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THE FIFTEENTH ANNUAL MEETING OF THE CANADIAN MINING INSTITUTE

Much was expected of the Institute's fifteenth annual meeting. Expectations were not dissapointed. The Ottawa Branch appointed a vigorous Executive Committee. Aided by members of the Geological Survey and others, this committee did its duty nobly. In fact, there was hardly a dull moment during the three days of session. The hotel accommodation and service were hyper-excellent. The new Chateau Laurier is a thing of beauty. Ottawa at last possesses an hotel for which it need not blush. The outstanding features of the whole meeting, apart from certain papers to which reference will be made later, were the business sessions, the smoker and the dinner. At the business sessions there were discussed resolutions submitted by two prominent members, supported by several others and criticized by several. The resolutions were defeated; but their end is not yet. In essence they met the approval of the whole assembly. In form they were not acceptable. In view of subsequent development we can see no adequate reason for the postponement of an obviously necessary duty. Sooner or later the Institute will pass these or similar resolutions.

The resolutions in question were foreshadowed in an editorial in our issue of March 1st. Since they were intended to embody the opinion of the Institute, and did not take the form of a memorial to the Government; and since no more effective occasion could possibly have been chosen, it seems indeed superfluous to have permitted considerations of expediency to have overruled all else. A request for an entirely autonomous Domonion Department of Mines is reasonable. They express the Institute's need of more action—participation in legislation is neither undignified nor untactful. To impress the importance of the mining industry upon the country's representatives is neither untimely nor reprehensible. In fact, both the Premier and Sir Wilfrid Laurier gave evidence in their admirable speeches on Friday night of their general desire to do everything possible for the industry. We believe that both might have spoken more strongly had they had as a working basis a carefully worded resolution from the Institute. Hence it follows that a rare opportunity was missed. It remains for the Council to take the matter up as promptly as is feasible. In fact, a letter vote may prove a satisfactory remedy for the miscarriage at Ottawa.

The reading of Dominion and Provincial statistics brought out a most satisfactory state of affairs. The enormous growth of the mining industry during 1912

was amply demonstrated. His Royal Highness the Duke of Connaught, Governor-General of the Dominion of Canada, formally opened the proceedings in a felicitous and graceful speech. His Royal Highness, moreover, had the privilege of listening to a description of the Sudbury ore deposits by Dr. A. P. Coleman.

Dr. Coleman used none but a few necessary technical terms, and it would be hard to conceive of anything more lucid, instructive and interesting than his brief talk. Would to high Heaven all speeches were like his!

It is a matter of congratulation that the Institute can command such sterling papers as those presented by Dr. James Douglas, to whom, by the way, all the members should be grateful for his unceasing and active interest in the society. Of the great bulk of the papers read it may be asserted that they were well up to the average. Professor H. E. T. Haultain's address on "The Geologist" was a carefully prepared statement on a very delicate subject. Not only was it well received, but it excited more discussion than did any other. It was at once an appreciation of the geologist and calm, though searching, analysis of the relationship subsisting between him and the mining engineer. It was well and heartily received.

The brief announcement on the programme that, on Thursday evening, "a smoking concert will be held in the ball-room of the Chateau Laurier at 8 p.m.," was totally misleading. An enthusiastic audience was treated to a "Diastrophic Musical Tragedy," the alteration titles of which were, "The Mining World, or the Stinging Wildcat of Cobalt." Two of the leading characters in the tragedy were studied replications of two eminent Canadian geologists—one of whom has not been unconnected with Cobalt, the other not far distant from the presidential chair. Both were portrayed to admiration. The remaining characters were composite pictures of types ranging from the bemonocled English expert to the capable bartender. While the bar was the real motiff of the play, there was sufficient geology intermixed to serve the true and right purpose of confounding facts. Intelligent as was the audience, it is nevertheless a sad fact that many of the best points passed without applause. The apparently unrehearsed incidents of the play threw new light upon the characters of Messrs. Barlow, Denis and Obalski. These were the actual culmination of the tragedy. The audience was not infrequently moved to tears.

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As for the annual dinner it is difficult to speak in terms of too warm appreciation. The presence of the Premier, Sir Wilfrid Laurier and of other distinguished guests, lent diginity and meaning to the occasion. The speeches of both the first-named gentlemen and of Senator Pope were of prime importance to the future of the industry. The position of those who submitted the rejected resolutions was fully sustained.

To the Ottawa Branch the success of the meeting is in a large measure to be credited. They spared no pains. The President, Council and Secretary did all that in them lay to further that success. Special thanks, of course, are due to His Royal Highness, the Duke of Connaught, to the Rt. Hon. R. L. Borden, to Sir Wilfrid Laurier and to all the eminent gentlemen who honoured the convention with their presence. It is much to be regretted, however, that for the first time in years the Domonion Minister of Mines did not appear either at the ordinary sessions or at the dinner. Comment would be unfair, as we are ignorant of the reasons for the Hon. Mr. Coderre's apparent oversight. Yet it may be pointed out that the situation is open to several interpretations.

The praiseworthy attempt to arrange in groups the papers read was not as fruitful of good as we had hoped. Discussion lagged. The remedy for this is in the hands of the members. The President and the Secretary obviously did their best. However, this word of dispraise must not be taken too seriously. We may add that the papers themselves made amends for any defective arrangements. Possibly, and the matter can only be determined by trial, few papers might be presented.

* * * *

But in all essentials, in goodfellowship, in professional gain, in academic disquisition, and in social import, the fifteenth annual meeting of the Canadian Institute will go down into history as one of the most remarkable in the society's annals.

CANADIAN MINING INSTITUTE ANNUAL MEETING 1913.

DR. A. E. BARLOW'S PRESIDENTIAL ADDRESS.

Before commenting on the main theme upon which I propose to address you on this occasion, it is fitting that I should make some reference to the work of the Canadian Mining Institute during the past year. To occupy the office of President of an Association such as ours, is, indeed, a high honour, but it also represents a heavy responsibility. I have been particularly fortunate during my tenure of office in receiving the loyal and enthusiastic support of the members, and it is most gratifying to be in a position to state that the Institute to-day is in a better and more flourishing condition than at any time in its history. If in the past there have been from time to time factional differences, these have now disappeared and in their place we have

harmony and good will. Occasionally, however, a complaint is heard emanating usually from younger members of the society, that the Council is not sufficiently liberal in its support of the local branches or sections. The majority of those present to-day will doubtless remember that the financial assistance to branches was a question thoroughly discussed at the annual meeting held in Montreal four years ago (1909). At that meeting it was definitely decided that it would be unwise to adopt a policy that would cripple the parent association, and might well lead to its bankruptcy. The present sound financial position of the Institute is due to the conservative policy that the Council has persistently followed. The enviable position which the Institute occupies is largely due, therefore, to the unselfish interest and willing devotion of its officers and individual members. As a matter of fact, the members whose admission to the Institute is recent, that is to say, within the last four or five years, get a great deal more by way of return for their annual subscriptions than did their seniors in point of membership. The Canadian Mining Institute at the present time gives in actual monetary equivalent at least as good a return to its members as does any similar society in the world, while in comparison with many this consideration is much greater. Only recently I had occasion to refer to some of the earlier volumes of the Journal embodying the transactions of the society, and any member who will do the same and will compare these earlier publications with the annual volumes now issuing, will be as agreeably impressed as I was with the extraordinary difference from every point of view. The first volume of the transactions published in 1898 contains 66 pages, inclusive of the papers, reports of the general meeting, annual meetings, constitution and by-laws, and list of members. The next three volumes never exceeded 350 pages and were similarly inclusive of all the activities of the society. Many of the papers then submitted and published would unquestionably be rejected by our present Publication Committee. Errors of statement as well as those of typography are noticably frequent. In short, these earlier volumes, both as regards subject matter and manner of treatment are far from comparable with the Journals of the proceedings of the last few years, comprising as they do, volumes of 700 pages and upward of well written, carefully edited and adequately printed theses of a very high average quality.

With further reference to Branches, it may be affirmed that the Council appreciates the benefit accruing to the Institute as a whole from their establishment, and, if conditions permitted, would gladly contribute to their support. But as this is not at present possible, it is necessary that the officers of the respective Branches should encourage among their members that same spirit of unselfishnes which has ever characterized the Institute. If such an attitude be maintained and strengthened, the sphere of influence of the Institute will indeed be extended.

As has been well said by a former President, the Canadian Mining Institute represents an industry, not a profession. With this fact before us, and remembering the necessarily more open membership qualifiiation, there is evidently necessary a much greater degree of that esprit de corps which contributes so largely to the success even of those exclusive professional associations. Apropos of the increase of membership it is gratifying to note that last year constituted a record, the accessions representing no less than 197. The total membership at the end of February (1913) was 1,052, classified as follows:

MEMBERSHIP.

	Dec. 31, 1912.	Elected in 1913.	Resignations.	1913.
Patrons	5	..	..	5
Honorary	3	..	..	3
Corresponding	13	3	..	18
Ex-Officio	31	..	..	31
Members	737	22	5	754
Associates	125	3	5	123
Life	8	..	..	8
Students	15	..	..	15
Affiliated	97	..	..	97
	1,034	28	10	1,052

To the Past-Presidents and Council of the Institute I desire to express my hearty appreciation and thanks for their earnest co-operation and unity of purpose, without which the present eminently satisfactory condition in the affairs of the Institute would have been impossible.

THE NATIONAL IMPORTANCE OF MINING.

The subject of my Presidential adress, a subject of great interest, no doubt, to all members of the Canadian Mining Institute as well as to the general public, is "The National Importance of Mining." The title is by no means new or original, for under this same caption in 1902 one of our Past Presidents, Mr. John E. Hardman, presented a paper which, as he explained, he chose rather than the more specific title of "Government Aid to Mining," for the reason that he wished to emphasize the duty of the nation rather than the duty of the provinces to encourage an industry which has grown to be of such great importance to the Dominion. Mr. Hardman, assuming "that the national importance to which the industry of mining has attained, is axiomatic, proceeds to discuss how the Federal Government can best assist and promote such an industry, not only to greater dimensions, bu also to greater perfection, while still preserving and maintaining fidelity to that branch of the British North America Act by which the control and administration of minerals found within the borders of any particular province was vested in that province." This paper and the discussion following, which was shared by many mining men of prominence in Canada, afforded much necessary information and opinion on this even now timely subject. Our Secretary, Mr. H. Mortimer-Lamb, at this meeting, taking as his text, "State Aid to Mining in Australasia," will present some analogies and conclusions as to governmental assistance to the mining industry.

In this address, however, I do not propose to consider this aspect of the question, but simply to present in facts and inferences regarding the growth and relative importance of mining in Canada, especially in comparison with other industries that depend directly on the exploration and utilization of our natural resources. Minerals, in the widest acceptation of the term, are the basis of the business of mining. They are used either directly or indirectly in every branch of industry, so that it may fairly be said that the measure of a

nation's civilization and progress is directly proportionate to the development of its mineral resources, especially those of coal and iron. Cities, towns and even villages, often have their location determined by the presence of some mineral of economic importance; while others, again, owe much of their importance to such proximity. The great centres of industrial activity are directly dependent for their growth on an adequate supply of the raw minerals or mineral products. The might and power of England, as well as the extension of the Empire of Greater Britain to all parts of the habitable globe, are primarily traceable to the occurrence within this tight little island of mineral resources that are unique for their abundance and variety. The rise to eminence and wealth of the United States of America has accompanied the development and utilization of the mineral resources. In addition, each individual State included in the republic owes much of its importance to the possession of minerals whose exploitation has added to the comfort and wealth of its inhabitants. Thus, Alabama has coal and iron; California, gold, quicksilver and petroleum; Indiana, natural gas, building stone and coal; Maine, granite; Michigan, copper and iron; Minnesota, iron; Missouri, lead, zinc and iron; New Jersey, zinc, marble and clays; Ohio, coal, building stone, natural gas and petroleum; Pennsylvania; coal, iron and petroleum; and Tennessee and Vermont, marble.

There are four principal industries based upon the development and utilization of our natural reesources. In the value of their production, agriculture is preeminently first in rank, representing in 1911 a total of $565,711,600. The mineral industry is easily second, with a production in 1910 valued at $106,823,623. In 1910, it was nearly equal in value to the production from the fisheries and forests combined. The value of these two latter in 1910 was $113,954,433. (Forestry $83,989,000; fisheries, $29,965,433).

The relation of the mineral industry to the existing railways also brings out forcibly the importance of mining. This connection is ably illustrated in a paper submitted by Dr. James Douglas to the Institution of Mining and Metallurgy at its nineteen session (1909-1910) entitled "The Influence of the Railroads of the United States and Canada on the Mineral Industry." (Vol. XIX, pp. 2-56). One of the tables quoted shows that the freight supplied to the railways by the mines is far in excess of that contributed by any other branch of national activity. Thus in the United States in 1900, the products of the mine, according to the Interstate Commerce Commission, contributed 52.59 per cent. of the total freight carried by the railways, manufacturers ranking second with 13.41 per cent. In 1906 the products of the mines had increased to 53.09 per cent. of the total freight carried, while manufacturers were again second with 14.81 per cent. In Canada, in 1908, of the total freight hauled by the various railroads in operation, the products of the mines accounted for 35.92 per cent. of the total, while forestry products ranked second in importance, with 20.49 per cent., and agriculture third, with 14.91 per cent.

In order to obtain a true perspective of the national importance of mining to Canada, a brief historical outline seems necessary:

The first recorded mining excitement relating to Canada, was that occasioned by the discovery of some mica reported to contain a considerable proportion of gold, brought back to England by Sir Martin Frobisher in 1576. The great expectations aroused by this find inspired a second and even a third voyage, and the captain was specially directed by commission to search for this gold ore rather than for the discovery of the (Northwest) passage. On the second voyage, in 1577, it is related that they took 200 tons of glittering ore on the southern side of Frobisher's Strait, "but upon tryall made, it proved no better than blacklead and verified the proverb—All is not gold that glistereth." The third voyage, undertaken in 1578, for the purpose of founding a colony and collecting ores, was barren of results.

The limonite or bog iron ore deposits, in the district of Three Rivers, were described as far back as the latter part of the seventeenth century, and in 1737 a blast furnace was erected and smelting operations undertaken which have been carried on more or less continuously to the present time. The existence of workable deposits of copper in the vicinity of the Great Lakes, had long been known, but in 1767 a trader named Henry who had passed the winter at Michipicoten, reported the existence of lead at Maminse and of grey copper ore at that and various other places. In 1770, a company was formed in England, but the narrowing of the vein to 4 inches at a depth of thirty feet, the difficulty of procuring and maintaining mines at so great a distance from any centre of civilization, the remoteness of any market for the ore, as well as the absence of facilities for transportation, rendered these first attempts abortive.

The first mention of the occurrence of coal in Canada, as also in America, is contained in a small book published in Paris in 1672; but mining was not undertaken until 1720, when an opening was made on the north side of Cow Bay, from which coal was obtained for the men working on the fortifications of Louisburg. During the next sixty years the mining of coal was carried on in a desultory fashion, but from 1784 to 1788 the Government itself carried on systematic mining operation on the northwest shore of Sydney Harbour. From 1788 to 1826 these mines were either leased to individuals or worked by the Government, the output varying from 200 to 1,200 tons per year. In 1826 and 1827 the General Mining Association acquired all the ungranted mines and minerals of Cape Breton, and in 1830 the first shaft in the province was sunk on the main seam on the west side of Sydney Harbour.

Douglas, the celebrated botanist, discovered the Blue Bell (silver-lead) mine on Kootenay Lake, British Columbia, in the early twenties. Coal was discovered at Fort Rupert, Vancouver Island, in 1835, and some development work was done by the Hudson Bay Company; but these workings were abandoned in 1851 for those at Nanaimo, where coal mining has ever since been carried on. In 1850 gold was found on Vancouver and Queen Charlotte Islands, and a miniature mining boom took place at the Queen Charlotte Islands in 1851-52. In the interior of British Columbia, gold was found in the Natchey Pass and the Similkameen as early as 1852. In 1852 and 1854, Colville Indians were known to have gold nuggets in their possession, and Chief Trader McLean procured gold dust from Indians near Kamloops in 1852. Between 1855 to 1857 gold discoveries were made on the Thomson, Fraser and Columbia Rivers, and the news soon attracted attention to British Columbia as a possible gold field and first opened it up for settlement.

(To be continued.)

PRELIMINARY REPORT OF THE MINERAL PRODUCTION OF CANADA, 1912†

Statistics subject to revision.

The total value of the mineral production in Canada in 1912 was $133,127,489 according to the preliminary statistics published herewith, which are based upon direct returns from mine and smelter operators, but subject to final revision. Compared with the previous year this production shows an increase of $29,906,495, or nearly 29 per cent. The mineral output in 1911, however, was somewhat restricted owing to long extended labour disputes and the largest previous production was in 1910 compared with which that of 1912 shows an increase of $26,243,866, or over 24 per cent. The per capita production in 1910 was $14.93, and this has increased in 1912 to over $18. This record is a gratifying indication or confirmation of the fact that the Canadian mineral industry in 1912 has had by far the most successful year in its history.

This progress is all the more satisfactory because it is evidently due to a widespread and substantial development of the country's mineral resources. The only new camp of importance to contribute largely to the year's output was Porcupine, the gold production of which was about one and three-quarter million dollars. A slight scarcity of labour was reported, particularly in connection with the asbestos and clay working industries. There were compartively few clay bour disputes to interfere with output, the principal difficulties being a strike of coal miners on Vancouver Island, beginning in September, and a labour dispute at Porcupine toward the latter part of the year. The total coal and gold production were but slightly affected thereby.

A substantial increase in price in most of the metals, which took place early in the year and continued throughout, had a very important bearing on the year's operations and contributed largely to the increased value of the output.

A feature of particular interest during the year has been the continued and extended development of ore reserves. The satisfactory results from these operations particularly in the case of the nickel-copper ores of the Sudbury district, the Porcupine gold ores of Ontario and a number of the copper and lead deposits of British Columbia, point to much greater annual outputs in the future.

Extension of ore smelting and refining facilities and in a number of cases special improvements in methods of practice have also been important factors in the year's operations.

The production of the more important metals and minerals is shown in the following tabulated statement in which the figures are given for the two years, 1911 and 1912, in comparative form, and the increase or decrease in value shown. Tabulated statements in greater detail, will be found on subsequent pages of this pamphlet:

	1911.		1912.		Increase (+) or decrease (—) in value.
	Quantity.	Value.	Quantity.	Value.	
Copper, lbs.	55,648,011	$6,886,998	$77,775,600	$12,709,311 +	$5,822,313
Gold, ozs.	473,159	9,781,077	607,609	12,559,443 +	2,778,366
Pig iron, *tons	917,535	12,307,125	1,014,587	14,550,999 +	2,243,874
Lead, lbs.	23,784,969	827,717	35,763,476	1,597,554 +	769,837
Nickel, lbs	34,098,744	10,229,623	44,841,542	13,452,463 +	3,222,840
Silver, ozs.	32,559,044	17,355,272	31,931,710	19,425,656 +	2,070,384
Other metallic products	.....	411,332	.....	982,676 +	571,344
Total		57,799,144		75,278,102 +	17,478,958
Less pig iron credited to imported ores	875,349	11,693,721	978,232	14,100,113 +	2,406,392
Total metallic		46,105,423		61,177,989 +	15,072,566
Asbestos and asbestic, tons	127,414	2,943,108	131,260	2,979,384 +	36,276
Coal, tons	11,323,388	26,476,646	14,699,953	36,349,299 +	9,881,653
Gypsum, tons	518,383	993,394	576,498	1,320,883 +	327,489
Natural gas	.....	1,917,678	.....	2,311,126 +	393,448
Petroleum, brls.	291,092	357,073	243,336	345,050 —	12,023
Salt, tons	91,582	443,004	95,053	459,582 +	16,578
Cement, brls.	5,692,915	7,644,537	7,120,787	9,083,216 +	1,438,679
Clay products	.....	8,359,933	.....	9,343,321 +	983,388
Lime, bush.	7,533,525	1,517,599	7,992,234	1,717,771 +	200,172
Stone	.....	4,328,757	.....	4,675,851 +	200,172
Miscellaneous non-metallic	.....	2,142,842	.....	3,364,017 +	1,221,175
Total non-metallic	.....	57,115,571		71,949,500 +	14,833,929
Grand total	.....	103,220,994		133,127,489 +	29,906,495

†Presented by Mr. John McLeish at Ottawa Meeting.
*Short tons throughout.

The subdivision of the mineral production in 1911 and 1912 by provinces was approximately as follows:

Province.	1911. Value of production	1911. Per cent. of total.	1912. Value of production.	1912. Per cent. of total.
Nova Scotia	$15,409,397	14.93	$18,843,324	14.15
New Brunswick	612,830	0.59	806,584	0.61
Quebec	9,304,717	9.01	11,675,682	8.77
Ontario	42,796,162	41.46	51,023,134	38.33
Manitoba	1,791,772	7.74	2,314,922	1.74
Saskatchewan	636,706	0.62	909,934	0.68
Alberta	6,662,673	6.46	12,110,960	9.10
British Columbia	21,299,305	20.63	29,555,323	22.20
Northwest Territories	4,707,432	4.56	5,887,626	4.42
Dominion	$103,220,994	100.00	$133,127,489	100.00

Of the total production in 1912 a value of $61,177,989 or nearly 46 per cent. is credited to the metals, and $71,949,500 or 54 per cent. to non-metallic products. With the exception of petroleum every important mineral mined in Canada shows an increased production in 1912, in so far as value is concerned. In the case of silver only, is there a decrease in quantity, and this slightly less than 2 per cent., the increase in total value of silver being due to the much higher price obtained for the metal during the year. Among the metals, increases in quantity of output are shown as follows: pig iron, 10.5 per cent.; gold, 10.5 per cent.; gold, 28 per cent.; copper, 40 per cent., and lead, 50 per cent. On account of the generally higher prices of the metals the increases in total value of output considerably exceed the increases in quantity, and are as follows: silver 12 per cent., nickel 31 per cent., copper 85 per cent., and lead 93 per cent.

The most important increases among non-metallic products are in coal, gypsum and cement. Coal shows an increase of 30 per cent. in tonage, gypsum 11 per cent. and cement 26 per cent.

It is a matter of regret to have to report a continued decrease in the production of petroleum. The Canadian output of this product a few years ago was about 50 per cent. of domestic consumption. At the present time not over 5 per cent. of Canada's consumption of petroleum and its products is derived from domestic sources.

The record of production by provinces given above, shows some slight changes in the relative importance of the production of each. The only change in the order of magnitude of output is that Alberta, the production of which had exceeded that of Quebec in 1910, but fallen below again in 1911, on account of its restricted coal output, again takes premier place in 1912. Ontario is still the largest contributor to the total, being credited with 38 per cent., or $51,023,134; British Columbia comes second with 22 per cent., or $29,555,323; Nova Scotia third with $18,843,324, or 14 per cent.; Alberta fourth with $12,110,960, or over 9 per cent., and Quebec fifth with $11,675,682, or a little under 9 per cent.

It should be remembered in dealing with these comparisons that Nova Scotia in the above record is given no credit on account of the large iron smelting and steel making industries at Sydney, New Glasgow, etc. The pig iron made here is entirely from imported ore and naturally is not credited as a Canadian mine output. The same remark applies to a large percentage of the pig iron production in Ontario as well as to the production of aluminium in Quebec.

There was an increased output in each of the provinces in 1912, the largest gains being in Alberta and British Columbia.

In Nova Scotia both coal and gypsum mining were particularly active though a reduced production of gold is reported. Copper and asbestos mining in Quebec contribute chiefly to the increase in that province.

Ontario had important increases in nickel and copper but more especially in gold from the Porcupine district. This province has a large output of non-metallic products including cement, clays, etc. In Alberta coal mining has had a record year exceeding in tonnage the British Columbia production. In the latter province the principal increase was in copper, with gold, silver, lead, zinc, coal and structural or building materials as important contributors.

	1907. Cts.	1908. Cts.	1909. Cts.	1910. Cts.	1911. Cts.	1912. Cts.
Copper, New York	20.004	13.208	12.982	12.738	12.376	16.341
Lead, New York	5.325	4.200	4.273	4.446	4.420	4.471
Lead, London	4.143	2.935	2.839	2.807	3.035	3.895
Lead, Montreal*	4.701	3.364	3.268	3.246	3.480	4.467
Nickel, New York	45.000	43.000	40,000	40.000	40.000	40.000
Silver, New York	65.327	52.864	51.503	53.486	53.304	60.835
Spelter, New York	5.962	4.720	5.503	5.520	5.758	6.943
Tin, New York	38.166	29.465	29.725	34.123	42.281	46.096

Smelter Production.

General statistics showing the quantities of ores treated at smelters and the quantities of refined metals or smelter products obtained have been collected by this branch since 1908. It should be explained that the accompanying statistics include the treatment of a small quantity of imported ores chiefly in the British Columbia smelters.

The total quantity of ores, concentrates, etc., treated in 1912, was 3,008,559 tons as compared with 2,193,553 tons in 1911.

The ores treated may be conveniently classified as follows:

*Quotations furnished by Messrs. Thomas Robertson & Company, Montreal, Que.

	1910. Tons.	1911. Tons.	1912. Tons.
Nickel copper ores	628,947	610,834	725,065
Silver-cobalt nickel-arsenic ores	9,466	9,330	8,136
Lead and other ores treated in lead furnaces	57,549	55,408	63,042
Copper-gold-silver ores	1,987,752	1,517,981	2,212,316
Total	2,683,714	2,193,553	3,008,559

The products obtained in Canada from the treatment of these ores include: refined lead produced at Trail, B.C., and fine gold, fine silver, copper sulphate, and antimony produced from the residues of the lead refinery; silver bullion, white arsenic, nickel oxide, and cobalt oxide produced in Ontario, from the Cobalt District ores. In addition to these refined products, blister copper, copper matte, nickel-copper matte, cobalt material or mixed nickel and cobalt oxides are produced and exported for refining outside of Canada.

The aggregate results of smelting and refining operations may be summarized as shown in the next table. Unfortunately the figures cannot be taken to represent the total production from smelting ores mined in Canada, since considerable quantities of copper and silver ores are still shipped to other smelters outside of Canada for smelting.

	1911. Refined products.	1911. Metals contained in matte blister, base bullion and speiss.	1912. Refined products.	1912. Metals contained in matte blister, base bullion and speiss.
Gold, ozs.	15,270	175,189	12,118	184,815
Silver, ozs.	19,078,768	585,896	17,877,914	686,171
Lead, lbs.	23,525,050	.....	35,893,190	.....
Copper, lbs.	.....	29,855,868	.....	58,405,910
Copper sulphate	197,187	.....	87,110	.....
Nickel	.....	34,098,744	.....	44,841,542
*Nickel and cobalt oxides	1,415,006	.....	1,634,087	.....
White arsenic	4,194,209	.....	4,090,756	.....

Smelter products shipped outside of Canada for refining were: blister copper carrying gold and silver values 17,069 tons in 1912, as compared with 10,710 tons in 1911; copper matte carrying gold and silver values 6,727 tons in 1912, as against 11,320 tons in 1911; Bessemer nickel-copper matte carrying small gold and silver value as well as metals of the platinum group 41,925 tons in 1912, as compared with 32,607 tons in 1911.

Gold.

The gold production of 1912 is estimated at approximately $12,559,443, which compared with the 1911 production $9,871,077 shows an increase of $2,778,366.

The Yukon placer production in 1912 is estimated at $5,540,000, as against $4,580,000 in 1911, the total exports on which royalty was paid during the calendar year, according to the records of the Department of Interior, being 335,015.67 ounces in 1912 and 277,430.97 ounces in 1911. The British Columbia production in 1912 was $5,167,390, of which the placer production, as estimated by the Provincial Mineralogist, was $500,000, smelter recoveries and bullion obtained from milling ores being valued at $4,667,390. The main feature of the year was the large increase from Ontario due to the commencement of operations by several mills in the Porcupine district, the province producing $1,745,292 as against $42,625 in 1911.

In Quebec there is a small amount credited to the pyritic ores as well as a small recovery from Beauce county an dthe Nova Scotia estimate shows a further decrease.

The exports of gold-bearing dust, nuggets, gold in ore, etc., in 1912, were valued at $10,014,654.

Gold in bars, blocks, ingots, etc., was imported in 1912 to the value of $1,096,546.

Silver.

In quantity there was a slight decrease in the silver production in 1912, returns to date showing a production of 31,931,710 fine ounces, an apparent falling off of 627,334 ounces, but due to the increased price, the value shows an increase from $17,355,272 in 1911 to $19,425,656 in 1912 or $2,079,384.

Of the 1912 production 29,190,122 ounces were from Ontario, 2,651,118 from British Columbia, the increases being from British Columbia and the Yukon.

For British Columbia the figures represent the recovery as millbullion or silver contained in smelter products, while for Ontario the figures represent the total silver content of ore and concentrates shipped, less five per cent. allowed for smelter losses, together with bullion shipments.

The total shipments of ore and concentrates from the Cobalt district and adjacent mines were about 29,116 tons, containing approximately 25,684,082 ounces, in addition to which 4,773,878 ounces were shipped as bullion.

There was also a small silver recovery from the gold ores of Ontario.

In Quebec the silver was derived from the pyritic ores of the eastern townships.

The exports of silver in ore, etc., as reported by the Customs Department were 34,911,922 ounces, valued at $19,494,416. There was also an importation of silver in bars, blocks, sheets, etc., valued at $822,020.

*Nickel oxide, cobalt oxide and cobalt material, etc., not all completely refined.

The price of silver in New York varied between a minimum of 54¾ cents per ounce in January and a maximum of 64⅛ cents in October, the average monthly price being 60.835 cents, compared with an average of 53.304 cents in 1911.

Copper.

There is practically no recovery of refined copper in Canada and the production is represented by the copper contents of smelter of smelter products, matte, blister-copper, etc., together with the amount of copper contained in ores exported, estimated as recoverable.

The total production on this basis in 1912 was 77,775,600 pounds, valued at $12,709,311, as compared with 55,648,011 pounds valued at $6,886,998 in 1911, an increase in quantity of 22,127,589 pounds and in value of $5,822,313.

Quebec province is credited with a production of 3,225,523 pounds as against 2,436,190 pounds in 1911, the increase being due to the increased production from the pyritic ores of the Eastern Townships. Ontario's production in 1912 was 22,250,601 pounds, as compared with 17,932,263 pounds in 1911, being mainly derived from the nickel-copper ores of the Sudbury district.

Apart from the copper shipments from Dane, the most interesting occurrence was the payment made for copper in shipments from the Cobalt camp.

British Columbia had a record output of 50,526,816 pounds, having had a year of uninterrupted smelter operation free from strikes and other disturbances.

From the Yukon the Pueblo mine was a heavy shipper.

The New York price of electrolytic copper varied during the year between 13.75 cents per pound in February, to 17.60 in August, the average for the year being 16.341 cents, as against an averaeg monthly price of 12.376 cents in 1911.

The exports of copper in 1912 were: copper, fine in ore, etc., 76,542,643 pounds, valued at $8,800,276, and copper black or coarse and in pigs, 1,945,921 pounds, valued at $236,212.

The total imports of copper in 1912 were valued at $7,052,534.

Lead.

The total production of lead in 1912 was 35,763,476 pounds, valued at $1,597,554, or an average of 4.467 cents per pound, the average wholesale or producers price of pig lead in oMntreal for the year. In 1911 the production was 23,784,969 pounds, valued at $827,717.

The shipments were practically all from British Columbia mines in 1912, a small shipment being made from Ontario mines, but not paid for. Towards the close of the year the North American smelter at Kingston, Ontario, started operations.

In British Columbia the resumption of active operations at the Blue Bell and the activity of the Consolidated Mining and Smelting Company and a number of the more imprtant purely mining companies have been factors in the increase.

The exports of lead in ore, etc., in 1912 are reported as 299,240 pounds, valued at $8,193. No pig lead was exported.

The total value of the imports of lead and lead products in 1912 was $1,806,221, including pig lead, bars, sheets, tea lead, etc., valued at $1,202,001; manufactures of lea dvalued at $200,157; litharge and lead pigments, valued at $404,063.

The total value of the imports of lead and lead products in 1911 was $1,049,276, being pig lead, etc., $706,020; manufactures, $108,012, and litharge and lead pigments, $235,244.

The average monthly price of lead in Montreal during 1912 was 4.467 cents per pound. This is the producers price for lead in car lots as per quotations kindly furnished by Messrs. Thos. Robertson & Co.

The average monthly price of lead in New York during the year was 4.471 cents, and in London £18.929 per long ton, equivalent to 3.895 cents per pound.

The amount of bounty paid during the twelve months ending December 31, 1912, on account of lead production, was $118,425.74, as compared with $219,557.70 in 1911.

Nickel.

The mining and smelting of nickel-copper ores in the Sudbury District of Ontario, was carried on with greatly increased output during 1912. The same companies were in operation as in previous years, viz.: The Mond Nickel Company and the Canadian Copper Company operating mines and smelters, and the Dominion Nickel Company, developing and proving ore bodies. It is interesting to note that small shipments of nickel ore were also made from the Alexo Mine at Kelso, in the Nipissing district. This ore was smelted at Victoria Mines.

Considerable changes have been made in some of the details of smelting practice, although the general method remains the same, i.e., the ore is roasted, smelted and converted to a Bessemer matte containing from 77 to 82 per cent. of combined metals, copper and nickel, the matte being shipped to the United States and Great Britain for refining. A portion of the matte made by the Canadian Copper Company is used for the direct production of monel metal, an alloy of nickel and copper, without the intermediate refining of either metal.

The total production of matte in 1912 was 41,925 tons, valued by the producers, at the smelters at $6,303,102, an increase of 9,318 tons, or nearly 20 per cent. over the production of 1911. The metallic contents were copper 22,231,725 pounds, and nickel 44,841,542 pounds. The amount of ore smelted was 725,065 tons, which included 1,720 tons from the Alexo mine mentioned above.

The aggregate results of the operations on the nickel ores during the past four years were as follows in tons of 2,000 pounds:

	1909. Tons.	1910. Tons.	1911. Tons.	1912. Tons.
Ore mined	451,892	652,392	612,511	737,584
Ore smelted	462,336	628,947	610,834	725,065
Bessemer matte produced	25,845	35,033	32,607	41,925
Copper content of matte	7,873	9,630	8,966	11,116
Nickel content of matte	13,141	18,636	17,049	22,421
Spot value of matte	$3,913,017	$5,380,064	$4,945,592	$6,303,102

	Lbs.	Lbs.	Lbs.	Lbs.
Nickel contained in matte, etc.:				
Exported to Great Britain	3,843,763	5,335,331	5,023,393	5,072,867
Exported to United States	21,772,635	30,679,451	27,596,578	39,148,993
	25,616,398	36,014,782	32,619,971	44,221,860

The price of refined nickel in New York remained practically constant throughout the year, quotations in the Engineering and Mining Journal being for large lots, contract business, 40 to 45 cents per pound except during the early part of May, when 40 to 50 cents was quoted. Retail spot from 50 cents for 500 pound lots up to 55 cents for 200 pound lots. The price for electrolytic is 5 cents higher.

Iron.

Iron Ore.—Complete returns of iron ore production have not yet been received but shipments from Canadian mines in 1912 were probably about 175,000 tons.

The total shipments of iron ore from mines in 1911 were 210,344 short tons, valued at $522,319, and included 137,399 tons classed as rhematite and 72,945 tons as magnetite.

Exports of iron ore from Canada during 1912 were recorded by the Customs Department as 118,129 tons, valued at $382,005. The exports were chiefly from Bathurst, New Brunswick, and Torbrook, Nova Scotia.

Shipments from the Wabana Mines, Newfoundland, in 1912, by the two Canadian companies operating there, were 1,331,912 short tons, of which 956,459 tons were shipped to Sydney and 375,453 tons to the United States and Europe.

Pig Iron.—The total production of pig iron in Canadian blast furnaces in 1912 was 1,014,587 tons of 2,000 pounds, valued at approximately $14,550,999, as compared with 917,535 tons, valued at $12,307,125 in 1911.

Of the total output in 1912, 21,701 tons were made with charcoal as fuel and 92,886 tons with coke. The classification of the production according to the purpose for which it was intended was as follows: Bessemer, 256,191 tons; basic, 544,534 tons; foundry and miscellaneous, 213,862 tons.

The amount of Canadian ore used during 1912 was 71,588 tons; imported ore 2,019,165 tons; mill cinder, etc., 36,901 tons. The amount of coke used during the year was 1,265,998 tons, comprising 609,183 tons from Canadian coal and 658,815 tons imported coke or coke made from imported coal. There were also used 1,886,748 bushels of charcoal. Limestone flux was used to the extent of 705,613 tons.

In connection with blast furnace operations there were employed 1,358 men and $993,941 were paid in wages.

The production of pig iron by provinces in 1911 and 1912 was as follows:

	1911.			1912.		
	Tons.	Value.	Value. per ton.	Tons.	Value.	Value. per ton.
Nova Scotia	390,242	$4,682,904	$12.00	424,994	$6,374,910	$15.00
Quebec	658	17,282	26.24	.....	.....	.....
Ontario	526,635	7,606,939	14.44	589,593	8,176,089	13.87
	917,535	$12,307,125	13.41	$1,014,587	$14,550,999	14.34

*The Nova Scotia producers do not place a selling value upon their pig iron production and the increased value used for Nova Scotia pig iron in 1912 does not mean that there has been an increase in the value as shown but that the value used in 1911 was probably too low.

There was also a production during 1912 in electric furnaces of 7,834 tons of ferro-alloys valued at $465,225, as compared with 7,507 tons valued at $376,404 in 1911.

The exports of pig iron during the year are reported as 6,976 tons, valued at $310,702, an average of $44.53 per ton. Probably the greater part of this is ferro-silicon and ferro-phosphorus produced respectively at Welland and Buckingham.

There were imported during the year 272,680 tons of pig iron, valued at $3,512,969, and 19,810 tons of ferro-manganese, etc., valued at $469,884.

Asbestos.

The total shipments of asbestos in 1912 exceeded those of 1911 by at least 5 per cent., it being probable that complete returns will show a somewhat higher production and shipments than the figures given below. According to returns so far received, the total output of asbestos was 97,816 tons, the sales 106,520 tons, valued at $2,959,677, or an average of $27.79 and stock on hand at the end of the year amounting to 21,686 tons, valued at $1,021,066. The record indicates an increase in sales and a reduction of stocks on hand.

Shipments were confined to the mines of the Black Lake and Thetford districts, those at East Broughton remaining idle. Operators report that they were handicapped by shortage of labour, but since market prices and conditions have greatly improved, 1913 promises to be a very successful year.

The number of men employed in mines and mills during 1912, was 2,755, at a wage cost of $1,296,655.

The total quantity of asbestos rock sent to mills is reported as 1,514,314 tons, which, with a mill production of 97,815 tons, shows an average estimated recovery of about 6.45 per cent.

The following tabulated statement shows the output and sales during 1912, and the stock on hand at the end of the year.

	Output. Tons.	Sales. Tons.	Value.	Per ton.	Stock on hand Dec. 31. Tons.	Value.	Per ton.
Crude No. 1	1,447¾	1,928.9	$507,904	$263.31	864.8	$220,789	$255.31
Crude No. 2	3,224	3,669	372,357	101.49	2,719	293,263	107.86
Mill stock No. 1	19,672	18,758	843,559	44.97	7,490	338,069	45.13
Mill stock No. 2	35,389	43,359	855,902	19.74	6,278	132,349	21.08
Mill stock No. 3	38,083	38,805	379,955	9.79	4,334	36,596	8.44
Total asbestos	97,815¾	106,519.9	$2,959,677	$27.79	21,685.8	$1,021,066	$47.08
Asbestic	.....	24,740	19,707	0.80	.....	.....	.....

In the absence of a uniform classification of asbestos of different grades the above subdivisions have been adopted purely on a valuation basis; crude No. 1 comprising material valued at $200 and upwards, and crude No. 2 under $200; mill stock No. 1 includes stock valued at from $30 to $100; No. 2 from $15 to $30; No. 3 under $15.

Output, sales and stocks in 1911 were as follows:

	Output. Tons.	Sales. Tons.	Value.	Per ton.	Stock on hand Dec. 31. Tons.	Value.	Per ton.
Crude No. 1	1,467.9	1,301.4	$342,855	$263.45	1,256	$327,508	$260.75
Crude No. 2	3,594.5	3,562.7	402,107	112.87	3,222.7	404,198	125.42
Mill stock No. 1	20,379	18,315	916,678	50.05	8,471	380,570	44,93
Mill stock No. 2	39,289	47,826	991,370	20.73	17,794	365,458	20.54
Mill stock No. 3	31,572	30,388	269,052	8.85	3,823	31,367	8.20
Total asbestos	96,302.4	101,393.1	$2,922,062	28.82	34,566.7	$1,509,101	$43.66
Asbestic	.....	26,021	21,046	0.81			

Exports of asbestos during the twelve months ending December 31, 1912, are reported as 88,008 tons, valued at $2,349,353, as against 75,120 tons, valued at $2,067,259 exported in 1911.

Coal and Coke.

With the exception of a partial interruption of work, on Vancouver Island during the last three months of the year due to a dispute of coal miners, coal mining was actively prosecuted in all important coal mining districts during 1912. Thus in contrast with 1911 when the output was seriously reduced by a long continued strike in Southern Alberta and British Columbia the production in 1912 shows a very large increase.

The total production of coal during the past year comprising sales and shipments, colliery consumption, and coal used in making coke, etc., was 14,699,953 short tons, valued at $36,349,299, as against 11,323,388 tons, valued at $26,467,646 in 1911, and 12,909,152 tons valued at $30,909,779 in 1910. The 1912 production exceeded all former outputs. Nova Scotia shows an increase of nearly 8 per cent., British Columbia an increase of over 26 per cent., though not quite up to the 1910 production, Alberta an increase of about 128 per cent. over 1911, and 19 per cent. over 1910. The other provinces show comparatively little change. The figures for the Yukon represent the production from the Tantalus field, no record having been received of the output below Dawson.

The production by provinces during the past three years is given below:

Province.	1910. Tons.	1910. Value.	1911. Tons.	1911. Value.	1912. Tons.	1912. Value.
Nova Scotia	6,431,142	$12,919,705	7,004,420	$14,071,379	7,791,440	$17,391,608
British Columbia	3,330,745	10,408,580	2,542,532	7,945,413	3,220,899	10,065,311
Alberta	2,894,469	7,065,736	1,511,036	3,979,264	*3,446,349	8,471,126
Saskatchewan	181,156	293,923	206,779	347,248	196,325	327,054
New Brunswick	55,455	110,910	55,781	111,562	42,780	85,560
Qukon Territory	16,185	110,925	2,840	12,780	2,160	8,640
Total	12,909,152	$30,909,779	11,323,388	$26,467,646	14,699,953	$36,349,299

The exports of coal in 1912 were 2,127,133 tons, valued at $5,821,593, as compared with exports of 1,500,639 tons, valued at $4,357,074 in 1911, an increase in exports of 626,494 tons.

Imports of coal during the year included bituminous, round and run of mine 8,491,840 tons, valued at $16,846,727; bituminous slack 1,919,953 tons, valued at $2,550,922, and anthracite 4,184,017 tons, valued at $20,080,388, or a total of 14,595,810 tons, valued at $39.478,037.

The imports in 1911 were bituminous, run of mine, 8,905,815 tons; bituminous slack 1,632,500 tons, and anthracite 4,184,017 tons, valued at $20,080,388, or a total of 14,595,810 tons, valued at $39,478,037.

The imports in 1911 were bituminous, run of mine, 8,905,815 tons; bituminous slack 1,632,500 tons, and anthracite 4,020,577 tons, or a total of 14,558,892 tons.

The apparent consumption of coal in 1912 was thus 27,168,630 tons, as against an apparent consumption in 1911 of 24,381,641 tons.

Coke.—The total production of oven coke in 1912 was 1,411,219 tons, valued at $5,352,520, as compared with a production of 935,651 tons, valued at $3,630,410 in 1911. A considerable percentage of this is made from imported coal.

Statistics furnished by Mr. John Stirling, Inspector of Mines, Alberta.

By provinces the production in 1912 was: Nova Scotia 625,908 tons, Ontario 379,854 tons, Alberta 105,684 tons, and British Columbia 299,773 tons, as against a production in 1911 of: Nova Scotia 557,554 tons, Ontario 259,554 tons, Alberta 36,216 tons, and British Columbia 82,327 tons.

The quantity of coke imported during the calendar year 1912 was 628,174 tons, valued at $1,702,856, as compared with imports of 751,389 tons, valued at $1,843,248 in 1911.

Petroleum and Natural Gas.

The annual output of crude petroleum from Canadian oil wells still continues to decline, the production having steadily fallen off during the past five years. Twelve years ago Canada produced about 50 per cent. of the domestic consumption of petroleum and its products, while at the present time not over 5 per cent. of our consumption is derived from Canadian oil wells. The output in 1912 was 243,336 barrels or 8,516,762 gallons, valued at $345,050, compared with 291,092 barrels or 10,188,219 gallons, valued at $357,073 in 1911. The average price per barrel at Petrolea in 1912 was $141.08 or considerably higher than the average price in 1911, which was $122 2/3.

The price of crude oil increased steadily through the year, rising from a minimum of $1.24 in January to a maximum of $1.65 in the latter part of December.

These statistics of production have been furnished by the Department of Trade and Commerce and represent the quantities of oil on which bounty was paid, the total bounty payments being $127,751.39 in 1912 and $152,823.29 in 1911.

The production in Ontario by districts as furnished by the supervisor of petroleum bounties, was in 1912, as follows, in barrels: Lambton, 150,272; Tilbury and Romney, 44,727; Bothwell, 34,486; Dutton, 4,335, and Onondago, 7,115; or a total of 240,935 barrels. This agrees very closely indeed with the production in Ontario on which bounty was paid, viz., 240,657 barrels. In 1911, the production by districts was: Lambton, 184,450; Tilbury and Romney, 48,708; Bothwell, 35,244; Dutton, 6,732; and Onondago, 13,501.

The production in New Brunswick in 1912 was 2,679 barrels, as against 2,461 barrels in 1911, and 1,485 barrels in 1910.

Exports entered as crude mineral oil in 1912 were 18,500 gallons valued at $3,964, and oil refined 36,945 gallons valued at $6,147. There was also an export of naptha and gasoline of 25,791 gallons, valued at $4,261.

The decreased production has been accompanied, particularly during the past two or three years, by a very large increase in imports of petroleum and petroleum products. The total imports of petroleum oils crude and refined in 1912 was 186,787,484 gallons, valued at $11,848,533, in addition to 2,144,006 pounds of wax and candles valued at $119,520. The oil imports included crude oil 120,082,405 gallons, valued at $3,996,842; refined illuminating oils, 14,748,218 gallons, valued at $1,022,735; gasoline, 40,904,598 gallons, valued at $5,347,767; lubricating oils, 6,763,800 gallons, valued at $1,077,712, and other petroleum products 4,288,463 gallons, valued at $413,477.

The total imports in 1911 were 116,892,689 gallons of petroleum oils crude and refined, valued at $6,009,730, and 1,959,787 pounds of wax and candles, valued at $106,424. The oil imports comprised crude oil, 71,653,251 gallons, valued at $2,188,870; refined and illuminating oils, 13,690,962 gallons, valued at $722,403; gasoline, 23,338,773 gallons, valued at $1,976,032; lubricating oils, 5,308,917 gallons, valued at $806,452, and other petroleum products, 2,900,786 gallons, valued at $315,973.

The principal increases in imports have been in crude oil now used so extensively in British Columbia by the railways and in gasoline.

Natural Gas.—While the production of petroleum has been declining, the output and use of natural gas has been steadily increasing. The southern portion of Ontario has for many years been the principal source of gas, but the Albert county field in New Brunswick is now an important producer while large developments are taking place in Alberta with such a rapid increase in output of gas that this province may soon take first place as a producer.

The total production in Canada in 1912 was approximately 15,015 million feet, valued at $2,311,126, and includes 12,534 million in Ontario, valued at $2,045,488 and 2,481 million feet in Alberta, value at $265,638. New Brunswick returns have not yet been received. The production in 1911 was reported as 11,644 million feet, valued at $1,907,678, including 10,864 million feet in Ontario, valued at $1,807,513 and 780 million feet in Alberta, valued at $110,165. These values represent as closely as can be ascertained the value received by the owners or operators of the wells for gas produced and sold or used. The values do not represent what consumers have to pay since in many cases the gas is resold once or twice by pipe line companies before reaching the consumer.

Cement.

The statistics of production of cement given herewith, will be subject to but slight variation when complete returns shall have been received. Estimates have had to be made for two firms that had not yet reported but the totals given are probably with a half of one per cent. of the final returns. The record for the past year is of particular interest, in view of the undoubted widespread demand for cement. Congestion of freight traffic no doubt militated somewhat against the eastern mills supplying western requirements and in order to relieve the situation the Federal Government reduced the duty one-half on importations during the period from June 12 to October 31, inclusive. Statistically the important features of the industry during the year were an increase of over 26 per cent. in the Canadian output, an increase of over 116 per cent. in imports and an increase of over 34 per cent. in total consumption. Canadian mills supplied 83.2 per cent. of the consumption as against 90 per cent. in 1911.

The total quantity of Portland cement, including slag cement and natural Portland, made in 1912, was 7,169,184 barrels. The quantity of Canadian cement sold or used was 7,120,787 barrels, valued at the mills at $9,083,216, or an average of $1.27½ per barrel. The total imports of cement were 5,020,446 cwt, equivalent to 1,434,413 barrels of 350 pounds each, and valued at $1,969,529, or an average of $1.37 per barrel. The total consumption of Portland cement, therefore, neglecting a small export of Canadian cement, was approximately 8,555,200 barrels.

Detailed statistics of production during the past four years are shown as follows:

	1909. Brls.	1910 Brls.	1911. Brls.	1912. Brls.
Portland cement sold	4,067,709	4,753,975	5,692,915	7,120,787
Portland cement manufactured	4,146,708	4,396,282	5,677,539	7,169,184
Stock on hand Jan. 1st.	1,098,239	1,189,731	918,965	904,165
Stock on hand Dec. 31	1,177,238	832,038	903,589	952,562
Value of cement sold	$5,345,802	$6,412,215	$7,644,537	$9,083,216
Wages paid	1,266,128	1,409,715	2,103,838	2,591,090
Men employed	2,498	2,220	3,010	3,379

The average price per barrel at the works in 1912 was $1.27½, as compared with $1.34 in both 1911 and 1910.

The imports of cement already included 130,580 barrels from Great Britain, 1,280,958 barrels from the United States, 6,107 barrels from Belguim, 15,857 barrels from Hong Kong, and 911 barrels from other countries. The average price per barrel was $1.37, as against an average value of $1.26 on imports in 1911, in which year the total imports were 661,916 barrels valued at $834,879. These included 190,506 barrels from the United Kingdom, 441,317 barrels from the United States, and 30,093 barrels from other countries.

The consumption of Portland cement in Canada during each of the past five years is shown as follows:

Annual Consumption of Portland Cement.

	Canadian.		Imported.		Total.
Calendar Year.	Brls.	%	Brls.	%	Brls.
1908	2,665,289	85	469,049	15	3,134,388
1909	4,067,709	97	142,194	3	4,209,903
1910	4,753,975	93	349,310	7	5,103,285
1911	5,692,915	90	661,916	10	6,354,831
1912	7,120,787	83.2	1,434,413	16.8	8,555,200

Annual Mineral Production in Canada Since 1886.

Year.	Value of production.	Value per capita.	Year.	Value of production.	Value per capita.
1886	$10,221,255	$2.23	1900	64,420,877	12.04
1887	10,321,331	2.23	1901	65,797,911	12.16
1888	12,518,894	2.67	1902	63,231,836	11.36
1889	14,013,113	2.96	1903	61,740,513	10.83
1890	16,763,353	3.50	1904	60,082,771	10.27
1891	18,976,616	3.92	1905	69,078,999	11.49
1892	16,623,415	3.39	1906	79,286,697	12.81
1893	20,035,082	4.04	1907	86,865,202	13.75
1894	19,931,158	3.98	1908	85,557,101	13.16
1895	20,505,917	4.05	1909	91,831,441	13.70
1896	22,474,256	4.38	1910	106,823,623	14.93
1897	28,485,023	5.49	1911	103,220,994	14.42
1898	38,412,431	7.32	1912	133,127,489	18.01
1899	$49,234,005	$9.27			

ADVANCE STATEMENT OF MINERAL PRODUCTION, PROVINCE OF QUEBEC*

(Figures are subject to revision)

Although there are still a few producers who are dilatory in sending in their returns of production, on the whole the responses to our enquiries are prompt and the following figures give a close approximation of the mineral production of the Province of Quebec during the year 1912.

The present statement wil be followed, in the course of a few weeks, by the complete annual report, giving corrected figures and more detailed information concerning the mining industry of the Province during 1912, as well as the report of the field-parties sent out by the Mines Branch during the summer of 1912.

In the following table, giving the value of the mineral production for 1912, a column has been added giving the value of the same products during the previous year 1911.

*From pamphlet presented by Theo. C. Denis, Ottawa Meeting, 1913.

Table of Mineral Production of the Province of Quebec During 1912.

	Production 1912		Value in
Substances.	Quantities	Value	1911
Asbestos, tons	111,175	$3,059,084	$3,026,306
Asbestic, tons	25,471	23,358	19,802
Copper and sulphur ore	62,107	631,963	240,097
Gold, ozs.	980	19.924	11,800
Silver, ozs.	26,526	14,591	11,500
Bog Iron Ore, tons	.....	.....	4,041
Ochre, tons	7,054	32,010	28,174
Chromite, tons	.....	.....	2,469
Mica, tons	.....	99,463	76,428
Phosphate, tons	164	1,640	5,832
Graphite, lbs.	1,210,278	50,680	33,613
Mineral Water, gals.	39,452	9,854	65,648
Titaniferous Ores, tons.	2,949	4,935	5,684

Slates, squares	1,894	8,939	8,248
Cement, bbls.	2,684,002	3,098,350	1,931,183
Magnesite, tons	1,714	9,645	6,416
Marble	.....	250,939	143,457
Flagstone	.....	600	500
Gold, ozs.	980	19,924	11,800
Lime, bush.	1,705,937	455,570	284,334
Limestone	.....	1,361,082	1,128,402
Bricks, M.	100,146	1,284,232	1,129,480
Tiles, Drain & Sewer Pipe, Pottery, etc.	.....	203,100	142,223
Kaolin, tons	40	520	
Feldspar ,tons	110	2,200	600
Peat, tons	500	2,000	700
Glass Sand	152	418	1,179
Sand	81,800	33,200	62,000
Quartz	.....	.....	1,125
		$11,017,046	$8,679,786

We have therefore to record an increase of $2,337,260 in 1912 as compared with 1911. For the last ten years, the record of increases of each year over the previous one has been unbroken as the following table shows.

Table Showing the Annual Value of the Mineral Production of the Province of Quebec Since 1903.

Year.	Value.
1903	$2,772,762
1904	3,023,568
1905	3,750,300
1906	5,019,932
1907	5,391,368
1908	5,458,998
1909	5,552,062
1910	7,323,281
1911	8,679,786
1912	11,017,046

Notes on Mineral Production in 1912.

Asbestos.

Asbestos, as in the past years, heads the list of the products of the Quebec mines in 1912. After having passed through a severe crisis, the asbestos market is steadily improving. This is specially true for the higher grades, crude and long fiber mill-stock. The demand for the short mill-stock is not brisk, and, as a consequence, the qualities under $30 a ton have to be sacrificed to some extent.

Therefore, under these circumstances, of good prices for high grade stock and low prices for short mill-stock it is quite easy to understand that only the mines which can produce the better qualities are able to operate satisfactorily. Hence, none of the mines of the Broughton district were operated during 1912, as the Broughton rock is essentially a milling rock, containing as a rule a good percentage of disseminated fiber, but short and low in value. The same remark applies to most of the mines of the Robertson district.

On the other hand, the Thetford mines and the Black Lake mines worked steadily and the shipments are higher than for 1911.

Figures of comparisons between the last three years are given below:

Shipments of Asbestos.

	1912.	1911.	1910.
Tons	111.175	102,224	80,605
Value	$3,059,084	$3,026,306	$2,667,829
Aver value per ton	27.52	$29.60	$33.10

Stock on Hand on Dec. 31st.

	1912.	1911.	1910.
Tons	24,176	33,751	41,159
Value	$1,102,206	$1,583,076	$1,921,923

Returns of shipments in 1912 were received from nine operators, whereas in 1911, shipments had been effected by ten operators.

If we compare the figures for 1912 with those of 1911 we see that the shipments increased 8.75%, while the total value shows an increase of only 1.07%.

Copper and Sulphur Ores.

The increase in the price of copper which prevailed during 1912 as compared with 1911 naturally caused a renewal of activity in the copper mines of the Eastern townships. This was manifested by a marked increase in the shipments of copper and sulphur ore, which this year amounted to 62,107 tons, valued at $631,963 for their copper and sulphur contents; as compared with 38,554 tons, valued at $240,097 in 1911.

The McDonald mine at Weedon which is operated by the East Canada Smelting Co. is responsible for a large part of the increase. This mine is operating very satisfactorily.

The Eustis mine, another mine of cupriferous pyrite which has been in operation for 30 years, was another active shipper.

Iron.—For the first time in a great many years, there were no blast furnace operations in the Province of Quebec. Both the Drummondville and the Radnor furnaces remained idle all year.

Gold and Silver.—The gold production of the Province amounted to 980 oz. which represent a value of $19,924. The sources are the same as last year; part of this production comes from the Copper-Sulphur ores of the Eastern Township mines and the balance is the product of the operations of the Champs d'Or Rigaud-Vaudreuil, who have a hydraulic plant near Beauceville. The silver is also from the same sources.

Titaniferous Iron Ores.—There were 2,949 tons of Titaniferous ores shipped to the United States during 1912. These were shipped as ores of Titanium. Part came from the mines of St. Urbain, and the balance from a mine situated at Ivry, near St. Jerome.

Mica.—The mica market was satisfactory this year. There is a substantial increase to record as compared with the previous year. As usual the production of mica comes entirely from the Gatineau and Lievu River district, to the north-east of Ottawa.

Graphite.—The shipments of graphite appearing in the table of production were all made from Buckingham, which is the center of the graphite industry in the Province. However, it may be mentioned that a company is building a modern and well-equipped mill at St. Remi, Township of Amherst, some 40 miles north-east of Buckingham, which is expected to start operations shortly.

Peat.—The Peat Industries, Limited, made returns of shipments of 500 tons of peat fuel, valued at $2,000. This company operates at St. Brigide, near Farnham, where a very complete air-dried peat fuel plant, of a capacity of 4,000 tons a year, is installed and working satisfactorily. The demand for this fuel is quite brisk and there is no question about the possibility of disposing of a large quantity.

The summer season of 1912 was exceptionally unfavorable for the production of air-dried peat on account of the rainy weather.

Structural Materials.—There is a marked increase in the production of the various structural materials, lime-

stone, granite, marble, brick, cement, etc. This is as it might be expected, as the production of these substances increases with the development of the country.

It may be mentioned that the figures given for the structural materials are far from complete, as it is almost impossible to keep track of all the small quarries and brick-yards, a great number of which only work in a desultory way.

MINERAL PRODUCTION OF ONTARIO FOR 1912.*

Metallic.	Quantity.	Value.
Gold, ozs.	89,080	$ 1,859,285
Silver, ozs.	30,322,805	17,455,080
Copper, tons	11,116	1,581,062
Nickel, tons	22,421	4,722,040
Iron ore, tons	117,357	238,884
Pig iron, tons	589,593	8,054,369
Lead (concentrates), tons	26	1,290
Cobalt oxides, etc., labs.	1,029,532	317,165
Nickel oxides, lbs.	117,160	11,716
		34,240,891
Less Ontario ore smelted into pig iron, 71, 589 tons		145,326
		34,095,565
Non-Metallic.		
Arsenic (refined), lbs.	3,927,347	79,297
Brick, common	385,000,000	3,178,250
Tile (drain)	16,463,000	279,579
Brick, paving, fancy, etc.	5,631,000	126,286
Brick, pressed	65,028,000	627,669
Building and crushed stone	.....	953,839
Calcium carbide, tons	1,998	120,000
Cement, Portland, bbl	3,028,486	3,373,653
Corundum, tons	1,960	233,212
Feldspar, tons	12,133	24,416
Graphite (refined), tons	1,246	65,076
Gypsum, tons	31,331	50,246
Iron pyrites, tons	20,677	70,694
Lime, bush.	2,297,525	381,672
Mica, tons	318	36,634
Natural gas	.....	2,267,897
Peat, tons	175	725
Petroleum, Imp. gals	8,432,730	344,537
Pottery	.....	52,445
Quartz, tons	94,758	179,576
Salt, tons	90,986	450,251
Sewer Pipe	.....	427,353
Talc, tons	5,902	53,118
Total non-metallic production		13,376,425
Add net metallic production		34,095,565
Total production		$47,471,990

General Remarks.—Metals.

Gold.—For the first time in the history of Ontario there was a substantial production of gold. In 1911 the output had a value of $42,637; in 1912 of $1,859,285. The explanation is found, of course, in Porcupine, where the mines came into yield during the year. The Hollinger and Dome are the leading properties, and furnished the bulk of the production, but there are a number of smaller mines, several of which contributed to the yield, and others whose stamp mills are not yet completed and in operation. This group comprises the McIntyre, Vipond, Jupiter, McEnany and others. An unfortunate labour strike ocured in November, and to some extent lessened the output of bullion. In other gold districts such as Swastika, Larder Lake and Munro-Guibord, a good deal of development work has been done, but the era of steady production has not yet set in. At Long Lake, the stamp mill has been waiting for power, now nearly ready for delivery. The St. Anthony mine at Sturgeon Lake and the Cordova mine in Peterborough county both yielded considerable bullion.

Silver.—Cobalt well maintained its rate of production, the output of silver being a little over a million ounces less than in 1911. Owing, however, to the higher prices for silver, the money return to the mining companies was greater by about one and a half millions of dollars. It would appear as if the crest of production at Cobalt were reached in 1911, and that the descending curve brought the output in 1912 to nearly the same level as in 1910.

The total production since the opening of the mines has amounted to nearly 156 million ounces, and the total value to about 82 million dollars, as follows:

Year.	Ounces.	Value.
1904.	206,875	111,887
1905.	2,451,356	1,360,503
1906.	5,401,766	3,667,551
1907.	10,023,311	6,155,391
1908.	19,437,875	9,133,378
1909.	25,897,825	12,461,576
1910.	30,645,181	15,478,047
1911.	31,507,791	15,953,847
1912.	30,260,635	17,455,080
Total.	155,832,615	81,777,260

The tendency towards final treatment of the ore in the camp is manifested in the increased shipments of bullion, consignments of which amounted to 5,071,897 ounces in 1912 as against 3,132,976 ounces in 1911. The Nipissing and Buffalo mines are now equipped for reducing their entire output to merchantable bars on the spot. Nevertheless, the tonnage of ore and concentrates shipped to outside points was larger than in 1911, the respective quantities being 17,959 tons ore and 11,214 tons concentrates, as compared with 17,278 tons ore, and 9,375 tons of concentrates in 1911. The year of largest shipments was 1910, when 27,437 tons ore and 6,845 tons concentrates left the camp.

The largest producers during the year were as follows:

	Ounces.
Nipissing	4,680,670
Coniagas	3,703,942
La Rose	2,920,344
Crown Reserve	2,714,765
McKinley-Darragh Savage	2,694,560
Kerr Lake	1,895,309
Buffalo	1,890,150
Cobalt Township	1,505,396
Temiskaming	1,217,994
O'Brien,	1,091,631

*Presented at the Ottawa Meeting.

In Gowganda three mines—Miller Lake, O'Brien, Millerett and Mann—produced in all 549,976 ounces, and in South Lorrain one—Wettlaufer-Lorrain—834,-119 ounces. The T. & N. O. railway branch line from Earlton to Elk Lake is now in operation.

As in previous years, the larger proportion of the high-grade ore and concentrates produced at Cobalt was treated in refineries situated in Ontario, the principal works being those at Copper Cliff, Deloro, Thorold and Orillia. At Deloro and Thorold, also at a small refinery opened during the year at North Bay, the oxides of cobalt and nickel are produced and large shipments made, both of refined cobalt oxide and of the mixed oxides and of the mixed oxides of cobalt and nickel, to the United States and European markets. Another by-product turned out by the refineries is white arsenic, of which nearly four million pounds were made during the year.

There was paid out in dividends by silver mining companies in the Cobalt camp over seven million dollars in 1912. The total distribution of profits since the beginning of the camp has been close upon 41 millions of dollars on a gross aggregate return for sales of silver of $81,777,260.

New and important silver-bearing veins were found at La Rose, Cart Lake (Seneca Superior), Casey Cobalt, etc. The last named mine is significant of the possibilities of the conglomerate, situated as it is, on an outlier of this formation some 14 or 15 miles distant from Cobalt proper. The finding of good ore by the Beaver mine in the diabase underlying the Keewatin, and the recrudescence of the Cobalt Townsite mine were other features of the year.

Platinum and Palladium.—It is well known that platinum is associated in small quantities with the chalcopyrite in the nickel-copper ores of the Sudbury district. Accompanying the platinum is palladium, a silvery-white metal of the same group, which finds its chief uses in the manufacture of astronomical instruments, watch-making and dental work. There were recovered by the Orford Copper Works, New Jersey, in refining the nickel-copper mattes produced at Copper Cliff during the six years 1907 to 1912 inclusive, 2,864 ounces of platinum and 4,896 ounces of palladium, together with 15,675 ounces of gold and 459,250 ounces of silver. It cannot be specifically stated that tihs entire production was from the nickel-copper ores, since certain residues from other mines are treated along with the matte in the process of refining. Doubtless, however, a large proportion is traceable to the nickel and copper-carrying pyrrhotite. The value of the production was about $817,030.

Nickel.—Leaving out of account the nickel constituents of the ores raised from the silver mines of Cobalt, the production of nickel in 1912 amounted to 22,421 tons, being 5,372 tons, or 31.5 per cent., in excess of the production of 1911. There were 725,065 tons of ore smelted, the matte produced aggregating 41,925 tons. The mines operated by the Canadian Copper Company were Creighton, Crean Hill, and No. 2, and by the Mond Nickel Company, Victoria No. 1 and Garson. About 2,000 tons of ore were treated by the latter company from the Alexo mine, a new deposit in the township of Dundonald on the Temiskaming and Northern Railway, now being opened up.

Systematic and extensive operations with the diamond drill by the several companies in the Sudbury region have proven the existence of very large reserves of nickel ore. At the Murray mine, the Dominion Nickel Copper Company discovered a large body of ore some distance away from the outcropping of the former workings; at the Frood mine, the property of the Canadian Copper Company, the drill revealed what is believed to be the most extensive body yet discovered; and the Mond Company have located an extension of the Frood on their side of the boundary line. The Dominion Company, which had large holdings on the Northern Nickel range, including the Whistle mine, after acquiring the Murray mine, formerly owned by the Vivians, and the Gertrude and Elsie mines, which belonged to the Lake Superior Corporation, have sold out to a new company, said to represent the Rothschild interests. The prospects are for a large expansion in nickel mining in the near future.

Copper—Copper was produced to the extent of 11,116 tons, almost wholly from the Sudbury district, where it occurs associated with nickel. The output for 1911 was 8,966 tons, the increase for the year being about 24 per cent.

Iron Ore and Pig Iron.—The quantity of iron ore mined in Ontario in 1912 was less than in 1911 by 58,-274 tons. Shipments were from the Moose Mountain, Helen and Bessemer mines. The Grondal concentration plant at Moose Mountain and the roasting equipment at the Magpie mine (Lake Superior Corporation) are now both nearly completed, and if successful in practice will inaugurate the utilization of the low-grade iron ore deposits of the Province.

Of Pig Iron the output was 589,593 tons, as against 526,610 tons in 1911. The number of blast furnaces in operation was eight, as follows: Algoma Steel Company, Sault Ste. Marie, 3; Canada Iron Corporation, Midland, 2; Steel Company of Canada, Hamilton, 2; Standard Iron Company, Deseronto, 1.

Non-Metals.

Building Materials.—The building trade was brisk in the cities and towns of Ontario, and there was an increased output of construction materials as compared with 1911, notably in brick and stone, also a small increase in Portland cement. Lime showed a falling off. The beautiful marbles afforded by the quarries at Bancroft are coming into use for decorative purposes, especially in public buildings. Trap rock is also quarried in Hastings county and used in the making of good roads near Toronto and elsewhere. The whole production of building materials amounted in value to $8,-641,369.

Petroleum, and Natural Gas.—The yield of petroleum again shows a decline, the quantity raised from the wells of Lambton and Kent counties being 8,432,730 Imperial gallons as against 10,102,081 gallons in 1911. Natural gas shows an increase, the output in 1912 having a value of $2,267,897 as compared with $2,186,762 the previous year.

Minor Products.—There is a long list of mineral substances produced in Ontario, none of them of prime importance, yet contributing to the aggregate output, and constituting the basis of considerable industries. Among these are corundum, which shows an increased production in 1912 of $86,504; graphite, increase $28,-711; iron pyrites, decrease $47,763; mica, decrease $6,-424; pottery, increase $1,945; quartz, increase $115,171; 584; feldspar, decrease $27,194; gypsum, increase $1..-salt, increase $19,416, and talc, increase $5,393. In most cases the raw material is abundant and could easily respond to a much larger demand.

THAT NELSON PLATINUM, MR. FRENCH, AND SOME FACTS

We have been desired to publish the following letter. We do so without comment.

21st February, 1913.

The Honourable
The Minister of Mines,
Victoria, British Columbia.

Sir,—I beg to report as follows regarding my investigations into the alleged finding of platinum metals of that group in certain dykes in the vicinity of Nelson.

Last year I had a number of samples sent to me; these I sent to several eminent chemists for assay, all of whom reported that they were unable to detect even a trace of platinum metals of that group in the samples tested.

These results were published in detail in the report of this department for 1911—pages 165, et seq.

On October 1 of 1912, I proceeded to Nelson—at your request—to obtain other samples from the same and other localities, so that our samples would represent a wider range.

I made you a detailed report of my trip to Nelson, under date of December 18, 1912, which may be briefly summarized as follows:

I personally took the following samples, with the assistance of Mr. James McGregor, inspector of mines, and in the presence of the parties interested:

No. 7201—Devlin dike; general sample, upper and softer portion of dike;

" 7202—Devlin dike; general sample, lower and harder portion of dike;

" 7203—Patenaude dike; general sample, across dike;

" 7204—Patenaude dike, special sample of 2 feet next to contact;

" 7205—Beelzebub dike, Granite-Poorman Mine, general sample;

" 7206—Beelzebub dike, Granite-Poorman Mine, special sample of footwall.

" 7207—Greenhorn dike, Granite-Poorman Mine, general sample;

" 7208—Granite dike, Granite-Poorman Mine, general sample;

(It was from this dike that the 50 tons milled was taken.)

" 7209—Hardscrabble tunnel, No. 1, chute, general sample of dike.

In addition to the samplings made by me personally, the following samples were supplied to me:

" 7211—Monaghan dike, general sample, sampled by owner;

" 7212—Monaghan dike, general sample, 2 ft. next hanging wall, sampled by owner;

" 7269—McQuarrie & Robertson dike, samples supplied by owners.

" 7215—Sample given by Thomas Gough, manager Granite mine, to the Provincial Mineralogist and said to be a sample from "concentrates" made on Wilfley table, in 1911, during a run through the Granite mill of 50 tons of dike matter, taken from same dike as was sample No. 7208.

As the ratio of "concentrates" to the ton of ore is unknown, this sample would not determine the amount of metal in the dike, and was taken only to determine whether there was any platinum present even in ore so concentrated.

It was Mr. A. G. French who was primarily responsible for the alleged discovery of platinum, and I found in an interview I had with him that he claimed that the metals of the platinum group "were so elusive that no ordinary assayer, even the best, could find them upon assay, but that he (Mr. French) by his great experience had found a method of assaying that would show them."

I obtained from Mr. French a description of his method of assaying, which I had typed, and submitted a copy to him for correction; this was returned with slight corrections and initialled by him.

To show me the manipulation of his processs, Mr. French had some samples run through in my presence; those on dike matter were, however, abandoned, but a sample of concentrates was run through to the end.

The samples, re-agents, and operators were of Mr. French's selection, which was unimportant, as it was only the manipulation I was there to see, and the result was of no consequence, as of course I could not certify the results without control of operations.

Upon my return to Victoria, I had the samples I had obtained divided each into several identical samples.

There has never been any question as to the samples or sampling—the whole question has been as to the assaying of the samples, so to obtain the best expert determination on this point, I sent a set of four samples, each set identical, to a number of the most expert chemists, asking that they be "tested with the greatest possible care for metals of the platinum group, for even a trace, and if found, then in what quantities."

With each of these sets of samples I sent a copy of Mr. French's method of assaying.

Sets of samples were sent to the following parties, each set being identical and comprising Nos. 7203, 7205, 7211 and 7215:—

Canadian Government Bureau of Mines, Ottawa, courtesy of Dr. Eugene Haanel; this laboratory does all the chemical work of the Bureau of Mines and of the Geological Survey of Canada.

Johnson—Matthey & Co., London, England, Assayers to the Royal Mint, one of first authorities in England on Platinum assaying.

Dr. Frederic P. Dowey, Washington, D.C., chief Chemist to the U. S. Mint and the greatest authority in America on de-

tection of minute quantities of platinum, the author of numerous papers on this special subect. (These were sent through the Geological Survey, whose courtesy and Dr. Dowey's is hereby acknowledged.)

Ledoux & Co., of New York, one of the best known assaying firms in America.

Consolidated Mining & Smelting Co.'s laboratory at Trail, whose chemists have become expert in this matter.

British Columbia Government Laboratory, Mr. Carmichael and Mr. Whittaker working independently, making two sets of assays.

The S. S. White Dental Company, manufacturers of platinum goods, New York.

With the notable exception of the S. S. White Dental Company (which will be remarked on later), each and every one of these experts to whom the question had been submitted reported that they were unable to find even a trace of any metal of the platinum group.

The following are extracts from some of the letters accompanying the certificates of assay:—

Johnson-Matthey & Co: "Our results are again of an absolutely negative character, and we can affirm that the samples contain neither platinum nor metals of the platinum group."

Dr. Dewey reports:

"Washington, D.C., Jan. 21, 1913.

"The Director of the Mint:

"Sir,—None of the samples from the Provincial Mineralogist of British Columbia, forwarded to us by the United States Geological Survey, show any platinum.

"No unusual occurence was observed during the assay, but no special test could be made for Canadium."

"Respectfully,

((Signed) "Frederick F. Dewey,

"Assayer Bureau of the Mint."

Ledoux & Co: "In examining these samples we have used assay charges four times as large as usual, and the results are negative in every case; we can assure you that none of these samples contain even a trace of platinum or any other members of the platinum group.

"We have assayed these samples by the method described as A. Gordon French's method, a sketch of which accompanied your letter."

Mr. Carmichael and Mr. Whittaker—In addition to the four samples mentioned also assayed each and every one of the samples brought from Nelson.

Mr. Carmichael says: "These assays were made with the greatest care, both by the assistant assayer (Mr. Whittaker) and myself personally, and I must now report that in no case were we able to find even a trace of platinum or any of the metals of the platinum group.

"The samples were tested both by Mr. French's method and by the generally accepted methods, and as a result, I am certain they do not contain any of the platinum group metals within the limits stated, that is, not as much as one ten-thousandth part of an ounce to the ton.

"To test whether there was even an 'infinite simally minute' quantity of platinum present, as is frequently found in the gold of this coast, we ran through the furnace, by Mr. French's method, 60 charges of 20 grammes each of sample No. 7215, 'concentrates,' equal to 1,200 grammes of material, combining all the buttons into one in the final cupellation.

"We next took 42 charges of 1 A T (29.,166 grammes), making 1,225 grammes of materials, which we ran through by the regularly adopted methods joining all the beads into one on the final cupellation. These two beads were treated separately, and any possible platinum condensed into a solution of about 1/20 c.c. in volume, and each of these solutions tested qualitatively, by potassium iodide, showed the presence of platinum 'in infinitely small quantity'—as near as possible to estimate, I should say the platinum present amounted to about sixteen (16) cents worth of platinum in 10,000 tons of ore, an amount quite negligible and only discernible upon treating a great amount of material—more than 1,220 grammes.

"I have carefully looked into the method of assay as proposed by Mr. French, and have experimented with it, and I fail to find any merit in it, either from a chemical or practical viewpoint."

The S. S. White Dental Company—as already noted—report that they find platinum and gold in each of the four sample sent them, as follows:—

Sample.

No. 7203—Platinum, 0.033 oz.; gold, 0.035 oz. per ton;

" 7205—Platinum, 0.088 oz.; gold, 0.108 oz. per ton.

" 7211—Platinum, 0.042 oz.; gold, trace

" 7215—Platinum, 0.119 oz.; gold, 1.136 oz. per ton.

The company, as such, has a high commercial standing, but of the skill or experience of the assayers employed by the company, I have no means of judging. The company, however, is engaged in the manufacture of platinum goods on a large scale and its laboratory is naturally an adjunct to its manufacturing business, so that it is quite possible, and even probable, that its laboratory—and even utensils—were so saturated with platinum as dust and otherwise, as to render any samples treated there open to grave suspicion of contamination and the results subject to question.

The firm does not do assaying or chemical analysis as a business—although in this case it was paid for these assays—and has no public rating as analysts. My only reason for sending samples to this firm was the fact that a number of person in Nelson had received from it returns of platinum in these dikes, and it was largely

due to these assays that local credence was given to the alleged discovery, and that this "platinum excitement" was started.

Some years ago we had an experience with another firm of platinum manufacturers—near New York—who reported to prospectors high platinum results in ore, which subsequent investigations proved to be not founded on fact; this was accounted for by contamination in the laboratory of the platinum works, the probability of which, in such a laboratory, is known to any assayer of experience. In fact, it is usual to exclude all bullion assaying from the room in which assays of ore are made.

In making this investigation I have simply obtained the samples and Mr. French's method of assaying. These I have submitted for the best expert advice obtainable, and in making this report to you of the result of the investigation, I do not need to express any opinion of my own. I merely give you the verdict of the experts employed, which may be summarized as follows:—

Seven of the most expert assayers in England, the United States and Canada—including the Geological Surveys of the two latter countries—report that not even a trace of platinum is present.

The laboratory of a firm of platinum manufacturers reports from 0.033 (33-1000) to 0.088 (88-1000) oz. per ton on dike samples and 0.110 oz. per ton on the "concentrates.

Any comment on the above results appears to me to be unnecessary.

I am, sir, respectfully,

(Signed) Wm. Fleet Robertson,
Provincial Mineralogist.

THE GEOLOGIST.†

(Written for the Annual Meeting of the Canadian Mining Institute, by H. E. T. Haultain.)
Ottawa, 1913.

For the sixth year in succession the president of the Canadian Mining Institute is a geologist. Ontario has its Provincial Geologist and British Columbia its Provincial Mineralogist, and the Dominion its Geological Survey. These are all of importance to the community. The standing of the geologist in all branches of his activities, and they are varied, is taken as a matter of course. In a public way it is neither questioned nor criticized. So quietly and universally is this the case in Canada that the half brick** that the spur of the moment caused me to throw at the action of certain geologists last March had all the appearance of a bombshell. Judging from the many comments during the past year it must have shattered into its original grains of sand and these must have found lodgement in many tender spots wide of the original line of aim. But though my brick was fashioned on the spur of the moment (and hence lacked sufficient coherence) it represented a feeling that has been growing and is sane and sound.

The geologists are a large group and count among their numbers men eminent in the community. Their general average is high. They touch on the one hand ultra-academic learning and on the other the popular progress of the country. Owing to their special field of research they are segregated. They are more or less separated by gulfs from other scientific men and are in a position to present a united front, which in itself is sufficient to deflect criticism or attack. But in addition they are surrounded, they surround themselves individually and collectively, by one of the finest assets of defence, a well-carried dignity. Furthermore, they are coming this summer to this country from all over the world, and to a very large part of the community they will appear of magnificent importance. They will be our guests and we shall be their hosts, carrying all the responsibilities that are entailed thereby. One may well hesitate before criticizing.

Nevertheless, there are aspects of the case that should be considered, and I hope to put before you certain ideas that may call forth profitable discussion. Succinctly, but perhaps crudely, geology is the science of rocks and mineralogy the science of minerals. Minerals are the basis of the mineral industry and minerals are found in rocks, hence the syllogism is apparently complete. Geology and mineralogy are the basis of the mineral industry. This is such a fine, comfortable, broad generalization that it is commonly accepted for very much more than it really means.* It would be as well to confess at once that this is the source of any peevishness, and of the tender spot, the irritation of which last March caused the throwing of the brick. Into the details of this phase of the matter this is not the time or place to enter.

The early reports on the geology and mineralogy of the Cobalt district issued by the Ontario Bureau of Mines were a model of utility. Cobalt is a remarkable case. Perhaps there is no other metalliferous camp in which the commercial values are so clearly and so simply affected by geological conditions to the degree that exists in Cobalt.

The early recognition of this, the publishing of it in clear, unmistakeable manner, so that the early prospectors and miners could understand was a magnificent piece of commercial geology applied to metalliferous mining.

Should the various geological departments throughout the Dominion fail to achieve the like of this again in a generation, still their existence would be justified by a possibility of this alone.

In this particular case the geologist could and did "see into the earth farther than the ordinary man." He could foretell with fair accuracy the extensions of the contacts and thus, in many cases, foretell definitely the commercial conditions at depth. This probably lent added local importance to geology, and geological conditions become a very important feature of all reports on mineral properties. Alleged geogicial features and broad conclusions supposed to be derived from them became a prominent part of all newspaper boom talk, and of all the wildcat reports with which the community was flooded. Many men with a smattering of geological knowledge and some geologists with little or no experience either geologically or com-

†Editor's Note: This paper is intended by Mr. Haultain to be one of the series on "Toronto University and the Mineral Industry.
*See "The University of Toronto and the Mineral Industry" Page 136, March 1, 1913.
**See "The University of Toronto and the Mineral Industry." Part II., Canadian Mining Journal. August 1, 1912. Page 510.

mercially with mining, posed as experts. Geological nothings were learnedly interpreted into optimistic reports and drew out much money and many failures. Should all this be laid at the door of the geologist? Certainly not. It is characteristic in greater or less degree of every mining boom. But it existed here, I think to a greater degree than usual, and with a very few, perhaps notable exceptions, geologists let it pass without comment, while others helped it and fanned it, possibly unwittingly, by their serious and seemingly important discussion of hopelessly unimportant academic details. These remarks are by way of being very general. They are perhaps not specific or explicit enough to provoke a profitable discussion. That particular phase of the subject does not lend itself to explicitness. It is a matter of degree. Every man must decide for himself to what extent there was posing and what was probably the motive of the posing. But I will try to be specific and, to many, the explicitness will be so obvious that they may not accept it as a subject for discussion.

Is it too simple to assert that a geologist is not, as a consequence of his geology, a mining engineer? Yet there are those who claim that geology is such a large part of mining that a geologist is as a result a mining engineer. The truth is that a mining engineer is to a large extent a geologist. He concerns himself deeply with his branch of geology. He knows much geology and studies much of such geology as applies to his work. The geologist knows much more geology and studies it more intensely, but their points of view are very different. A geologist may have spent years mapping mining districts, and yet not be a mining geologist. He may be a very valuable man at mapping the district and yet be quite unsuitable to report on the value of an ore body. A man may be a keen and successful student of the life history of certain phases of ore deposition and yet not be a suitable man to estimate the risk involved in opening up an ore body. A man may be a renowned histologist or anatomist and yet be a very poor judge of a man. The botanist plays a small part in our lumbering interests. Our chemists and druggists are not physicians. Bacteriologists do not report on sewage disposal, and our physicists, with all their profound knowledge of gases, neither design gas engines nor become aeroplanists. In fact such is generally the case. The point of view is so different that the man who is keen on the scientific side is handicapped if he enter the commercial side.

A geologist cannot become a mining engineer, cannot become the right man to report on a commercial proposition (that is to estimate a risk) without a special and lengthy training, which he can get only in actual mining operations. A geologist can no more become a mining engineer by simply saying so than can a new graduate of a mining course in a university. Each has a good training, enabling him to become a mining engineer through experience, but of the two the new graduate is nearer the goal on account of his flexibility and on account of his broader perspective.

Some geologists do become mining engineers; we have notable examples, but it is by means of experience in actual operations.

On the other hand all mining engineers must have considerable geological knowledge, their paleontology may be weak or practically non-existent and their optical crystallography likewise, but their working knowledge of ore deposits is not only general and broad, but of useful phases it will be detailed and intimate.

The average mining engineer knows much more about ore deposits than the average geologist and what is very much more important, his point of view is quite different. Two Porcupine veins may have a similar life story and be each of intense interest to the geologist and may be the subject of unending dissertations, but one may be very valuable commercially and the other worthless without in any way affecting the interest of the geologist. Speaking broadly, the quartz is the main source of interest to the geologist, the gold to the engineer. There are those, however, who like to say that because the engineer's eye is on the gold he sees nothing else unless a geologist comes along and interprets things for him.

For the engineer there are many basic sciences—geology is only one of them. Mathematics is as much a basic science. Mining engineering without geology is impossible; it is also impossible without mathematics, but the mathematician is no more a financier than is the geologist a mining engineer. It is the function of the engineer to co-ordinate the sciences to a definite end. The mining engineer estimates risks, and to do this he must balance up many things of which geology is only one. The mining engineer gets results which call for co-ordination of knowledge of different branches of science, and calls for compromise.

To question the value or importance of geology to mining would be foolishness of a very inane kind. It would be fully as foolish as to question the value of arithmetic, but much geology has as little to do with mining as have quanternians.

To our more important geologists this is obvious, but there are those who would foster the other idea and there is indeed abroad in Canada a false idea of the real importance of geology to mining.

The mining engineer needs the geologist. He appreciates the geologist and his stories better than can anybody else, and he can make more real use of the geologists' knowledge than can anybody else. The geologist has the time and opportunity and the conditions that permit him to study geological problems as pure scientific problems. He can stop and carefully study the effect of varying conditions of high temperature, of chemical reaction, or time, of capillarity, and of many more or less obscure conditions, and with his study he can often tell us with rough accuracy the life history of some of our ore bodies, he can in truth be an authority "on an almost absolutely unknown region." What really magnificent stories the geologist has told and can tell the mining engineer. Has any engineer ever been told a more beautiful story than that of magnetic segregation or of metasomatic replacement, and is not the whole subject of magmatic waters, magnificent inspiration to thought and spur to greater study? But some geologists are about to forget that this is only a part. They are inclined to think that the life story of an ore body is everything or nearly everything, whereas the engineer recognizes that it is only a part and often a very insignificant part of what is really required, for often it helps him no more in relation to his desired result than does his mathematics or his physics. Many geologists are apt forget that all that is known under the headings of geo-chemistry and geo-physics do not but touch matters of vital importance to the engineer. There are generally other causes and facts of much greater importance to the engineer and to the community. There are causes and effects not yet classified, with only a generic name, and that probably a false one. The causes giving the most important features of an orebody are causes not required, not considered, not included in the stories of the geologist, but to the engineer they are paramount, they are the causes known

as chance. That the source of a river is higher than its mouth is due to the very well-studied laws of gravity, but the twists and turns of the river, its falls and its navigability are the results of chance. An ore body may clearly be the result of magmatic waters, but whether a particular part will carry $2 or $20 worth of mineral is a matter of chance; is a matter of so many varying causes that no geology can follow them.

Once in a while geology can give us very definite information not on the varying values but on the limitations of extensions of our ore body.

In general the training of the geologist dealing as it does with broad generalities, with life histories, with generalizations rather than with detached facts, gives him a perspective that is a serious obstacle when he tries his hand at estimating the commercial risks of ore bodies. It is not profitable though it would be easy to be specific here; many of us carry in memory and some of us on our files, examples of this kind of thing.

But enough, the work of the geologist is of certain value to the mining engineer, but as far as mining and the estimation of mining risks is concerned the work of the geologist is for the engineer. The geologist is a scientific specialist, the engineer is the co-ordinator. The geologist cannot become a co-ordinator without special training which entails actual experience of operations, and geology is only one out of may things that the engineer has to consider. It is often, in metalliferous mining very often, of a type that the engineer takes in his daily stride as it were.

This much must be sufficient concerning the relation of the geologist to the engineer, the discussion will I hope carry it further.

There is another phase upon which I must touch and that is the relation of the geologist to the community. Not only have the three last presidents of the Canadian Mining Institute been geologists, but the president of the American Institute of Mining Engineers is a geologist, the Dean of the Faculty of Applied Science of McGill is a geologist, the late renowned Principal of McGill was a geologist. Van Hise is President of the University of Wisconsin and Geikie is president of the Royal Society. We find geologists holding important public positions in all parts of the world and holding them successfully and with distinction. The geologists are an ancient and honourable body. I can find no reference of slur or suspicion remaining attached to them. They have been clean and kindly men. Taking the geologists that I know personally I find them delightful men, agreeable companions and general favourites wherever they go. Of course there is always the exception that proves the rule, but I believe you will all agree with me when I say that in general pleasantness the average of the geologists is higher than the average of most of the other groups of men with whom we come in daily contact. They are not only prominent in their scientific work, but they are prominent in the community, and the Canadian public at large accepts them not only as being of great importance to the state scientifically, but as being above the average good citizens.

In remarkable contrast to these public successes of the geologist, I find the condition of the engineer, not only the mining engineer, but the engineer in all branches. The engineer is doing the world's best work to-day. All that counts for prosperity and health and material growth is based on the work of the engineer. All that we are most proud of in this young nation is dependent upon the work of the engineer. The engineer exists in large numbers. Even in Ottawa there are more engineers than geologists. But we find very little public recognition of the engineer. We seldom if ever find him holding a public position of responsibility or honour outside of his immediate work. We have no engineers in Canada who are members of the Royal Society, and if we have one who has been knighted it is simply the exception that proves the rule. Why? How is it that the geologists beat the engineers to the high positions? Is it because their work is of greater importance to the state? Is it because their work is of a higher type? One would think so from the results. Is it not patent? Is it not obvious? But unfortunately the truth is not always obvious. Truth is oftener at the bottom of the well than prominent on the horizon. We must carry our analysis further. I submit that there is another and simpler reason. When we analyze the work and effort of the geologist we find it made up of two separate and distinct functions. The engineer's time and effort is devoted entirely to his engineering work. A part only of the geologist's time is devoted to the study of geology. A large part, and some times the larger part, is devoted to descriptions of his work, to publicity. One of their functions is that of the story teller. From the beginnings of their existence they have been great story tellers. In fact, they have been the champion story tellers of all time. Now there is no doubt in my mind that some geologists, or near-geologists, will consider that this is another half brick in poor disguise. But let us see what the story teller has been to the community. When we go back to the beginning of things, that is to the beginning of things for man, to about the time, let us say, of pithecanthropus erectus, the story teller was beginning. He was almost the first luxury. Possibly man's first distinction was that he was a fire-using animal. Certainly about the same stage of his development he became a story-telling and a story-bearing animal, and the story telling part was certainly more removed from mere animal than any other phase of his activities. Progress in all stages has been based largely on co-operative organization and this came first with the fighting animal, but organization alone did not win out from the animal stage. Organization could and does exist without language and without man, but we departed from the animal through language and progressed through language. Language was produced by and for the story teller. For his purpose was language developed and without language we would have had no modern man. The neolithic scriber on bone, that "mamothistic etcher at Grenelle" was a later development of the story-teller, who told stories in pictures and was not only the forerunner of the comic supplement, but of all that we understand in modern pictorial art. Later he told stories in song and in mimicry so that all our art, which represents our greatest departure from the anthropoid ape is the work of the story teller. He has been in the vanguard of all progress since we left the trees.

It is impossible to conceive of a geologist being eminent without this story telling function being well developed. Unlike most story tellers he generally tells his own story of his own work. He is his own publicity agent ,and what magnificent stories he has been able to unfold. In the second chapter of Genesis and the second verse, we are told that God rested on the seventh day and for a thousand years man had interrupted all his work every seventh day to signify his assent to the six day history of the world's creation. The story telling geologist comes along and says: "There is a mistake somewhere; it took several million years to create this earth and I can prove it, here are the proofs." When the world had become accustomed to the shock of this the geologist's story went on to tell that man was not

created on the sixth day, but that his creation was a gradual development occupying a period also of millions of years, the records of which in an almost unbroken chain stretching from the protozoa to modern man are preserved in the everlasting rocks. True some links were absent, but every now and then the story is added to and the Neanderthal skull and our friend from Java help to fill in the blanks. Who couldn't attract attention and hold the stage with such stories as these? And the geologist had many such in his bag. He shows us where the moon was born. He dissects the teeth of the mammoth who wandered on our back yard before the ice was two miles thick upon it and he counts the nervatures of the wing of the fly that plagued it.

But even the geologist's supply of stories could not keep up forever to these high-grade samples and as the family of geologists grew they had to be content with less and less interesting stories. But stories they must have to maintain their eminence and a story to be a story entails of necessity a hearer, a willing and an interested listener. As the quality of his stories waned he often had to expend as much pains finding the listeners as in finding the story, and this led him to the study of the listener, to the study of man, his characteristics, his wants, his needs, his foibles, and his weaknesses. He had to make the most of meagre stories, he had to study that phase of man which brought him listeners. This has ben going on for generations and the methods of the family of geologists in finding hearers is as well organized to-day as their study of geology. Are not many of them geologists in the summer and writers of their stories in the winter?

Now the story teller is still the greatest man among us. What does Kipling get per word? and has he not had the refusal of the high honours of the realm? Theodore Roosevelt received $350,000 for seven years' work as President of the United States, but received a million dollars for the story of his African holiday. But the geologists' stock of interesting stories is running low or rather the proportion of interesting stories to the number of geologists is becoming small, and instead of a greedily paying public he must perforce fall back on government Bluebooks for publication.

And how do I interpret all this? I interpret it thuswise. The work of the geologist is in two parts. There is the study of geology to get the story and of man to get a listener. The engineer is so busy with his own work that he fails to study man. The geologist, with his knowledge of man and with his knowledge of publicity becomes useful to man in other ways.

The search for a listener has made the geologist in many ways a broader and a bigger man and his art of story telling brings him into the public eye.

Do I begrudge the honours to the geologist who has reached to high position through his knowledge of man? By no manner of means. I respect him, in some cases I bow down to him, but let us be honest about it and recognize that it is not the geology, but the story telling and the man that has won to high honour.

Why then my half brick of last year? It was not directed at the geologist as a geologist or as a story teller but at men who were inclined to tell stories of no consequence to listeners provided by the reputation of the whole family of geologists and to make capital out of these stories of no consequence. The geologist has from time immemorial been on a pedestal, and has no doubt taken care to be kept there. Round and about him due to his art of story telling there has been a halo or an auro. His stories have not only had the important essentials of mystery and distance, but, in the main, they have been truthful and unquestioned by the general public. But there are those who would impose on this good name and on this long-earned and carefully preserved reputation.

I must confess that it is a source of some content to see the radical change that has taken place in our programme since last year, with the greatly reduced percentage of geological papers. There are many geological stories that we require, but that fact need not be abused.

This summer the geologists from all the world are coming here, and they will bring with them their best stories, and we, aided by government grants, have been diligently preparing for them not only to hear their stories, but to provide them with new stories.

Their stories will be lstened to by all manner of people, but by no one will they be more appreciated than by the mining engineer, for he will know and will preserve what he needs and this he will use in practical work for the benefit of the community and, going his own way, he will hold his peace and be unrecognized, and to the geologist and to the story teller will be the glory.

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Discussion of Mr. H. E. T. Haultain's Paper on "The Geologist."

Remarks by Mr. R. W. Brock, Director the Geological Survey of Canada.

Mr. Haultain's remarks at the C.M.I. meeting last year were jocular and, therefore, called for no serious rejoinder. Moreover they were restricted to certain geologists and would be equally applicable to certain mining engineers or certain men of any other profession. His carefully prepared and admirably written paper presented to this body at the present meeting I should like to dscuss, but I perceive that it has been anticipated and effectually disposed of by Paul the Apostle in his first epistle to the Corinthians. For the convenience of those members who have not access to a reference library, I shall quote a few verses from the twelfth chapter:

"For the body is not one member, but many.

"If the whole body were an eye where were the hearing?

"If the whole were hearing where were the smelling?

"But now hath God set the members every one of them in the body as it hath pleased Him.

"And if they were all one member where were the body?

"But now are they many members yet but one body.

"And the hand cannot say unto the eyes I have no need of thee, nor again the feet to the head I have no need of you.

"Nay, much more those members of the body which seem to be more feeble are necessary;

"And those members of the body which we think to be less honourable upon these we bestow more abundant honour; and our uncomely parts have more abundant comeliness.

"For our comely parts have no need; but God hath tempered the body together, having given more abundant honour to that part which lacked.

"That there should be no schism in the body; but that the members should have the same care one for another.

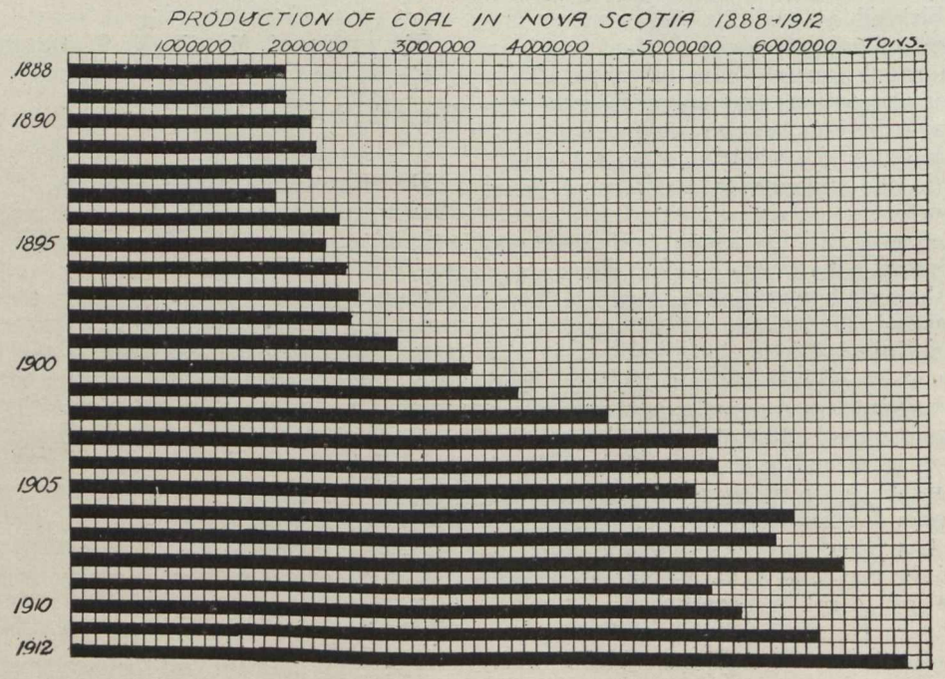
"And whether one member suffer all the members suffer with it; or one member be honoured, all the members rejoice with it."

NOTES FROM THE ANNUAL REPORT OF THE DEPARTMENT OF MINES OF NOVA SCOTIA.

Nova Scotia Mineral Production.

Year ended September 30th, 1912.

Mineral.	Quantity. 1911.	Quantity. 1912.
Coal raised (gross tons)	6,208,444	6,802,997
*Iron ore (net tons)	53,595	none
Pig iron made (net tons)	397,614	411,388
Steel ingots made (net tons)	438,922	561,392
Limestone quarried (net tons)	525,286	473,067
Coke made (net tons)	545,619	603,372
Gypsum quaried (net tons)	333,358	280.000
Building stones quarried (net tons)	11,226	11,644
Bricks made (number)	23,273,700	22,348,486
Drain pipe and tile made (feet)	1,431,761	984,922
Grindstones quarried (net tons)	380	400
Gold bearing ore mined (net tons)	18,320	15,868
Gold produced (ounces)	8,389	4,948
Manganese ore (net tons)	150	233
Antimony concentrates (net tons)	191	none
Moulding sand (net tons)	380	1,190
Tungsten concentrates (net tons)	none	14
Sulphate of ammonia (gross tons)	3,971	5,213
Barytes		974



Coal Trade.

The returns of coal sold during the year 1912 show, compared with the returns for 1911, as follows:

	1911.	1912.
Nova Scotia	2,108,665¾	2,295,363
New Brunswick	541,591	653,938¾
Newfoundland	184,195¼	200,642
Prince Edward Island	80,637	92,302¼
Quebec	2,067,831½	2,159,005
United States	332,301	412,531
St. Pierre	9,024½	9,406¾
Other countries	1,992	91,825
Bunker	204,681	236,733¾
Time chartered boats	25,545	25,867½
	5,556,464	6,177,615

*Iron ore imported 1910-1911, 853,904; 1911-12, 880,409 net tons.

Cape Breton County.

The production for the year 1912 was 5,197,601, as compared with 4,736,026 for the year 1911. The largest producers were the Dominion Coal Co., Ltd., with an output of 4,332,320, and the Nova Scotia Steel & Coal Co., Ltd., with an output of 821,165 tons.

The reports of Mr. Neil A. Nicholson and Mr. John J. McNeil, Deputy Inspector for the districts of Cape Breton, give (pages 17 and 52) for their district, detailed information concerning the collieries and their operation.

Pictou County.

The production for the year 1912 was 682,883 tons, as compared with 727,944 tons for the year 1911.

The principal producer was the Acadia Coal Co., Ltd., with an output of 439,476 tons.

The report of Mr. Thomas Blackwood, Deputy Inspector, for the pictou district, gives (page 94) for his district, detailed information concerning the collieries and their operation.

Cumberland County.

The production for the year 1912 was 632,809 tons, as compared with 411,695 tons for 1911.

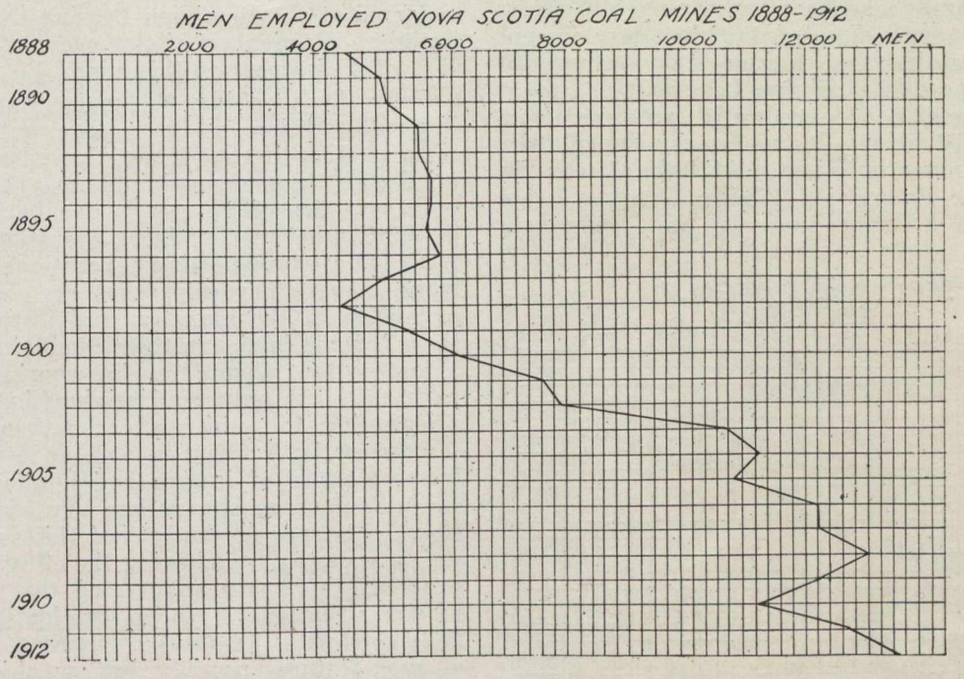
The reports of Mr. A. V. Cameron and Mr. E. B. Paul, deputy inspectors, give (page 148) detailed information concerning the collieries and their operation in the Cumberland district.

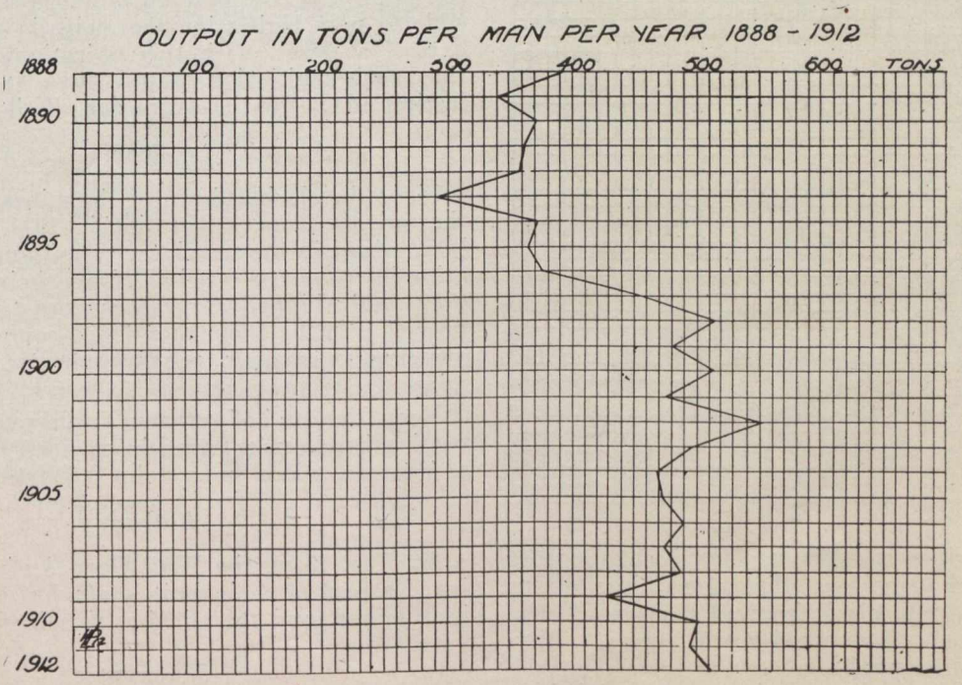
Inverness County.

The production for the year 1912 was 289,704¼ tons, as compared with 332,779 tons for 1911.

The whole production was by the Inverness Railway and Coal Company.

The report of Mr. W. F. Davis, deputy inspector for the district of Inverness, gives (page 135) detailed information concerning the Inverness Railway and Coal Company's Colliery and its operation.





METALLIFEROUS MINES.

The minerals other than coal, mined in the Province during the year, were gold, manganese, tungsten and barytes.

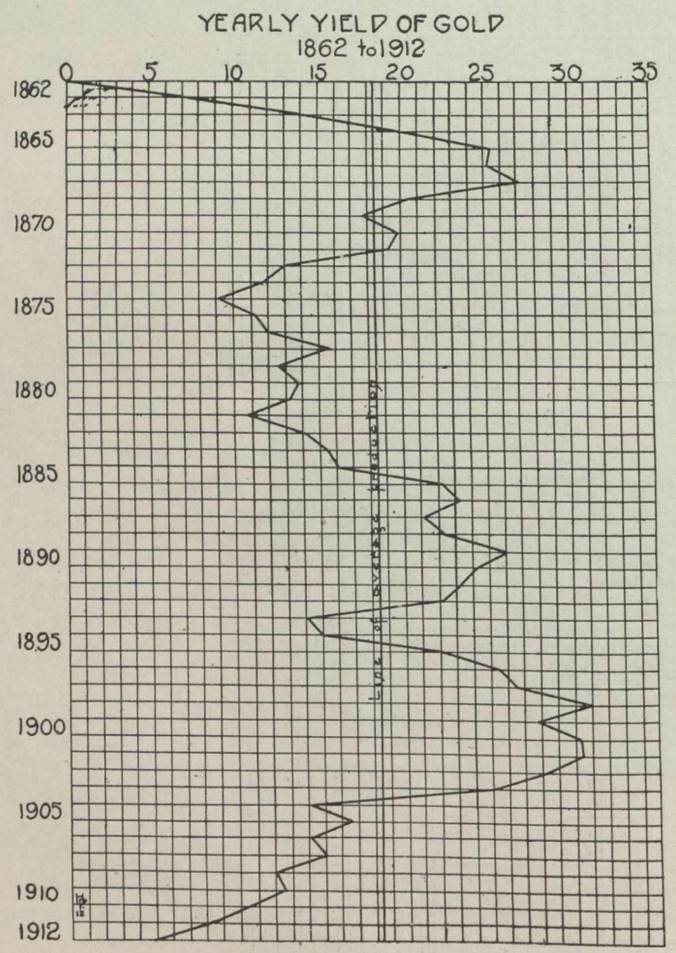
The report covering the operations in connection with these minerals by Mr. H. B. Pickings, deputy inspector of mines, is contained in the following pages.

Gold.

The production of gold was 4,949 ounces recovered from 15,862 tons of gold bearing rocks mined and crushed. This production having a value (at $19.00 an ounce) of $94,031.00 equaling an average recovery of $5.99 a ton crushed.

Compared with the production of the year 1911 this year's production shows three decreases as follows: 2,452 less tons crushed; 3,441 less ounces of gold recovered, and $2.71 less in the value of the average yield a ton.

The gold production is lowest since gold mining was established as an industry in the province; and it is almost needless to say is most disappointing. It is, however, but justice to the industry to say that it does not fairly represent the extent of the operations carried on, as at several of the districts the principal efforts of the operators were directed to mine development and prospecting rather than to immediate recovery of gold. At Tangier, the Dominion Leasing Co., had at the close of the year commenced only to recover from the setback caused by the destruction by fire of their charthouse and power buildings. At Lake Catcha the operations of the Petpeswick Mining Company were almost wholly of a prospecting and ore-development



nature, and at Caribou and Fifteen-Mile brook, a great percentage of work done was that the miner terms "dead work." At Shier's Point and Goldenville the surface equipments have received much more attention than the underground workings.

The properties on which operations were carried on were the following:

Byron Bower, Carleton.
Touquoy, M. J. O'Brien and tributors, Caribou.
Stillwater Mining Co., Moose River.
Switzer Mining Co., Fifteen-Mile Brook.
Uniac Mines & Power Co., Gold River.
W. A. Brennan and tributors, Oldham.
M. J. O'Brien et al, Renfrew.
New England Mining Co., Stormont.
Sydney Gold Mining Co., Stormont.
Seal Harbour Mining Co., Stormont.
Boston and Goldenville Mining Co., Shier's Point.
Goldenville Mining Co., Sherbrooke.
Dominion Leasing Co., Tangier.
Gladwin Gold Mining Co., Beaver Dam.
S. R. Giffin & Sons, Stormont.
Petpeswick Mining Co., Lake Catcha.

I regret to have to report one fatal accident which occurred at the Dominion Leasing Company's mine at Tangier. Particulars of this accident will be found in the detailed report on this mine.

Generally speaking, the underground workings are in good condition and the requirements of the "Regulations of Metalliferous Mines" have been generally complied with. Some complaints have been made by mine managers that these regulations in not making more distinction between "mining operations" as permanent work and "prospecting operations" as temporary work, impose hardships that are detrimental to the expansion of the industry, and it would appear that there is some justice in their complaint and that this is a matter that should receive consideration, affecting as it does not only gold mining, but all mining and prospecting for minerals other than coal. Another feature of the Act that is more or less freely criticized is the manner of leasing and holding gold areas for speculation purposes, rather than for mining operations. There is no doubt that this feature of the Act as it stands to-day is having the effect of causing much property to remain unoperated that otherwise would receive attention. I realize that legislation, to successfully cope with these matters, without being productive of new features possibly just as objectionable as the features to be overcome, is a difficult problem, but at the same time the opinion is expressed that it is possible to pass legislation that will do away, to a great extent, at least, with this objectionable feature, and that such legislation would have an immediate and lasting effect for the expansion of the industry.

Iron.

Since the closing down of the mines, at Torbrook, of the Canada Iron Corporation in 1911, no iron ore has been mined in the province. The Canada Iron Corporation have concentrated ore from their stock pile, however, and shipped several cargoes. Prices have improved, and the above-mentioned company is now commencing operations preparatory to reopening their mine.

Near Glencoe in Inverness County considerable prospecting has been engaged in on a very promising body of iron ore, taken up by John S. Hart.

Antimony.

At West Gore, the West Gore Antimony Co., retimbered a part of their main shaft, but as yet no ore has been mined, and the mill has remained idle during the year.

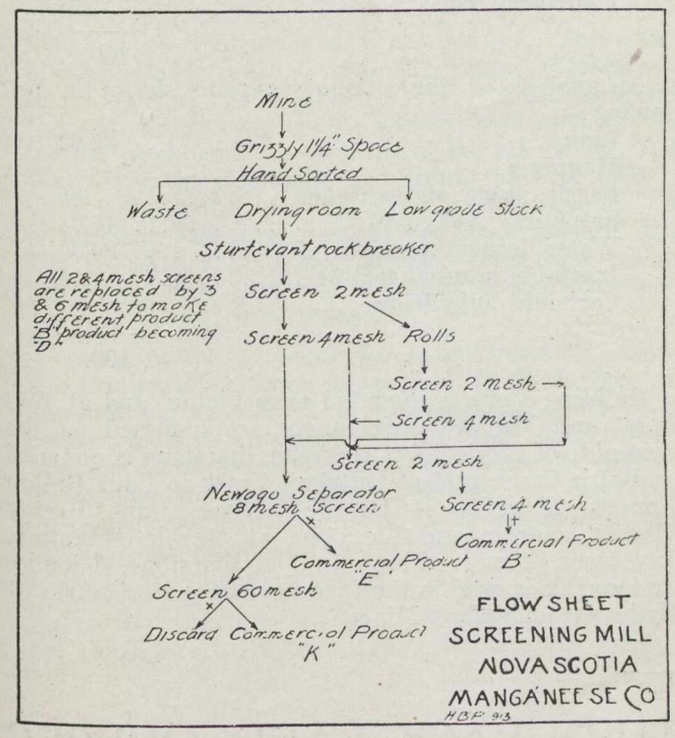
Manganese.

The Nova Scotia Manganese Company at New Ross, continued development work and raised 233 tons of ore recovered from this development work. The new road to tide water by way of Benjamin's Mills, is nearing completion, and stoping of ore is soon to be commenced.

No other properties were operated during the year in connection with the mining of this mineral.

Tungsten.

The first shipment of Tungsten-bearing mineral from Nova Scotia, namely, 14 tons of scheelite concentrates containing 72 per cent. tungsten acid, were shipped during the past year from the Scheelite Mines, Limited, Scheelite, Moose River. The concentrating mill con-



structed in 1911 was operated, producing a very high-grade concentrate. Development work at the mines of this company was continued and prospecting for tungsten-bearing minerals has been engaged in at a number of places in the province.

Barytes.

A total of 974 tons of barytes was mined by the Barytes, Limited, at Scottsville, Inverness Co. This company have put their new mill in operation, and during the year have shipped their manufactured product as far West as Winnipeg.

Oil.

The Maritime Oil and Gas Co., Limited, have continued their oil-well boring operations at North Lake Ainslie.

To date, five test-holes have been put down to various depths as follows:—

	Feet.
No. 1 hole	800
No. 2 "	1612
No. 3 "	1120
No. 4 "	1100
No. 5 "	870

No. 6 hole is about to be started

These holes are all located within a territory at North Lake Ainslie, of about one square mile in extent.

Oil sands and natural gas have been encountered in all holes, and it is stated that at No. 2 hole over 215 feet of oil sands were drilled through, two of the beds encountered being 75 feet and 130 feet in thickness, respectively. This No. 2 hole has been cased and capped, ready for shooting, which is being delayed until another hole has been put down to the 75 feet bed. The drilling is being done with a standard oil drilling equipment as supplied by the Oil Wells Supply Company. The derrick used is 75 feet high.

The size of No. 1 hole when commenced was 10 inches in diameter, but this was found to be too small on account of the frequent caves, and the size of the other holes was increased, the last holes being 18 inch. This allows of casing and reducing six times, or until the hole has been reduced to 5 3-18 inch diameter.

The last year's work has been on the drilling of No. 5 hole. Progress all through has been greatly retarded on account of the many crevices and beds of quicksands met. No. 6 hole is to be located nearer the lake, and it is hoped will encounter a better drilling formation.

Quarries.

The information in the report is from inspection and from official records.

The quarries are all in good condition, worked systematically and with due regard to safety. There are about 1,400 men employed, not regularly. The output for the year was, gypsum 280,000 tons; building stone 10,690 tons; limestone 473,067 tons; grindstone 400 tons; granite 954 tons.

One fatal accident was reported in the year: Reuben B. Smith, age 50 years, was killed at the Wentworth Gypsum Company's quarry near Windsor. He was caught under a dump car while oiling it. A verdict of accidental death was given by the jury of inquest.

Copies of the Act relating to quarries, and the necessary forms for making returns have been sent to all operators in the province; but it is difficult to get prompt returns.

The principal material quarried is gypsum (sulphate of lime).

Nova Scotia is rich in this mineral, generally of pure quality.

A glance at the geological map, readily shows that the coboniferous system in Nova Scotia, lies in the counties of Cumberland, Colchester, Hants, Pictou, Antigonish, Inverness, Victoria, Cape Breton and Richmond. The carboniferous series is the home of the gypsiferous deposits, and these counties contain immense deposits of gypsum.

In the territory lying between Minudie and Pugwash, there are large deposits, especially at Nappan River, and at Pugwash. In Hants County, it is quarried near Windsor, in the outcrop of an immense vein. It is quarried at Newport, Cheverie, Walton, and Noel, in the same county. In Pictou it is found in workable quantities on the East River. In Antigonish it is exposed, in one place on the coast, for a height of 200 feet. The bed of gypsum from which Plaster Cove, now Port Hastings, took its name, is of enormous thickness, two-thirds of which is anhydrite or hard gypsum.

Near the mouth of Mabou River, there is another immense deposit: a peculiarity about the gypsum in this vicinity is; that it crops alongside the coal, both being in the Lower Carboniferous. It appears again at Cheticamp, and is quarried and manufactured at Eastern Harbour, by the Great Northern Mining and Railway Company.

It lies in many places along the Margaree River, and at Lake Ainslie. It abounds at Big Harbour on the Bras d'Or Lake, and at St. Ann's, where the Victoria Gypsum, Mining and Manufacturing Company is work-

ing a large quarry. Another deposit is being worked in Victoria County, at Ottawa Brook, near the Intercolonial Railway.

At Lennox Passage, Isle Madame, in Richmond County, there is a large bed of excellent quality. In Cape Breton County there are large deposits, but they have not been worked to any great extent.

The surfaces of all these beds of gypsum are marked by inverted cone-shaped cavities, known as plaster pits or kettle holes. In some deposits they are not exposed, save the tops, and gypsum may be traced by these, where there is no outcrop. These cavities are formed, some geologists say, by the solvent action of surface water penetrating the fissures of the gypsum. Other authorities contend that kettle holes are formed by escaping gases. The cavities are more contracted in the anhydrite.

The increase in the production of gypsum is about proportional to the increase in the manufacture of cement: this and the slow increase in the building trades and other purposes for which white gypsum is used, regulate the production. The quantity is, easily, far in excess of the demand for many years to come. The grey and blue varieties are used for cement and for agriculture, and are available for many years.

The output of gypsum in Canada in 1911 was 505,457 tons, valued at $978,863, half of which was produced in this province.

The following is an analysis of gypsum quarried at Eastern Harbour, Inverness County:—

	%
Insoluble residue	.30
Oxide of iron and Alumina	.10
Calcium sulphate	90.49
Calcium carbonate	2.01
Magnesium Carbonate	.76
Moisture	5.70
Undetermined	.64
	100.

An analysis of Hants County gypsum shows the following:—

Lime	32.62
Magnesia	tr.
Ferric oxide and alumina	.86
Sulphuric Anhydrite	46.08
Water, loss on ignition	20.30
Insoluble mineral matter	.14
Carbonic anhydride	tr.
	100.

Building stone is quarried near Pictou, and at Amherst and Wallace, grindstones are quarried on the west side of Merigomish Harbour, limestone is quarried at Ball's Creek, and at Leitche's Creek in Cape Breton County, dolomite at George's River, Cape Breton County, marble and limestone at Marble Mountain, Inverness County. The output of limestone, dolomite and marble is used in the furnaces of the steel works at Sydney and Sydney Mines.

MOLYBDENITE DEPOSIT AT TURN BACK LAKE, QUEBEC

By R. O. SWEEZEY, B.Sc.

Molybdenite for some years was known to occur at Turn Back (Keewagama) Lake in Northern Quebec, but it was not until November, 1909, that the writer's attention was attracted by samples of this ore which were shown him by some Indians. A brief examination of the deposits showed their importance and a selection was at once made covering the best showing and 720 acres was staked.

At the present time these properties are most readily reached via Transcontinental Railway from Cochrane, Ont., 140 miles east to Davey Lake, Que., thence by overland road four miles south, thence by canoe a half day's travel to the properties on Indian Peninsula, Turn Back Lake.

To a large extent the surrounding country is covered by dense forest growth and by a heavy clay mantle. The rock formation is Keewatin. On Indian Peninsula the rocks are mostly coarse grained and pegmatite granites, which have intruded through the older schistose Keewatin. Later there were intrusions of large dykes of diabase. These softer Keewatin rocks have been worn down but the granite rocks reach boldly up to a height of about 300 feet above lake level. On the northern part of the peninsula some 30 to 40 quartz veins occupy fissures in the granite and have a bearing roughly northwest. On the two claims situated on the southern part of the peninsula there are about as many more of these quartz veins bearing the same direction.

These veins vary in width from a foot to over 10 feet, with the greater number over three feet wide. The quartz is clear, smokey, and rose tinted. The contact with the granite walls is clearly defined, the quartz breaking away readily.

Greenish white mica is usually present in the walls forming as it were a lubricant at the contacts.

Work has been carried on prospecting these properties during the past three summers with a force of ten to twenty men. Most of this prospecting work was executed on the 440 acres of the properties situated at the north end of the peninsula while the 280 acres on the southern part of the peninsula were only scratched along the lake shore where the outcroppings are more easily worked.

The length of vein matter uncovered and traced on the north claims aggregated over 16,000 feet. One of these veins was traced for 2,000 feet without a break, while indications leave no doubt as to its length being at least 2,600 feet. Several veins have been traced for over 500 feet in length.

The molybdenite occurs in these quartz veins usually associated with mica and in most cases concentrated at the walls of the veins and within a width of six inches or a foot on each wall, but within the quartz matter. In a few cases though the molybdenite has entered the granite walls to a depth of a few inches. Bismuthenite occurs in some of the veins associated with the molybdenite but usually it is found in isolated long needle-shaped crystals in the quartz and removed from the walls.

By rejecting the central part of the quartz veins there would be practically no loss of molybdenite. The richest veins of molybdenite ore bodies have been found on the eastern side of the north properties where the

contact of granite and Keewatin schist is located. Along this contact which is traceable for over 1,500 feet on the properties there are three or four veins three to eight feet wide which have been broken here and there by the irregularity of the contact, but are traceable for lengths of 500 feet and over. One of these veins especially, which has been traced and uncovered for a length of 450 feet, seems to lose its identity as a true fissure vein and becomes a filling between the granite and schist following the irregularities of the contact. This quartz filling has been trenched across in a couple of places, and in one trench 15 feet deep where the quartz mass is eight feet wide an average sample selected with care throughout the whole mass in the walls of the pit, by Dr. T. L. Walker, of the University of Toronto, gave an assay of 6.4% molybdenite. Several other average samples were taken along this same ore body and gave assays of from 2,17 to 2.3 per cent. molybdenite. This vein has not been thoroughly explored, and only in one place has a depth of 15 feet been reached.

Owing to the tendency for molybdenite to weather and oxidize, all the veins appear lean on the surface, and especially on account of the concentration of ore at the contact walls it is necessary to get down some three or four feet in the veins in order to get below the effects of weathering and oxidization caused by the percolating of water or subsequent freezing in the seams at the contact between quartz and country rock.

In sampling in some fifteen different pits throughout the north claims with a view to ascertaining the average ore contents, Dr. Walker found the average assay of 1.92 MoS^2. This takes into account the whole of the vein matter, fully one-third of which would be rejected as barren and the other two-thirds of the quartz mass cobbed to one-half its bulk for crushing and concentrating.

There are portions of a few feet in the lengths of the veins which might be totally rejected in mining, but this would probably more than be made up for in other portions of the vein where the ore concentration would average about 6% of the vein matter. Several tons of ore have been taken out from these properties from time to time and concentration tests were made by Prof. J. C. Gwillim at the School of Mining, Kingston, by the Elmore Vacuum Process at Denver and by the Henry E. Wood Ore Treating Co., Denver. All of these tests were satisfactory though certain difficulties were met with. As a result it was found that a very successful and efficient concentration may be employed by a combination of parts of the three methods used in the tests.

The St. Maurice Syndicate of Quebec owns these molybdenite claims and has carried on the development and prospecting work on the properties. No attempt has been made to sink shafts to any depth beyond 20 to 25 feet, the main object being chiefly to prove continuity of surface extent of vein matter within an economically workable area.

The reports of their consulting engineers show that the results of the work carried on are very satisfactory and presuming a reasonable continuity in depth of the veins with the same percentages of ore as found on surface sampling these properties should certainly become very important producers of molybdenite.

PERSONAL AND GENERAL

Dr. Milton L. Hersey, of Montreal, left last week on a visit to California.

Mr. John E. Hardman has returned to Montreal from an absence of nearly three months in Mexico, where he was engaged in examining tin properties.

Mr. M. E. Purcell, chairman of the Western Branch of the Canadian Mining Institute, and who represented the branch at the recent annual meeting of the Institute in Otawa, returns to Rossland this week.

Mr. H. P. De Pencier has accepted an appointment to engage in consulting work with Mr. W. Mein.

Mr. Charles A. Banks, a mining engineer from New Zealand, who in the latter part of 1912 took charge of Jewel gold-mine and stamp-mill, and did mining and milling for two or three months, has left the Boundary district, British Columbia, in which the property is for England. A local newspaper states that he has gone to confer with the directors of the Jewel Syndicate relative to the substitution of a more effective process for treating the slimes than that with which the mill is now provided.

Mr. T. Walter Beam, of Denver, Colorado, who had much to do with the purchase of the Nickel Plate group of mines and 40-stamp mill in Hedley camp, Similkaneen district, B.C., by those who organized the Hedley Gold Mining Company, has again been spending a few weeks in British Columbia.

Mr. Hermann Bellinger, general manager of the Great Cobar, Limited, was in San Francisco in February on his way from New South Wales to England.

Mr. C. Victor Brennan, chief mining engineer for the Utah Consolidator Co., has returned to Bingham, Utah, after a honeymoon trip from British Columbia to Southern California and thence to Salt Lake City, Utah.

Mr. C. M. Campbell, superintendent of the Granby Consolidated Co.'s big copper mines in Boundary district, British Columbia, has returned to his headquarters at Phoenix, after a wedding trip that extended over several weeks.

Mr. Lorne A. Campbell, general manager of the West Kootenay Power and Light Co., who is member for Rossland constituency in the Legislature Assembly of British Columbia, recently gave the local parliament some interesting and instructive information relative to the mining industry of Rossland camp (which to date has produced metals to an aggregate gross value of between $55,000,000 and $60,000,000). Mr. Campbell took advantage of the opportunity afforded him, when participating in the debate on the Provincial Budget, to show that the future of Rossland's chief mines is as promising as the past has been prolific in good results.

Mr. Herbert Carmichael who, at the end of 1912 voluntarily retired from the position of Provincial Assayer in British Columbia after more than twenty years' efficient service in that office, left Victoria on March 2 for England, intending to be absent from the Province three or four months.

Mr. W. G. Clark, who last October was one of the victims of an accidental explosion in the low-level adit of the Payne mine, Slocan, B.C., the work of driving which he was superintending, has returned to Sandon after having been several months in Vancouver under surgical treatment. One of his eyes was saved, but he has lost the other.

Mr. C. L. Copp, manager for the Coronation Mines, Ltd., of Victoria, B.C., has returned to the company's mine on Cadwallader creek, Bridge river, Lilloet district, B.C., to continue development work, with the main object of opening a sufficient number of faces of ore in the Coronation mine to allow of an adequate supply being maintained to keep the 10-stamp mill running continuously crushing ore. The mill is to be started next summer. Large samples of quartz sent to the company's office in Victoria, stated to be fairly representative of the first-class ore available, look promising for yielding payable gold returns.

Mr. A. W. Davis, of the Consolidated Mining and Smelting Co.'s mining engineering staff, has taken charge at the company's No. 7 mine, in Boundary district, where ore-production has been resumed after several months of inactivity at this one of the company's several mines.

Mr. Geo. Watkin Evans, coal geologist and mining engineer, of Seattle, Washington, has disclaimed, through the medium of the Victoria Times, any association with a Mr. Grossman in the examination of the coal property of the British Columbia Anthracite Coal Co., Ltd., he having made an independent examination of, and confidential report on, that company's coal lands in northern Skeena. Like many "hot-air artists," Mr. Grossman seems to have made use of the name of Mr. Evans and Mr. G. S. Malloch, of the Geological Survey of Canada, without the knowledge or consent of those gentlemen. There must surely be lots of gas obtainable from some of the northern Skeena and Graham Island coals, if one may judge by the published allegations of several of those who claim to know all about them.

Mr. Colin Fraser, who spent several months examining mining properties in Ontario and British Columbia, arrived in London several weeks ago on his return from Canada.

Mr. J. A. Fraser, member for Cariboo district in the British Columbia Legislature, recently gave his fellow-members in the local House some valuable information about the enormous mineral resources of the large area of territory contained within the boundaries of the electoral district he represents. Now that railway transportation facilities are being provided, it is expected these resources, heretofore largely neglected by reason of their remoteness from transportation, will be utilized in steadily increasing degree.

Mr. Robert R. Hedley, of Vancouver, B.C., expects to spend the month of March on the Queen Charlotte islands, whence he went early in the month.

Mr. C. P. Hill, of Montreal, actively interested in coal-mining enterprises in Alberta and British Columbia, was out West in February.

Mr. Joseph G. S. Hudson, of the Explosives section of the Mines Branch, Canada Department of Mines, went to Naimo, Vancouver island. B. C., in February, to be present at an official inquiry into the circumstances connected with the utter destruction of the steamer Oscar by an explosion of a cargo of dynamite she was carrying. Incidentally, much damage was done to colliery headworks on Protection island, and to buildings in the city of Nanaimo, this having resulted in considerable loss to the respective owners.

Mr. J. F. Menzies, of Roslyn, general superintendent for the Northwestern Improvement Co., of Tacoma, Washington, probably the largest owner of coal-mines in that state, on the invitation of the Western Branch of the Canadian Mining Institute, kindly consented to attend the fourteenth general meeting, convened to be opened at Naimo, B. C., on March 4, and deliver an address on mine-rescue matters. Mr. Menzies has taken great interest in first-aid and mine-rescue training and is fully informed on these subjects.

Dr. E. B. Milward, F.G.S., has for a year or more been resident in West Kootenay district of British Columbia, where he has been giving attention to the occurrences of mineral in parts of that large mining area. For years he was connected with the Bewick-Moreing firm of mining engineers, and in their interests visited various parts of the British Empire and other countries.

ECHOES FROM THE MEETING.

Messrs. F. H. Sexton, A. C. Ross, and C. L. Cantley were representative Nova Scotians present.

While some familiar faces fro mthe United States were missing, the meetings were graced by Dr. James Douglas, Mr. W. R. Ingalls, Dr. Heinrich Ries, Mr. R. V. Norris, Mr. G. M. Colvocoresses, and others.

No master of ceremonies ever excelled Colonel J. J. Penhale. His mirthful dignity, his calm resourcefulness, his unbending tyranny, make him a marked man.

Past President Geo. R. Smith was called hastily away on business.

Mr. Neil Macdonald was among the missing. Both the applause and the Cobalt contingent suffered from his absence.

The deadly drops dealt out behind the stage-bar had such immediate effect as to endanger the dramatic unities.

Barring the fact that he called us the Canadian Mining Association, the Governor-General made no lapse. This is a constructive compliment to all concerned.

The officials of the Chateau Laurier were attentive, tolerant, and courteous.

The Cobalt contingent preserved all its traditions. Individually and collectively that contingent is a credit to its native lair. Would that all our mining camps were as loyal to the Institute!

Mr. Haultain's paper rang in pleasant change in the programme. The audience filled the room and overflowed into the corridor.

Major Leckie, brisk and cheerful as ever, took part in the proceedings throughout. Much missed was his side partner, Col. A. M. Hay.

Dr. J. A. Dresser is coming in to his own as a genuine humourist. He was one of the lights of the occasion.

Markedly in contrast were the speeches of the Premier and of Sir Wilfrid at the dinner. The former, impressive, thoughtful, dignified, and incisive, wields the intellectual sabre; the latter, elusive, rapid, graceful, chooses the rapier.

Sir James Grant was by no means least amongst the after-dinner speakers. He was listened to, as he always will be, with respect and sympathy.

The friends and adversaries—both included in the term "friends"—of Mr. Eugene Coste, sincerely regretteed his absence. With most of us Mr. Coste has become a habit.

C. M. I. Group in front of Chateau Laurier, Ottawa.

As assured by Mr. G. C. Mackenzie, the members who failed to secure free trips on the Ottawa street cars, could obtain vouchers, and, later, refunds. The company will not go into liquidation.

SPECIAL CORRESPONDENCE

ONTARIO.

Cobalt, South Lorrain, Elk Lake and Gowganda.—According to figures prepared by Mr. John McLeish of the Mines Department at Ottawa, the production for the province showed a falling off of 627,334 ounces in silver ounces. The production from the Cobalt camp showed a falling off of a million and a half ounces and a gain in value of a million and a half dollars. The increase in value for the province was about 12 per cent.

The Anglicization of the Cobalt camp continues. At a general meeting of the City of Cobalt mining company it was decided to accept the offer of an English syndicate for the sale of the property at 52½ cents a share. This would amount to about $750,000.

At the annual meeting of the Cobalt Lake mining company 90 per cent. of the stock was already in the hands of the English syndicate identified with the Cobalt Townsite mining company. The Chambers Ferland and the Silver Queen are in the hands of the Cobalt Aladdin and some tempting offers have been made to several companes with mines that have produced and are producing. That there will be more sales there is little doubt.

Development along the Cobalt Lake fault is attracting very general attention in the camp. The Cobalt Lake is finding rich shots of ore along the fault, but there is no continuity of ore body. So far development along the fault has revealed wide and sometimes rich ore shoots with intervening patches of barren ground. Development along the fault is, however, very inexpensive, one drill on the McKinley-Darragh making from 40 to 45 feet a week. At the north end of the lake the La Rose is now conducting some very interest-

ing exploration on work with a view to opening the fault at lower levels. At one level the vein was cut showing over a foot of solid calcite, and now it will be intersected at a lower level. The Right of Way is also sinking to develop along it and on the Cobalt Lake several good and wide ore bodies have been opened up on it. The McKinley-Darragh has 1,200 feet of it on their property. They have lately been developing along the fault at the 250 foot level, where some rich ore has been struck. Beyond them again the Princess has struck four inches of cobalt in the fault at the 200 foot level. J. B. 2, which is all the Little Nipissing now has in the camp, has suddenly taken on value because the fault runs across it. Beyond it again the Hudson Bay is pushing a cross cut from the bottom of a 100 foot shaft in order to see what there is along the fault on their property. In a few months' time there will be some very valuable data on the subject.

The production at the McKinley-Darragh for the month of February was approximately the same as for January, namely, 180,000 ounces. This is lower than last year by reason of the fact that development is being retarded as much as possible at the Savage, where every ton of rock thrown on the dump will have to be re-handled at additional cost. The Savage addition to the McKinley mill will not be running till the end of April or May, when all Savage ore will pass over the aerial tramway to it. Intensive development on the McKinley is still producing good results. On vein 36 a shoot of ore 100 feet long has been opened up, and there is width of about twelve feet of milling ore. On the second swamp vein the top of an old stope is yielding unexpected good results, several rich stringers in a body of fair milling ore giving good tonnage. The McKinley-Darragh will pay its usual 10 per cent. quarterly on April 1, which will raise the record of that company to 156 per cent. and a gross total returned to shoreholders of $3,505,175.

Development on the old King Edward property at Cross Lake under the management of the York Ontario continues to be very interesting. When the Silver Cliff mine was closed down about two years ago it was concluded that silver in the diabase in this particular section of the camp was not worth mining. Now both the King Edward and the Silver Cliff have been reopened. The York Ontario, which obtained a lease on the old mine at very favourable terms, is mining the property most economically. Silver has been discovered, both in the wall rock and as vein matter in nearly every point where a drill has run, and there is already a good body of ore ready for the bumping tables now being installed in the old compressor house. As the City of Cobalt will undoubtedly make new arrangements for milling in the near future the little stamp mill will probably be available for the York Ontario in a few months. Everywhere in the mine it was discovered that a little development opened up ore. Whether this is worth mining is yet to be demonstrated, but there is certainly plenty of it. Very interesting, too, is the diamond drilling on the property. The drill has now been put down 600 feet below the adit level and the cores still show that the bottom of the diabase sill has not been reached. The management want to see what chances there is of picking up ore along the contact.

At the Silver Cliff Mr. W. H. Jeffery is in charge for Mr. Wigmore of Toronto, who has purchased the property on what appears to be easy terms. The old workings have already been pumped out and a gang set to work to clean up. No time will be lost in resuming development. On one of the old Prince properties adoining the King Edward some development is being attempted by a leasing syndicate. This property has never received much development. In 1906 the Mackenzie and Mann interests had an option on it for a big figure. They did some diamond drilling and sank a shaft, but discovered nothing which would justify the payment of the first big instalment of the purchase price. Since then it has lain idle. There is scarcely an old prospect in camp that is not been looked over and examined mainly, it is probable, for exploitation on the London market, though there is a demand for properties in the best parts of Coleman all over the country again.

Figures compiled by Mr. A. A. Cole show that there was a big increase in the tonnage of ore milled last year. The total tonnage rose from 329,462 in 1911 to 455,516 in 1912. Every mill in camp was busy with the exception of the Silver Cliff, and it is being reopened this spring. At the McKinley-Darragh, Beaver, Cobalt Lake and Casey additions are being made to existing plants which will raise the tonnage again for 1913. The Nipissing, Buffalo, Dominion, Reduction, Campbell and Deyells and the O'Brien are shipping concentrates, the other companies operating mills concentrates. There is now no mine in camp making regular shipments of low-grade ore and only three or four despatching it at all.

Porcupine, Swastika and Larder Lake.—So satisfactory has been the development of the ore body on the 260 foot level of the Golden Stairway ore body of the Dome that it has been definitely determined to make an addition of forty or sixty stamps to the present mill. Until further drifting has been done the determination for the smaller or the larger number of stamps will not be made. Whilst it has been generally understood that the forty stamps at the Dome would be duplicated this year, nothing definite had been stated.

On the first of March the Dome mill will be treating 450 tons per day. On this basis, with the addition of 40 stamps, the capacity will be raised to 900 tons per day, or, with 60 stamps, to 1,125 tons every 24 hours. At the present time all ore for the mill is coming from the glory holes on the Dome ore body. For the past nine months the mill has been running on a basis of 10,000 tons per month, and this is all coming from above the 100 foot level of this big ore body, where it is estimated there are yet between seven and eight years' reserves of ore, computing the capacity of the mill at its old level. As one drill can break down 75 tons per day into the shoots, the mining is necessarily the most economical.

The Dome is now running with electric power from Waiwaiten Falls. The coal bills has been for some time the feature in the cost which the management most desired to prune, and it will now be eliminated for all but heating purposes.

The new McIntyre mill is now running. The management was so anxious to get it started that they did not wait for the arrival of the agitating tanks, and they will be installed later. Ore will be fed to the mill from the 300 foot levels of No. 4 and No. 1 shaft, while the original mill will be kept going from the glory hole at the No. 1 shaft, where there is still much free milling ore at the upper levels. The capacity of the new plant is stated at 150 tons.

With the payment of the fifth dividend from the Hollinger goes a statement showing that the property is in a very healthy condition indeed. Production jumped in January from 1,373 tons, gross value $25,-

687, to 2,122 tons per week, gross value $59,313. Since the last report was issued the production has again been raised, so that it is now between $70,000 and $75,000 per week, or very considerably more than half as much again as for the whole of the gold production of Ontario for the year 1911.

General Manager Robbins reports "a steady improvement in values and tonnage will be noted. The relative decrease for the week ending January 28 was due to shutting down portions of the mill for much-needed repairs. Mr. Robbins also reports that development was, when the report was issued, along a lean streak in the main vein at the 300 foot level. This was anticipated, as the same conditions occur at all the upper levels.

Strike conditions in Porcupine are almost at an end. Most mines wanting to resume work have resumed and more will in a few days. The clearing of the air at Cobalt has relieved the stress all through Northern Ontario.

Operations at Larder Lake are largely confined to the Goldfields, Limited. A very valuable electric power plant has been erected at Raven Falls and is now running all the machinery at the mine. The power rights are capable of developing 10,000 horse power if it is ever required.

According to an official statement, "the ore body has been opened up for 130 feet in width and 600 in length and there are eight drills at work. Thirty stamps are dropping on ore.

STATISTICS AND RETURNS

DOMINION IRON AND STEEL. FEBRUARY OUTPUT.

The output at the plant of the Dominion Iron and Steel Co. for the month of February was as follows: Pig iron, 700; ingots, 22,560; blooms, 19,900; rails, 12,745; total shipments, 19,470. The February output of the Dominion Coal Co. was 336,000 tons.

SCOTIA FEBRUARY OUTPUT.

For the past month Nova Scotia steel and coal outputs were as follows: Coal mined, 59,704 tons; pig iron made, 5,495; steel ingots, 4,828; ore mined, 79,535 tons; February being a short month.

COBALT ORE SHIPMENTS.

Of the half million pounds of ore shipped out last week almost half was low grade. The Bailey Cobalt also sent out a car of ore running less than 500 ounces to the ton.

	Ounces.	Value.
Nipissing	921.98	$54,587.97
Buffalo	28,338.00	17,000.00
Kerr Lake	1,500.00	900.00
	122,359.98	$72,487.97

The shipments for the year to date are:

Mine.	High.	Low.	Tons.
Townsite	12		426.68
Crown Reserve	1		146.47
McKinley-Darragh	12		436.36
Peterson Lake	1	2	115.96
Wettlaufer	1		60.00

The shipments for the week ending March 8th in pounds are:

Mine.	High.	Low.	Lbs.
Crown Reserve	1		60,162
Coniagas	3		160,501
Trethewey	2		83,600
Bailey Cobalt		1	46,500
Nipissing		3	211,005
La Rose	2		35,776
Cobalt Townsite	2		142,000
	10	4	539,544

The bullion shipments for the week were:

Temiskaming	5	1	168.85
Beaver	3		78.10
Kerr Lake	3		120.17
Coniagas	10		362.86
Trethewey	6		158.73
Drummond	5		6,127.83
Cobalt Lake	4		173.32
Nipissing		9	306.29
La Rose	15		538.86
Hudson Bay	4		125.35
Colonial	1		21.56
Chambers-Ferland	1	2	95.20
O'Brien	2		87.41
Dominion Reduction	1		85.80
Bailey		1	23.25
City of Cobalt	1		32.94
Green-Meehan	1		12.96
Casey Cobalt	2		59.32
	92	15	3,764.26

The bullion shipments to date are:

	Ounces.	Value.
Nipissing	878,000.20	$484,626.22
Buffalo	258,867.00	162,100.00
Dominion Reduction.	79,200.00	45,405.00
O'Brien	21,058.00	13,038.00
Crown Reserve	15,691.00	9,354.00
Trethewey	5,077.00	3,223.00
Townsite	6,770.00	4,209.00
Casey Cobalt	2,394.00	1,520.00
Miscellaneous	7,643.00	4,575.00
Kerr Lake	1,500.00	900.00
	1,276,600.00	$686,935.22

B. C. ORE SHIPMENTS.

Week ending March 1st.

With last week's ore production the total in the Kootenay and Boundary district for the year to date reached the substantial figure of 407,232 tons, which is considerably above the average of 1912. Boundary ore output last week was 38,600 tons, which sent the total for the first nine weeks of 1913 flying past the 300,000 ton mark.

Receipts at the Consolidated Mining & Smelting Company's plant at Trail continued heavy and reached nearly 8,000 tons.

In the Nelson district the heaviest shipper was the H. B. at Deer Creek, in the Sheep Creek camp, which sent 326 tons to Trail smelter. The Queen Victoria

shipped 300 tons to the British Columbia Copper Company's smelter at Greenwood.

Ore production for the week in the Kootenay and Boundary districts was 51,013 tons. Smelter receipts for the week were 45,013 tons and for the year to date 353,895 tons. Production in detail was:

Granby Smelter Receipts.

Grand Forks, B.C.

	Week.	Year.
Granby	23,683	188,048

Consolidated Co.'s Receipts.

Trail, B.C.

Ben Hur	124	1,229
United Copper	95	796
No. 7	28	416
Standard	348	2,555
Bluebell	248	1,708
Hope	56	146
Yankee Girl	128	923
H. B.	326	1,714
Emerald	31	372
Granite-Poorman	32	65
Second Relief	44	44
Centre Star	3,768	23,918
Le Roi	1,069	11,006
Le Roi No. 2	648	4,021
Sullivan	782	6,720
St. Eugene	130	333
Other mines	...	2,991
Total	7,857	58,957

B. C. Copper Co.'s Receipts.

Greenwood, B.C

Mother Lode	6,210	53,639
Rawhide	6,083	41,893
Napoleon	820	6,069
Unnamed	60	667
Queen Victoria	300	4,622
Total	13,473	106,890

East Kootenay.

Sullivan	782	6,720
St. Eugene	130	333
Total	912	7,050

Rossland.

Centre Star	3,768	23,918
Le Roi	1,069	11,006
Le Roi No. 2	648	4,021
Le Roi No. 2, milled	350	3,150
Other mines	...	132
Total	5,835	42,227

Boundary.

Granby	23,683	188,048
Mother Lode	6,210	53,639
Rawhide	6,083	41,893
Napoleon	820	6,069
Unnamed	60	667
Ben Hur	124	1,229
United Copper	95	796
No. 7	28	416
Nickel plate, milled	1,500	13,500
Other mines	...	2,393
Total	38,603	308,850

Nelson.

Queen Victoria	300	4,622
Yankee Girl	128	923
H. B.	326	1,714
Emerald	31	372
Granite-Poorman	32	65
Second Relief	44	44
Mother Lode, milled	500	4,500
Granite-Poorman, milled	250	2 250
Second Relief, milled	200	1,800
Other mines	...	3,486
Total	1,811	19,776

Slocan and Ainsworth.

Standard	348	2,555
Bluebell	248	1,708
Hope	56	146
Standard, milled	500	4,500
Bluebell, milled	1.200	10.800
Van-Roi, milled	1.100	8 800
Kilo, milled	100	900
Rambler-Cariboo, milled	300	2.700
Other mines	...	1,547
Total	3,852	21,656

Lardeau.

Other mines	...	137

GENERAL MARKETS.

Coal, anthracite, $5.50 to $6.75.

Coal, bituminous, $3.50 to $4.50 for 1¼ inch lump.

Coke.

March 10.—Connellsville coke (f.o.b. ovens).

Furnace coke, prompt, $2.50 per ton.

Foundry coke, prompt, $3.00 to $3.25 per ton.

March 10.—Tin, Straits, 46.40 cents.

Copper, prime lake, 14.90 to 15.00 cents.

Electrolytic copper, 14.82½ to 14.92½ cents.

Copper wire, 16.00 to 16.25 cents.

Lead, 4.35 to 4.40 cents.

Spelter, 6.40 to 6.50 cents.

Sheet zinc (f.o.b. smelter), 8.25 cents.

Aluminium, 26.50 to 26.75 cents.

Nickel, 40.00 to 45.00 cents.

Platinum, ordinary, $46.00 per ounce.

Platinum, hard, $51.00 per ounce.

Bismuth, $2.00 to $2.25 per lb.

Quicksilver, $40.00 per 75-lb. flask.

SILVER PRICES.

	New York. cents.	London. pence.
Feb. 22	..	28 5/16
" 24	61	28 1/16
" 25	60¾	27 15/16
" 26	60½	27 13/16
" 27	60	27 5/8
" 28	58⅞	27 1/16
Mar. 1	59⅛	27 3/16
" 3	59⅝	29 7/16
" 4	59⅝	27 7/16
" 5	59⅝	27 7/16
" 6	59⅜	27 3/8
" 7	58⅝	26 15/16
" 8	58¾	27
" 10	58¾	27