillan was also at the mine, and after these gentlemen had thoroughly looked into the matter, along with the other officials at Rossland, they agreed in recommending the comprehensive scheme of exploration and development which is at the present moment being carried out. This work involves not only a large amount of diamond drilling on the lowest levels of the mine, but also arranges for thoroughly testing the property by means of the diamond drill for a depth of about 1,000 feet below the 1,650 foot level. In addition to this, a good deal of work has been and is being done by means of diamond drilling and by drifts and cross-cuts in other parts of the property. You will remember that a short time since you were notified that two finds of ore had been made by means of the diamond drill and that work was under way by means of cross-cuts to reach the places indicated. What the final outcome of this development work may be we cannot state, but you may depend upon it that, if any considerable bodies of payable ore exist in the mine, we are pretty sure to find them by means of the work we are now carrying out. The future depends upon the discovery and opening up of important bodies of pay ore. If we find these there will be no difficulty in making profits. No one has a greater interest than your directors in achieving satisfactory results, and you may depend upon it that everything that can be done is being done in your interest. I am pleased to say that the work we have been doing is approved by the shareholders at large, as shown by the fact that we are to-day supported by proxies representing nearly one-half of the capital of the company.

Mr. A. J. McMillan (managing director) said: There is but little to add to the speech made by the chairman, and to the reports already in your hands. You will notice that during the year we have spent liberally on exploration and development,

and that the whole amount spent has been written off. Owing to the fact that so much of the exploration work done during the last year or two in the older parts of the mine failed to locate large bodies of ore of commercial value, and seeing that the high grade ore discovered on the 1,650 foot, or lowest, level of the mine last year, and to which reference was made at the last annual meeting, did not apparently continue any considerable distance below that level, it became necessary to deal with the question of exploratory work in a bold and comprehensive manner, and lay out our plans upon a large scale. After the most careful consideration, the work now under way was decided upon—work involving a great deal in the way of cross-cuts and drifts, and about 30,000 to 40,000 feet of diamond drilling in many different parts of the property, including portions hitherto unworked; and giving special attention to the lowest levels in the mine and the testing of the vein by means of boreholes for 1,000 feet below this. There is a large amount of low grade ore in the mine and on the dumps, amounting to some hundreds of thousands of tons—ore which, though too low to be of commercial value to-day, may some day be valuable owing to the progress in the direction of new and improved methods of treatment and reduction in treatment costs. As you have already been told, in carrying on our diamond drill work we ran into some ore of good value, but a considerable distance had to be driven and a good deal of work done to ascertain the value of these discoveries, the outcome of which is not yet determined. If the values are not in the ore we cannot, of course, put them there, but if large bodies of payable ore exist in the mine I have no doubt we shall discover them, and there will then be no difficulty in making money. Everything possible is being done in order to achieve results satisfactory to the directors and the shareholders alike.

Replying to questions, the Chairman stated that the superintendent of the mine had been looking round for some time for another property, but up to the present he had not found anything good enough to recommend. With regard to the development work now in progress, Mr. Carlyle, the consulting engineer, informed him that they ought to know definitely the result within the next few months.

Mr. McMillan proposed the re-election of Mr. Grimke-Drayton as a director, which was seconded by Mr. G. W. Wilson, and unanimously agreed to. The auditors were also re-elected.

STATISTICS AND RETURNS

The January output of the Nova Scotia Steel and Coal Co. is as follows:
 Coal, 58,236 tons.
 Ingots, 6,684 tons.
 Pig iron, 5,740 tons.

GOWGANDA SHIPMENTS.

Jan. 1st, 1910.—Blackburn to Copper Cliff	30 tons
Jan. 14th, 1910.—Reeves-Dobie to Thorold	29 tons
Jan. 22nd., 1910.—Reeves-Dobie to Thorold	32 tons

COBALT ORE SHIPMENTS.

Following are the shipments from the Cobalt camp for the week ending Jan. 28, and those from Jan. 1, 1910, to date:

	Jan. 28	Since Jan. 1.
	Ore in lbs.	Ore in lbs.
Buffalo		112,144
City of Cobalt		64,000
Cobalt Central	41,299	81,299
Cobalt Lake		132,000
Colonial	63,660	63,660
Coniagas		119,542
Crown Reserve	123,071	368,856

Drummond	664,200
Kerr Lake	302,605
King Edward	49,952
La Rose	123,500 700,531
McKinley-Dar	46,027 144,397
Nipissing	306,852 672,092
O'Brien	64,056
Right of Way	127,963
Temiskaming	60,000
Trethewey	65,000 65,000

Ore shipments for week ending Jan. 28 were 769,409 pounds, or 384 tons. Total shipments from Jan. 1 to Jan. 28 were 3,792,297 pounds, or 1,896 tons.

Following are the shipments from the Cobalt camp for the week ending Feb. 4, and those from Jan. 1, 1910, to date:

	Feb. 4,	Since Jan. 1.
	Ore in lbs.	Ore in lbs.
Buffalo	61,250	173,394
City of Cobalt	65,970	129,970
Cobalt Central		81,299
Cobalt Lake		132,000
Colonial		63,660

Coniagas	61,200	180,742
Crown Reserve	61,444	430,300
Drummond		664,200
Kerr Lake		302,605
King Edward		49,952
La Rose	195,248	895,779
McKinley-Dar.		144,397
Nipissing	300,300	972,392
O'Brien	69,050	133,106
Peterson Lake	49,600	49,600
Right of Way		127,963
Temiskaming	60,000	120,000
Trethewey		65,000

Rambler	4	4
Summit	5	5
Ruth	28	28
Utica	14	14
Other mines		411
Total	2,329	5,405
Grand Total	47,886	180,407

Smelter Receipts.

	Week.	Year.
Granby	25,927	104,579
Consolidated	12,619	36,973
B. C. Copper	9,408	39,203
Total	47,954	180,753

Ore shipments for week ending Feb. 4, were 924,062 pounds, or 462 tons. Total shipments from Jan. 1 to Feb. 4 were 4,716,359 pounds, or 2,358 tons.

B. C. ORE SHIPMENTS.

Nelson, B.C., January 29,—The feature of the ore shipments for the past week was the large number of shippers to the Consolidated Company's smelter at Trail, 33 properties sending in over 12,600 tons of ore. The first shipment to Trail has been made from the Sullivan in East Kootenay, and the Fern, close to Nelson, two properties long idle, but now being extensively developed. Appended are the details:

ORE SHIPMENTS.

Boundary.		
Granby	23,927	104,459
Mother Lode	9,408	38,233
Snowshoe	5,191	14,561
Other mines		1,040
Total	40,526	158,343

Rossland.		
	Week.	Year.
Centre Star	3,643	13,135
Le Roi	581	1,347
Le Roi No. 2	41	145
Velvet		13
Total	4,821	16,654

Slocan-Kootenay.		
	Week.	Year.
St. Eugene	618	1,523
Richmond-Eureka	134	388
North Star	126	282
Blue Bell	198	274
Whitewater	42	203
Queen	23	74
Rambler-Cariboo	45	68
Emerald	96	222
Highland-Buckeye	31	98
Silver Cup	13	143
Yankee Girl	262	543
Granite-Poorman	30	63
Eastmount	31	63
Sullivan	76	76
Maestro	35	35
Silver King	549	549
Duncan	6	6
Fern	7	7
Standard	23	91
Lucky Boy	3	3
Peco	7	7
Ferguson	33	33
Mother Lode	90	90

TORONTO MARKETS.

Metals.

Feb. 8.—(Quotations from Canada Metal Co., Toronto.)
 Spelter, 6 cents per lb.
 Lead, 3.75 cents per lb.
 Antimony, 8 to 9 cents per lb.
 Tin, 34¼ cents per lb.
 Copper, casting 14¼ cents per lb.
 Electrolytic, 14¼ cents per lb.
 Ingot brass, 9 to 12 cents per lb.
 Feb. 8.—Pig Iron—(Quotations from Drummond McCall Co.)
 Summerlee, No. 1, \$23.50 to \$24.00, (f.o.b. Toronto).
 Summerlee, No. 2, \$23.00, (f.o.b. Toronto).
 Midland, No. 1, (off the market).
 Coal Anthracite, \$5.50 to \$6.75.
 Bituminous, \$3.50 to \$4.50 for 1¼ inch lump.

Coke.

Feb. 4.—Connellsville coke, (f.o.b. ovens).
 Furnace coke, prompt, \$2.50 to \$2.60 per ton.
 Foundry coke, prompt, \$3.00 to \$3.15 per ton.
 Feb. 4.—Tin (straits), 32.50 cents.
 Copper, prime Lake, 13.75 to 13.87½ cents.
 Lead, 4.72½ cents.
 Electrolytic copper, 13.50 to 13.60 cents.
 Copper wire, 15.25 cents.
 Spelter, 6.10 cents.
 Sheet zinc, 8.50 cents.
 Antimony, Cookson's, 8.50 cents.
 Nickel, 40.00 to 49.00 cents.
 Platinum, (ordinary) \$29.00 per oz.
 Platinum, (hard) \$34.50 per oz.
 Bismuth, \$1.75 per lb.
 Quicksilver, \$51.00 per 75-lb. flask.

SILVER PRICES.

		New York.	London.
		cents.	pence.
January	22	52¾	24 3-16
"	24	52¾	24 3-16
"	25	52¼	24½
"	26	52¼	24½
"	27	52¼	24½
"	28	52¼	24½
"	29	52¼	24½
"	31	52	24
February	1	51½	23¾
"	2	51¾	23¾
"	3	51½	23¾
"	4	51¼	23¾
"	6	51½	23¾